

**Florida AREERA 2002 Report of Accomplishment
Submitted: March 1, 2003**

March 1, 2003

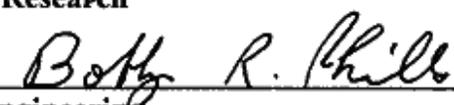
This is to certify that I have seen and approved the Florida FY2002 Annual Report of Accomplishment for AREERA. This report contains the following:

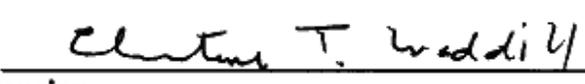
- **UF/IFAS (1862) Research and Extension Report including Extension Multi-state and Extension and Research integrated requirements.**
- **FAMU/IFAS (1890) Extension Report.**

This is also to certify that Cheri Brodeur will be submitting this report with our knowledge and approval.

Signatures:

Dr. Richard L. Jones 
Dean and Director of Research

Dr. Bobby R. Phills 
**Dean for College of Engineering
Sciences, Technologies and Agriculture**

Dr. Christine T. Waddill 
Dean and Director of Extension

Contained in this document is the Florida 2002 AREERA Report of Accomplishment. Information in this report has been obtained from UF/IFAS 1862 Research and Extension and FAMU/IFAS 1890 Extension. For the third year, information has been obtained from the Florida Institute of Food and Agricultural Science's (IFAS) online Faculty Accomplishment System (FAS) including multi-state and integrated activities. Contained herein are all requirements to complete this report, including a review of some projects and programs occurring within each of the critical need program areas as they were shown in the AREERA five year Plan of Work. In comparing this ROA to the POW, you will find that this year several critical need areas have been deleted or combined and one new critical need area has been added (disaster preparedness). These changes have been made to reflect changes occurring within IFAS and the state, through Florida FIRST, advisory committees, and at the recommendation of our stakeholders.

This report contains projects and programs receiving some Federal Formula Funds (specifically Smith-Lever, Hatch, and others identified in the AREERA guidelines). There is also a section relating specifically to multi-state (Smith-Lever) and integrated programs (Hatch and Smith-Lever). It should be noted that this report was designed to be submitted and viewed electronically (requirement from Washington) and may not print out well in a hard copy format.

If you have any questions about this report please feel free to email me at: cbrodeur@mail.ifas.ufl.edu

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II ~ EXECUTIVE SUMMARY

The Institute of Food and Agricultural Sciences (IFAS) located at the University of Florida (UF) and Florida A&M University (FAMU) have a mandate to serve the people of Florida. This mandate is defined in federal legislation including the Morrill Acts of 1862, 1890, and 1994, the Hatch Act of 1887, and the Smith-Lever Act of 1914. Through these Acts, the Florida land-grant college (IFAS) has been created and is expected "to set a broad course and direction to help Florida expand domestic and international commerce, enhance natural resources, provide consumers with a variety of safe, affordable food, support community development, maintain a sustainable food and fiber system, and improve the health and well-being as well as the quality of life for all Florida citizens."

IFAS is accomplishing these goals by identifying present and potential critical needs through grassroots networking with Florida's citizens and stakeholders. This networking is reached through Florida county advisory committees, councils such as the Florida Ag Council, Inc., departmental and commodity advisory committees, research and education Center advisory committees, listening sessions, survey's and one-on-one conversations. Extension also does a long range plan every four year that includes grassroots listening sessions. Extension is presently in the listening session stage for the 2004-2008 long range planning process. The Florida FIRST initiative, a movement developed by IFAS in 2000 was another broad based series of listening sessions. These sessions were held to engage Florida stakeholders from all walks of life, including individuals, groups and organizations, and encompassed all ethnic and socioeconomic levels. Information obtained from these activities will be used to mold the vision and direction of IFAS well into the 21st Century. This direction, combined with the land-grant mandate for service, is at the heart of Florida's IFAS and is the driving force within the research, extension and education components of the IFAS organization.

Through the Florida Agricultural Experiment Station System, the IFAS mission is "to invent, discover, and develop applications of knowledge. Its mission supports agriculture and the natural and human resources through application of the natural, biological and social sciences." It is through this scientific-based research that present critical needs are solved and future potential problems are alleviated before they have an opportunity to develop.

Integrated and inseparable from research, IFAS Extension "provides Floridians with life- long learning programs in partnership with county governments, state agencies and the United States Department of Agriculture. The wide breadth of educational programming offered in each Florida county responds directly to the local needs of families, youth, the economically disadvantaged, schools, regulatory agencies, community organizations and industry." IFAS Extension, through its integration with research, also serves to ensure that research needs, often identified by faculty working at the grassroots level, are included in the IFAS research agenda.

What problems does Florida IFAS face that require solutions? Some of the most pressing issues relate to population. In the 2000 census, it was shown that Florida's population had grown to almost 16 million, a dramatic 23.5% increase over the 1990 census. As the population continues to grow, it is also becoming more diverse with Hispanic and African Americans, who now comprise 16.8% and 14.6% respectively, of the total population. Diversity offers additional challenges such as language barriers, poverty, and additional health and nutrition issues. The ever-increasing tourist population, although necessary for Florida's healthy economic growth and wellbeing, can also cause challenges. The 50 million estimated annual visitors require a growing service and tourism-related labor force. This need for additional labor in the non-agricultural job market causes increased competition between agriculture and non-agricultural businesses. This often results in shortages of farm labor during crucial periods of the agricultural production cycle.

Population growth and other related factors also put increasing pressure on the natural and renewable resources in both the urban and rural settings. The skyrocketing growth in Florida, especially in coastal communities, places many unprepared and unsuspecting citizens in line for the natural disasters common in Florida, including hurricanes, flooding, and wildfires. Reduction and destruction of the environment, including marine, wetlands, and wildlife, are intensifying through continued population growth and development. The stresses of severe drought and its impacts on water quality and quantity are adding to the negative economic impact in the state. The demands for water in some counties are already beginning to exceed local water resource availability. IFAS is educating the public on these areas to reduce negative impact. Energy extension has a strong program with hotels and motels in coastal areas to reduce storm and hurricane damage to property and lives of citizens and tourists. Through the marine program research and extension are working together on post harvest treatment options for the Florida oyster industry to reduce the illness rate caused by *vibrio vulnificus*. Research scientists and extension faculty also continue to look for better ways to improve water quality and conservation. One example of where this is occurring is continuing improvements on the effectiveness and efficiency of agricultural irrigation systems and new uses for waste water.

The expanding need for land to meet the needs of urban growth continues to force traditional agriculture and forestry lands to increase in value, ultimately leading to increasing fees and taxes or rezoning for urban uses. In order to survive, with the help of IFAS, land-extension agriculture is finding solutions as can be seen in parts of South Florida where traditional farming is being replaced by high-value specialty fruits, vegetables and nursery products.

Changing U.S. government policies toward agriculture and trade have greatly enhanced risks facing Florida agricultural producers. This results in a need for more study in the area of risk management practices and strategies as well as an emphasis on the importance of overall financial and risk management planning, as Florida producers find themselves in competition with foreign markets selling in the U.S. Also, these changing policies will continue to increase market, public, and political pressure forcing Florida producers to be more competitive in the global market—a new and daunting venture for many. Not only will this increasing importation of goods into and through Florida increase financial risk issues, but will also increase environmental, health, and safety concerns as Florida's IFAS continues to battle the almost constant unwanted introduction of invasive plants, pests, and diseases, as well as food borne pathogens, into the state. IFAS is involved in the Southern Region Pest Management Center which maintains a regionally based pest management information and communication network among the states and territories in the Southern Region.

All of these pressures place additional stress on human and community resources in both urban and rural areas of the state. Problems facing communities include growth management, economic development, affordable housing, overcrowded schools, and environmental protection. Now at 17.6 percent, by 2020, one-fourth of Florida's population is projected to be 65 or older, and issues relating to health and nutrition, among others, will grow increasingly more important. Florida research and Extension is dealing aggressively, through scientific discovery and educational activities, with these and other related problems. IFAS/Extension is also partnering with many organizations, such as the national AARP, a national association of older citizens to provide much needed financial management programs for women and older adults nation-wide.

The 2000 census shows that presently 22% of the population is less than 18 years of age corresponding directly with the increase in juvenile violence and school dropouts. A nationally publicized, longitudinal study completed in 2001 by a Florida IFAS extension/research faculty member documents the affect of positive relationships in families to the educational success of children. Parenting and other skills meant

to teach these positive relationships are being offered to at risk families by extension faculty. This same study also shows the important roles that other adults play in children's educational success, including participation in youth organizations such as 4-H. In Florida last year, 271,077 children were involved in Florida 4-H through school enrichment, 4-H club enrollment, and special interest groups. There is also a successful tri-state consumer fraud prevention education program on going between Florida, Georgia and Alabama.

Another area of need that has been reinforced through stakeholder involvement is the request for a more positive focus on the small farmer and farm families. Traditionally, these underserved groups have not had equal access and participation in programs and training which have often been designed for large producers and agribusiness. In addition, a main issue identified by stakeholders is that profitability from traditional crops on small-scale farms is poor. Florida A&M University's 1890 program is doing research projects and extension programs on alternative crops such as scotch bonnet hot peppers and animal production such as meat goats, designed specifically for the small farm. Over 433 producers locally and regionally were trained in goat production and management in 2002. Research continues in several value-added products that can further increase the farmers profit and partially replace income lost through the removal of tobacco as a crop in the region. Two products made from goat meat and developed by IFAS researchers are now being sold in grocery stores catering to the Hispanic population, who historically consume large quantities of goat meat. Other new markets are also being investigated.

Besides population, weather, climate, and soil conditions also lend themselves to unique problems affecting Florida especially in the area of agriculture. Florida agriculture relies heavily on high value crops such as citrus, vegetables, green house and nursery ornamental plants, and sugarcane to a much larger extent than other states. Many of these crops are grown only in temperate areas such as Florida, reducing the amount of research readily available from other sources. This puts greater responsibility on IFAS researchers to discover new, stronger and more disease resistant cultivars adaptable to Florida's unique conditions. Changes in recent laws are also requiring Florida researchers to find new and better means of reducing pests and disease in Florida's agricultural industries. Recent research projects have included the development of numerous new value-added cultivars including tropical fruit and citrus cultivars, as well as post-harvest handling and processing methods needed to reduce spoilage and increase food quality in vegetable and fruit packing houses located in Florida's humid climate. Many of the cultivars that are developed are then field tested across the state by county extension faculty and stakeholders in order to duplicate exact growing conditions. This integration of stakeholders, research scientist and extension faculty is not unique to Florida IFAS.

Severe heat and many pests and diseases associated with Florida's temperate regions can also be responsible for the loss or reduced productivity from Florida's agriculturally important animals. The combination of heat and animal production can cause clashes between urban and rural communities. For example, problems with odors and flies caused by the existence of animal waste can cause environmental issues as the state population continues to encroach on traditionally agricultural areas. Florida research studies on improved absorption of animal nutrition and better methods of recycling animal waste productions, combined with proper education through extension programs for producers, lawmakers, and urbanites, have also added to solutions to some of these more volatile issues and have made for better neighbors in many parts of the state.

Recent changes in world conditions have also impacted IFAS goals and objectives. Fears of bioterrorism, food safety and the continued increase in emerging diseases and invasive species have increased the need for vigilance and solutions in agricultural communities. IFAS offers solutions through scientific-based research, information technology and strong educational programs throughout the state. Research and extension faculty also work closely with the Center for Disease Control, emergency management

departments and other agencies across the state to combat the steady onslaught of pest, disease and invasive weeds that continue to reach Florida from foreign ports.

Improving accountability and information technology to better reach and serve the residents of Florida have also been important developments by Florida IFAS in 2002. Through **EDIS** (Extension Digital Information Source), Florida research and extension publications are online for immediate use by Florida's citizens as well as the rest of the citizens of the world. Created and developed by IFAS faculty, **DDIS** (Distance Diagnostic Information System), consists of a website and database which allows identification of plants, animals, and diseases by IFAS experts using digital photography. For example, beneficial and harmful insects can be identified within hours or minutes, saving farmers and home owners crucial time in preventing crop and plant damage. **FAS** (Faculty Accomplishment System), an online database accountability system developed by IFAS research and extension personnel and used by all IFAS faculty, allows for more accurate evaluation of programs and accomplishments within IFAS. This system has also made it possible for states to see what multi-state programs are ongoing and is responsible for the increase in many multi-state activities this year. **FAWN** is a real-time weather information source that is used by many constituents for a variety of applications, including freeze protection, home and landscape irrigation scheduling, medium-term climate prediction based on El Nino, emergency management, and others. This program has been so successful that millions of dollars have been saved and additional towers were added this year to increase the coverage of the system.

Through these and many other projects and programs, The Institute of Food and Agricultural Sciences is working hard to successfully identify problems facing the citizens of Florida. And, following the goals and responsibilities set by the federal mandates, they are dedicated to finding long term solutions that will improve the wealth, safety, health and quality of life for all who reside within this great state.

But some hardships now face IFAS in reaching some of these goals? Since the terrors of 9/11 and the economic deficit that has plagued Florida since, IFAS has been directly impacted. In 2001-02 the state appropriated funds for IFAS were reduced by \$2.5 million. In 2002-03 they were reduced by an additional \$7.1 million. The proposed reduction for IFAS in 2003-2004 is another \$8.4 million. What this means for Florida is that:

- Over the past two years we have deleted 46 faculty and 131 vacant staff position from which the salary dollars, representing \$5.4 million, were being used for support of programs and operations.
- Sixty-eight high priority faculty and staff positions and 45 county extension faculty positions were frozen (not filled due to lack of funds). This represents almost \$2.3 million.
- Thirty-seven administrative and technical staff were either reassigned or laid-off due to a lack of funds representing \$1.4 million.
- Over the past four years over \$2.0 million has been reduced from IFAS central administration and shifted to the units for program support which reduces the ability to further reduce central support functions.
- IFAS administration has taken an additional \$1.2 million reduction from central services to meet mandated reductions.

- Program reductions have occurred through closure of the Florida poultry research program, the Blountstown aquaculture facility, the poultry demonstration site at Chipley, consolidation of the Chipley beef unit to Marianna, closure of the administrative functions and staff reductions at Hastings, consolidation of administration of multiple RECs under a single director, and staff reductions at Jay. Previous IFAS closures include Monticello, Sanford, and Leesburg. Bradenton and Dover RECs are in the process of being consolidated at a new site in Balm.
- IFAS has 40 faculty and 23 technical staff retiring statewide under the DROP program by July 1, 2003. This represents over 2125 years of experience in many critical areas that will be lost.

Given the above, a combination of the following will occur in Florida IFAS if the proposed State budget is implemented:

- Additional layoffs will be required through targeted program reductions and consolidations.
- Additional site closures and consolidations will occur.
- Departmental consolidations and program reductions will be necessary.
- Canceling faculty, county faculty, and staff positions previously approved for filling will be required.
- Not filling 40 high priority faculty positions caused by retirement in the next year could occur.
- Review of Extension administration and program delivery methods will be necessary.
- Mandated furloughs will be initiated.
- Nine-month and part-time appointments will be implemented for selected faculty.
- A reduction in the number of teaching curriculums (degrees offered) will occur.
- Slower graduation rates thus longer time in college per student.
- Larger class sizes

IFAS has received severe budget cuts for the past two legislative sessions and has absorbed them through realignments, consolidations and staff reductions doing everything possible to continue meeting the needs of Florida's citizens. The bottom-line is that if the presently proposed state budget cuts are implemented IFAS will not be able to meet some of the critical needs that have been identified and which require immediate attention. The agriculture and natural resources industries which represent a \$54 billion dollar impact on the state's economy and that depend on IFAS for research and education could be severely impacted adding to the reduction of the economy stability of the state. In order for IFAS to continue to adequately serve its diverse clientele, it cannot absorb additional cuts because it will result in a loss of 17% of its recently vacant faculty positions, and 20% of its recently vacant county faculty positions. Involvement in multi-state activities, which have already been reduced by faculty and budget cuts could be more severely affected as Florida IFAS is forced to prioritize the needs of Florida. Integration in some research/extension efforts could also be reduced or dissolved due to the loss of critical faculty and cut backs. The situation in Florida as in most states at this time is grim. As gas prices continue to rise and fear of travel continue to impact tourism in Florida, the need for a productive and economical sound agricultural system becomes more important. IFAS continues to search for innovative solutions that will allow us to reach the goals and promises as outlined in the Florida IFAS mission statement.

III ~ PLANNED CRITICAL NEED PROGRAMS

Goal 1: An Agricultural Production System That is Highly Competitive in the Global Economy

A. Overview

a. Extension and Research Results

Florida agricultural producers in all commodity sectors are struggling to remain competitive in the global market. The challenges are many, including conventional problems with pests, disease and weather. The 1990s introduced two new concerns affecting competitiveness: international trade and governmental regulatory policy. The consequence of these issues today is that market volatility increases, borrowing becomes more difficult, complying with rules and regulations becomes more tedious, costly and perplexing. There is a need for timely information on global and national marketing conditions that affect Florida competitiveness for all commodities, including the trade and other policy issues that define the setting for Florida markets. Research Economists in one project are gathering data and using it to develop models to analyze policy issues via both deterministic and stochastic simulation techniques. An even larger project, Impacts of Trade Agreements and Economic Policies on Southern Agriculture, is developing import and export demand equations and analyzing import behavior of agricultural commodities and products in major importing countries. They are also evaluating the growth of trade balances and income of selected developing countries. Through Extension programs like Tri-State Agriculture Economic Development, and Economics and Policy within the Florida Tomato Industry producers are learning how to understand marketing conditions and the rules and regulations needed to stay competitive.

Besides the need for competitiveness, Florida relies heavily on high-valued agricultural crops such as citrus, vegetables, greenhouse and nursery ornamental plants, and sugarcane, to a much larger extent than other states. Florida commercial citrus production occurs on 845,000 grove-acres representing 2.5% of state land area. As one of the world's largest fruit industries, Florida citrus makes a substantial contribution to the state economy, employing the equivalent of 61,000 full time employees and with total Florida sales of more than \$6.8 billion. Global competition is forcing Florida citrus growers to redesign production systems. One research project is evaluating production inputs and labor requirements and analyzing management practices to help reduce the unit cost of producing oranges and grapefruits. The annual farm value of Florida-grown vegetables during the 2001-2002 crop year was approximately \$1.7 billion, harvested from 280,600 acres. As much as 80% of the 20 major vegetables produced are shipped to out-of-state and export markets. During the past 10 years Florida has also followed the national trend of increasing the number and quantity of value-added products. Fresh-cut (pre-cut) vegetables now account for as much as 10% of total production, targeting both institutional and retail levels. Thus, vegetable production contributes significantly to the state's economy. To stay competitive, IFAS research scientists are constantly searching for new cultivars and other ways to improve Florida citrus. Several projects are looking at plant genomics searching for the basic knowledge needed to metabolically engineer plants to increase more productive crops. This may include ways to increase disease and pest resistance, improve taste or increase positive plant traits. Extension, in the meantime, is providing this scientific- based research to Florida stakeholders through

programs such as the Butter Bean Pilot program or the Tropical Fruit Crop management program.

Disease and insect pests of Florida can reduce yield in Florida crops, horticultural and animal industry. Pesticides and cultural methods effectively control some of these pests; however, development of controls is necessary for others. Furthermore, control may be lost for some pests due to cancellations associated with government regulation. Research and extension educational programs are helping producers to implement new technologies and sound management practices in order to stay efficient and profitable. Adoption of sustainable practices will contribute towards maintaining acceptable production and will minimize environmental impacts. A major thrust for research has been to find alternatives for methyl bromide which is being phased out. Extension is providing this information on a grassroots level as the results become available.

Rapid population growth has changed the state from a largely rural state to one of the most highly urbanized in the country. Florida's population is now 85% urban, compared to 76% nationally, making it the ninth most urbanized in the country. The number of Metropolitan Statistical Areas (MSA) (total population of 100,000 or more) grew from only seven in 1960 to twenty in 1990 and these numbers continue to increase. However, over half of the population resides outside the central city core in most MSAs in the state. IFAS is looking for ways to relieve some of the tension caused by the movement of urban populations into traditionally agricultural areas, and in particular those areas where land values threaten agricultural profitability. IFAS economists have recently completed a comprehensive land retention study for Miami-Dade county. The annual economic impact of agriculture on the Miami-Dade County economy is approximately \$1 billion per year. If the agricultural land retention study is successful in increasing agricultural output by 10 percent or successful in preventing a 10 percent loss in output, the overall impact on the economy could be approximately \$100 million per year.

Partially caused by and adding to growing population problems are water issues that affect almost every part of the state. The average Florida resident uses 170 gallons of fresh water per day, over 50% more than the average for the United States. Further, use is highest where population is the greatest. In South Florida, where fresh water resources are already under severe pressure, use averages 210 gallons per person per day. About half of all water use in Florida is for lawn and garden irrigation. In essence, we are mining our water supplies. Some water supplies are also polluted. Florida's population cannot be sustained without a safe, abundant water supply. Promotion of the Florida Yards and Neighborhoods program and planning at the community development level is significantly reducing consumption of installed landscapes. Promotion through extension educational for homeowners on water conserving dishwasher and clothes washers is also reducing consumption in homes. In the agricultural arena, research in better use of irrigation is reducing consumption and ground water pollution and making the use of irrigation more efficient. Better understanding of weather and climate conditions are also reducing the use of water and increasing profit.

Weather and climate were identified as critical in the recent Florida First Report in 2000. Access to accurate and timely weather information supports day-to-day management decisions taken by agricultural producers and other constituents. Likewise, short-term climate prediction permits development of strategies to face probable extreme conditions such as drought, freeze or flooding. Weather information and accurate climate predictions result in substantial economic savings, more efficient resource use, reduced environmental impacts, and increased safety and quality of life for Florida's population. Currently, FAWN and ongoing research by the Florida Consortium of Universities

address these issues. By enhancing the linkages between these existing resources and those who use them, IFAS can focus research priorities and contribute to the design and development of information products for use in operational programs.

Changing U.S. government policies toward agriculture and trade have greatly enhanced risks facing agricultural producers resulting in a need for more risk management practices and strategies. Research and Extension programs presented to producers and growers as well as agriculture related businesses have emphasized the importance of an overall financial and risk management plan. Technology, especially biotech and information technologies, are rapidly advancing and can provide a competitive edge in world markets. Molecular biology research is a priority and helps in the search for solutions to difficult problems. This research coupled with extension programs in Florida has contributed to increased quality of tropical and subtropical forages, which will improve animal performance and productivity. Other work represents an effort to alleviate the detrimental effects of ethylene on quality of ornamental crops during shipping and handling. Still other work looks at finding solutions to disease problems. For example, tomato genes that are turned on in a plant response to disease are being studied. These genes, once identified, will be prime candidates for genetic engineering to help the host plant fight off the disease causing organisms. Management of citrus tristeza diseases and bacterial spot disease of pepper and tomato are other examples of disease control research with genetic engineering. Recent Hatch funded research in strawberry cultivars has advanced UF/IFAS strawberry breeding another cycle. This work led to development of new strawberry cultivars which should help Florida maintain its dominance in the U.S. winter strawberry market. In Extension, Two sugarcane variety release committee (VRC) field days were held in 2002 in conjunction with USDA-ARS and the Florida Sugar Cane League. This participatory process involves a 23-person committee composed of representatives from grower, industry and research organizations. Three CP clones were released over the last 2 years. Recently-released clones CP 89-2143 and CP88-1762 are already grown on 43,490 acres in the EAA. These are just a few examples of how research and extension might improve the quality of Florida agricultural products.

As computers connected to the Internet become more accessible to the state population (almost every library in Florida now offers free access to the Internet), Florida citizens have instant access to knowledge and information produced by UF/IFAS. Information technology based research and applications are implemented in virtually every department of Florida IFAS. Some of the most relevant systems are:

- 1) FAWN, a real-time weather information source that is used by many constituents for a variety of applications, including freeze protection, home and landscape irrigation scheduling, medium term climate prediction based on El Niño, emergency management and others..
- 2) A Distance Diagnostic Information System (DDIS), consisting of a website and a database that allows identification of plants, animals and diseases by IFAS experts using digital photography. For example, beneficial and harmful insects can be identified within minutes, saving farmers crucial time needed to prevent crop damage.
- 3) EDIS, a massive on-line public warehouse houses thousands of scientific-based publications produced by IFAS faculty. The information at this site is used by the general public and for research projects around the world.

As we enter the 21st century, a key issue with agricultural research and extension development is the need to positively focus on the small farmer and farm families.

Traditionally, these underserved groups have not had equal access and participation in programs and training often designed to assist large producers and agribusiness. Also, a main issue identified by stakeholders is that profitability from traditional crops on small-scale farms is poor. Florida IFAS is doing research on alternative crops and looking for ways to help the small farmer be more competitive. This year extension faculty at FAMU have developed demonstration plots to test the adaptability and market potential of alternative tropical crops such as Pigeon Pea and Habanero peppers were established to effectively extend these services to farmers. The New North Florida Cooperative, an affiliate of the program, has recently acquired seven refrigerated trucks to enable farmers to get their produce to the more lucrative distant markets. Considering the great amount of emphasis being placed on sustainable farming practices, the Florida A&M University's Cooperative Extension Program also decided to include research on sustainable production techniques to complement the package of information and technical assistance to be passed on to farmers.

b. Successes

Extension:

A major producer of container foliage crops is now using controlled-release fertilizer in the container substrate in place of reliance on a total solution fertilization program. This practice change resulted from an onsite demonstration where controlled-release fertilizer reduced nitrogen loading to ground by 98 % compared to solution fertilizer.

In one area, the nurseries represented in the "Effective Irrigation Management" classes made changes that saved 1.8 million gallons of water annually.

Cost-sharing of BMPs is underway with over \$450,000 disbursed to help implement BMPs in 2002. Funding has been obtained from the St. Johns River Water Management District, the South Florida Water Management District, and DACS.

Over 2,500 citrus industry employees participated in BMP and worker protection programs

Lychee and longan acreage in Florida has more than doubled in the last 8 years. As a result of our workshops on lychee and longan production, producers have responded that the information provided has increased fruit production (96%), increased the use of sustainable fertilizer and irrigation agricultural practices (50% and 33%, respectively), and increased the use of scouting (over 90%) as a decision making tool in controlling the lychee web worm.

Research:

The nitrate load to the Suwannee River in the middle Suwannee Basin is contributed almost exclusively through groundwater discharge to the river. Knowledge gained from this project will help develop BMPs for vegetable farms in the Suwannee River Basin that will reduce nitrate leaching to groundwater. Development of BMPS will be essential to meet the nitrate TMDL that will ultimately be established for the Suwannee River.

Livestock heat stress limits production in warm climates such as Florida's. Air pollution in livestock housing can cause health problems for workers and livestock. Heat stress is a major factor limiting livestock production in Florida. The studies of new methods to cool dairy housing will result in additional housing choices for dairy producers.

Describing the temporal differences among fermentable carbohydrates in their yields of products, including organic acids and microbial protein is an essential starting point to predicting the yield of metabolizable nutrients to the cow. Differences noted in microbial CP yield for sucrose, starch, and pectin are in agreement with and help to explain the results of animal feeding trials. Currently, microbial yield from these three non-NDF carbohydrates are treated as being equivalent. This information will be used to modify animal feeding recommendations and they open the door for investigations into appropriate carbohydrate and protein supplementation strategies to meet animal nutrient requirements. This information can be used to help reduce nutrient excretion by animals through more accurate ration formulation and better feed efficiency.

Many Florida dairies will utilize no-till, sod-based forage programs with Tifton 85 bermudagrass as the primary forage in a two or three-crop system to scavenge and utilize high levels of manure N efficiently. This system will be utilized especially in deep sand soils to protect against leaching of nitrate N to groundwater.

The ornamental industry in Florida has a wholesale value of over \$1.7 billion. Research conducted in this project on pathogen epidemiology and movements, taxonomic differences within pathogens, and host resistance; make it possible to give sound recommendations on disease control. Thus, this research directly affects productivity of the State's horticultural industry.

Insect resistance in cos lettuce will save growers money, and reduce handler and environmental impact. Corn research findings and transgenic sweet corn resistant to worm pests will lead to reduced pesticide use. Our newly released sweet corn offers a shrunken 2 type variety with a high level of resistance to worm pests without reliance on proteins foreign to the natural corn gene pool.

Concerns about sodium in non-sodic sand-based Florida athletic fields and golf courses may be unfounded, and gypsum use on these soils may be unnecessary.

c. Benefits

Extension:

The most limiting factor to the expansion of the papaya industry in Florida is papaya ringspot virus. The only successful long-term method to overcome this virus is through genetic engineering as no natural resistance to this virus is found in nature. Most of the participants at the papaya growers field day were familiar (88%) with the TREC genetic engineering program because of previous seminars and field days. As a result of our program 100% of the participants indicated that genetic engineering appeared to be a good method to overcome PRV.

Sugarcane production has increased considerably in the state of Florida since 1960. The sugarcane acreage harvested in the Everglades Agricultural Area (EAA) in south Florida increased from 320,700 acres in 1980 to 466,500 acres in 2001/2002. Environmental concerns with water quality, removal of large previously cropped acreage for storm water treatment, and subsidence of muck soils in the Everglades have been playing an increasing role in reducing the percent acreage planted to organic soils. Concerns regarding phosphorus levels in the Everglades National Park have led to increasingly stringent requirements on P levels in agricultural waters.

Pests problems are often misdiagnosed. By providing accurate diagnosis of nematode disorders on plants we reduce the number of applications of unnecessary pesticides. This saves money for our clientele, reduces environmental impacts resulting from excessive pesticide use, and preserves the efficacy of pesticides by reducing the chance of pesticide

resistance. By identifying effective management options in our recommendations we help insure the economic viability of our green and agriculture industries.

Increased participation of minority producers raising meat goats, adopting new production and management practices and actively participating in on-going training activities and educational programs developed for meat goat producers.

As a direct result of extension programs, the biggest packer/shipper of tropical fruits in South Florida, who is also tropical fruit grower with several hundred acres under production of tropical fruits, installed tensiometers and changed irrigation practices for 70 acres of avocado grove. (20 acres of mature grove and 50 acres of recently planted avocado trees). Young trees were showing numerous nutritional problems and declining of some trees as result of over-irrigation. A few weeks after installation of the instruments and changing the irrigation schedule trees were much healthier. An avocado grower using tensiometers since February 2002 reduced water use by 50% and harvested this season 30,000 lbs (545 bushels) more fruit from 9 acre grove and increased the income this year by \$ 13,600.

Research:

Peanut is a difficult crop to genetically-engineer. Sugarcane varieties are susceptible to sugarcane mosaic virus. The purpose of this project is to develop an effective transformation system for elite peanut cultivars and to use sugarcane transformation technology to produce viral-resistant transgenics.

Vegetables in Florida are attacked by numerous insect pests inflicting direct damage through feeding on leaves, stems, flowers and fruit and inflicting indirect damage through transmission of plant diseases. The purpose of the project is to develop management systems that are economical, practical and effective. To accomplish this the biology and population dynamics of pests are studied, methods for estimating and monitoring pest and beneficial insects are developed, appropriate management tactics are developed, and management systems are evaluated. 1) Specific information on irrigation requirements for caladium tuber production can lead to the development of best management practices which optimize yield for this high value crop. 2) Understanding how fertilization influences the outbreak of thrips populations would provide growers with information to integrate crop production practices into control strategies for thrips.

Plant diseases of peanut are the major limiting factor in Florida for yield. The purpose is to create a system of tactics that will minimize damage from plant diseases at minimum cost to the grower. Two cultivars with resistance to *Cylindrocladium* black rot, Hull and Carver, were released in 2002. In field tests they were evaluated for resistance to CBR as breeding lines. they will allow for reduced fungicide sprays. Dollar returns for dollars expended can be maximized for fungicidal control of leaf spot by the grower with designated spray programs employed.

d. Assessments

Florida is meeting performance goals that make the Florida Agricultural System in this state highly competitive in the global economy. We will continue to strive to identify stakeholder needs and to redirect research and extension programs as necessary to meet these needs.

Critical Need Program 1.

Food Crops and Crop Production

Research

FLA-AGR-03427

FLA-BGL-03826

FLA-ENY-03798

FLA-HOS-03402

FLA-HOS-03601

FLA-HOS-03729

FLA-HOS-03822

FLA-HOS-03846

FLA-IMM-03364

FLA-PLP-03402

FLA-PLP-03603

Extension

SMP-FL101

Critical Need Program 2.

Value Added Agriculture and Sustainable Agriculture

Research

FLA-ABE-03492

FLA-AGR-03427

FLA-AGR-03667

FLA-ANS-03651

FLA-ANS-03768

FLA-ANS-03818

FLA-ANS-03821

FLA-ANS-03912

FLA-APO-03609

FLA-BGL-03826

FLA-BRA-03554

FLA-BRA-03609

FLA-BRA-03832

FLA-ENH-03595

FLA-ENY-03798

FLA-FOS-03741

FLA-FOS-03846

FLA-FRE-03497

FLA-FTP-03700

FLA-HOS-03457

FLA-HOS-03601

FLA-IMM-03364

FLA-IMM-03571

FLA-MCS-03861

FLA-PLP-03588

Extension

SMP-FL103

SMP-FL111

SMP-FL128

SMP-FL273

SMP-FL411

SMP-FL101

SMP-FL265

SMP-FL107

Critical Need Program 3.

Forest and Natural Resource Enhancement

No Hatch research project with impact

Research
FLA-ENY-03860

Extension

Critical Need Program 4.

Fundamental Plant Sciences

Research
FLA-AGR-03706
FLA-APO-03413
FLA-BRA-03544
FLA-ENH-03600
FLA-ENH-03602
FLA-ENH-03609
FLA-FTL-03554
FLA-FTL-03602
FLA-FTL-03609
FLA-FTL-03754
FLA-HOS-03601
FLA-HOS-03760
FLA-HOS-03822
FLA-JAY-03713
FLA-PLP-03336
FLA-QUN-03706
FLA-SWS-03458

Extension
SMP-FL212

Critical Need Program 5.

Plant Genetic and Germplasm Enhancement

Research
FLA-AGR-03374
FLA-AGR-03667
FLA-AGR-03706
FLA-AGR-03713
FLA-APO-03413
FLA-APO-03609
FLA-BGL-03826
FLA-BRA-03524
FLA-BRA-03554
FLA-BRA-03764
FLA-DOV-03764
FLA-ENH-03564
FLA-ENH-03602
FLA-ENY-03694
FLA-ENY-03798
FLA-FTL-03602
FLA-FTL-03754
FLA-HOS-03408
FLA-HOS-03601
FLA-HOS-03675
FLA-HOS-03729
FLA-HOS-03822

Extension
SMP-FL111
SMP-FL116
SMP-FL129
SMP-FL107

FLA-JAY-03713
FLA-JAY-03726
FLA-LAL-03280
FLA-LAL-03493
FLA-MON-03609
FLA-PLP-03524
FLA-PLP-03623
FLA-QUN-03706

Critical Need Program 6.

Citrus and Other Fruit Crops

Research

FLA-BRA-03764
FLA-DOV-03586
FLA-DOV-03764
FLA-ENH-03595
FLA-FOS-03764
FLA-FRE-03418
FLA-FTP-03700
FLA-HOS-03408
FLA-HOS-03700
FLA-IMM-03571
FLA-LAL-03280
FLA-LAL-03490
FLA-LAL-03493
FLA-LAL-03496
FLA-LAL-03571
FLA-LAL-03759
FLA-LAL-03924
FLA-PLP-03586

Extension

SMP-FL108
SMP-FL111

Critical Need Program 7.

Green Industry (TurfgrassHorticulture)

Research

FLA-ABE-03492
FLA-AGR-03713
FLA-APO-03523
FLA-APO-03609
FLA-BRA-03492
FLA-BRA-03524
FLA-BRA-03544
FLA-BRA-03554
FLA-BRA-03609
FLA-ENH-03544
FLA-ENH-03564
FLA-ENH-03609
FLA-FRE-03825
FLA-FTL-03554
FLA-FTL-03602

Extension

SMP-FL116
SMP-FL131
SMP-FL411

FLA-FTL-03607
FLA-FTL-03609
FLA-FTL-03620
FLA-FTL-03711
FLA-FTL-03807
FLA-JAY-03609
FLA-JAY-03620
FLA-LAL-03492
FLA-LAL-03496
FLA-MON-03609
FLA-PLP-03496
FLA-PLP-03524

Critical Need Program 8.

Improved Grazing Systems in Animal Production

Research

FLA-AGR-03374
FLA-AGR-03726
FLA-AGR-03854
FLA-JAY-03726
FLA-MAR-03854
FLA-ONA-03726
FLA-WEC-03618

Extension

SMP-FL103
SMP-FL273
SMP-FL102

Critical Need Program 9.

Understanding the Physiological Basis of Animal Disease, Pests Reproduction, Growth and Well Being

Research

FLA-ABE-03824
FLA-ANS-03572
FLA-ANS-03651
FLA-ANS-03821
FLA-ANS-03912

Extension

SMP-FL103
SMP-FL273
SMP-FL272

Critical Need Program 10.

Genetic Enhancement of Agriculturally Important Animals

Research

FLA-ANS-03552
FLA-ANS-03818

Extension

SMP-FL103

Critical Need Program 11.

Aquaculture

Research

FLA-ENH-03564

Extension

SMP-FL317
SMP-FL416

Critical Need Program 12.

Develop and Integrate Nutritional Knowledge to Enhance Animal Production

Research

FLA-ABE-03285

FLA-ANS-03572

FLA-ANS-03659

FLA-ANS-03768

Extension

SMP-FL211/FL711

Critical Need Program 13.

Potential of Alternative Livestock for Florida's Economic Enhancement

Research

Extension

SMP-FL103

SMP-FL261

Critical Need Program 14.

Economic Competitiveness

Research

FLA-ANS-03651

FLA-ANS-03768

FLA-BGL-03826

FLA-BRA-03544

FLA-BRA-03609

FLA-ENH-03564

FLA-ENH-03609

FLA-ENY-03924

FLA-FRE-03405

FLA-FRE-03418

FLA-FRE-03497

FLA-FRE-03599

FLA-FRE-03752

FLA-FRE-03825

FLA-FTL-03609

FLA-IMM-03571

Extension

SMP-FL103

SMP-FL111

SMP-FL116

SMP-FL128

SMP-FL129

SMP-FL273

SMP-FL411

SMP-FL102

SMP-FL119

SMP-FL265

Critical Need Program 15.

Agricultural Risk Management

Research

FLA-ENH-03544

FLA-ENH-03609

FLA-FOS-03846

FLA-FRE-03418

FLA-FRE-03497

FLA-FRE-03599

FLA-FRE-03752

FLA-FRE-03825

FLA-HOS-03846

FLA-LAL-03759

Extension

SMP-FL103

SMP-FL119

SMP-FL124

SMP-FL107

Critical Need Program 16.

Agricultural Information Technology

Research

FLA-FTL-03754

FLA-LAL-03571

Extension

SMP-FL129

SMP-FL131

SMP-FL135

Critical Need Program 17.

PestDiseaseWeed Management

Research

FLA-AGR-03594

FLA-AGR-03726

FLA-APO-03364

FLA-APO-03413

FLA-APO-03523

FLA-BGL-03364

FLA-BGL-03504

FLA-BGL-03826

FLA-BRA-03364

FLA-BRA-03524

FLA-DOV-03586

FLA-DOV-03764

FLA-ENY-03419

FLA-ENY-03490

FLA-ENY-03493

FLA-ENY-03592

FLA-ENY-03694

FLA-ENY-03798

FLA-ENY-03824

FLA-ENY-03860

FLA-ENY-03924

FLA-ENY-03934

FLA-FTL-03386

FLA-FTL-03423

FLA-FTL-03539

FLA-FTL-03607

FLA-FTL-03620

FLA-FTL-03754

FLA-FTL-03807

FLA-HOM-03402

FLA-HOS-03402

FLA-HOS-03457

FLA-HOS-03729

FLA-IMM-03364

FLA-JAY-03457

FLA-JAY-03620

FLA-LAL-03280

FLA-LAL-03490

FLA-LAL-03496

Extension

SMP-FL111

SMP-FL116

SMP-FL131

SMP-FL416

SMP-FL113

FLA-LAL-03924
FLA-PLP-03402
FLA-PLP-03496
FLA-PLP-03524
FLA-PLP-03586
FLA-PLP-03603
FLA-PLP-03623
FLA-PLP-03934

Critical Need Program 18.

Weed Management

(This critical need area has been incorporated into critical need program 17)

Goal 2. A Safe and Secure Food and Fiber System

B. Overview

a. Extension and Research Results

There is growing concern about the safety and quality of the American food supply which has escalated since the 9/11 incident. The Center for Disease Control (CDC) estimated that 76 million cases of food borne illness occur annually in the United States, resulting in 325,000 hospitalizations and 5,000 deaths (Mead et al., 1999), and costing more than \$5 billion in social and medical expenditures. The majority of food borne illness is caused by microbial contamination in homes and commercial eating establishments. Only 5% is linked to processing environments.

Although typical cases of illnesses are relatively mild and self-limiting, severe and chronic food borne diseases do occur in persons with compromised health caused either by health conditions or age. This group continues to grow as the general population ages and immuno-suppressive diseases reach epidemic proportions. Making matter worse are the new pathogens and scenarios for food contamination that becomes more common with the increased importation of foods. Because of this factors, educational food safety programs have been identified by Florida stakeholders as an essential component of future efforts to reduce health risks for the compromised as well as the general public.

Additional factors that compound food borne risks include new emerging pathogens, unique scenarios for contaminating foods, and different vectors for disease. Examples are salmonella in eggs and poultry, listeria in dairy products and meats, campylobacter in poultry, E. coli O157:H7 in ground beef, and risks associated with new food technologies (e.g. ready-to-eat meals) and innovative forms of packaging. Consequently, food handlers, food growers, food processors, and health professionals must be informed through education of these hazards and the ways to reduce risk. In the meantime Florida has ongoing research, including one Hatch project looking at new methods for controlling post harvest quality and safety in fresh-cut vegetables and fruits. At the same time, Florida extension is involved in a Southeastern multi-state fresh produce food safety training program.

Surveys show that many consumers are more concerned about chemical additives in foods than the greater risk posed by microbial contamination which is much more likely

to occur. There is presently IFAS research ongoing to measure consumer perceptions of food borne illness and personal risk management strategies to avoid food borne illness. Following the terrorist attacks on the United States in September 2001, Federal and state health authorities have raised the specter of terrorist acts aimed at the addition of pernicious agents into the food supply. Assuring food security in Florida is important not only in the public health sense, but also to the economy of the state. Food security can only be assured by focusing on vulnerable points in the food chain for each individual commodity or food processing/handling system, and this can be accomplished as an “add-on” to HACCP training. Also, Extension educational programs are being implemented by IFAS to discuss the risks from pesticides and other additives, as well as explaining the greater microbial risk and preventative methods

Recently, there has been some media attention that has drawn greater public interest toward food safety. Articles and television programs on Mad Cow disease has made the public more aware of the correlation between herd health and food safety, since many of the food borne hazards originate on the farm or with animals. Based on these concerns, Extension faculty at FAMU have developed a new state major program in Florida called “Herd Health and Food Safety” that will deal with issues on herd health. The impact of sound herd health practices to improve food safety would also benefit producers in areas of productions, efficiency, and cost-effectiveness, as well as decreasing the number of cases of food borne disease.

Today, the food industry is facing increased visibility and scrutiny in regard to food safety and more stringent demands for food-quality programs that have led to federal and state regulations including: nutritional labeling requirements, environmental regulations, microbiological testing programs, and federally mandated inspection programs based on Hazard Analysis and Critical Control Point (HACCP) principles. While these are federally mandated regulatory programs, the major share of the burden of implementation is at the state level where primary licensing occurs. Many are coordinated efforts through the Florida Cooperative Extension for expanded statewide training, consultations, and assistance. IFAS Extension has recently integrated several SMP's into one new one, SMP FL135 to provide better coordination for this important critical need area. Design team members from Cooperative Extension, as well as teaching and research faculty, are working in integrated programs in this area to protect Florida citizens from problems associated with food safety.

The food safety issue will continue to be one that will need to be addressed by Florida IFAS.

b. Successes

Extension:

An extension of DDIS (in part) was the awarding of CSREES to UF/IFAS (Florida) of the lead state status for crop bio-security surveillance and communications through the Southern Plant Diagnostic Network (SPDN). Some FL131 members are serving in this project. Five land grant universities in the United States have been designated as the coordinators for their Plant Diagnostic Regional Centers for the U.S. Plant Disease Surveillance and Detection Network called the National Plant Pest and Disease Diagnostic Network. A \$900,000 homeland security grant from U.S. Department of Agriculture (USDA) providing initial funding for a new Southern Plant Diagnostic Network (SPDN) at the University of Florida (UF) coordinated by IFAS.

Research:

Microorganisms permitted to live in food products may contaminate those foods. Keeping foods safe from microbial contamination generally requires some type of processing. This project explores advanced engineering methods for designing new, better processing of foods, with emphasis on thermal processing. Considerations include speed, energy efficiency, predictability, and minimal change of food properties with processing. This project has introduced thermal process simulation software to the food canning industry that will result in increased safety assurance of sterilized canned foods to the consuming public at high quality and low cost as well as improve manufacturing efficiency and global competitiveness of the industry.

Consumer demand for fresh-cut vegetables and fruits has led to a proliferation of these products in US markets. Losses of important plant-based compounds are associated with fresh-cut operations, which reduce quality characteristics and daily intake of antioxidants. This project will explore methods to promote or reduce losses of plant-based antioxidant compounds, which has important implications for improved quality and human health. Novel approaches to solving these problems will be investigated, by examining mechanisms of oxidative loss in fresh-cut vegetables and fruits. Treatments were evaluated to assess inhibition of oxidase enzymes and antimicrobial properties of anthocyanins containing intermolecular cofactor associations. In most cases, the inhibition rates following copigmentation were increased following copigmentation. These results indicate that copigmented anthocyanins may serve as multi-functional food ingredients applicable to the fresh-cut industry.

c. Benefits

Extension:

The Food Handler Education and Training has many Success Stories are documented in the county reports. Currently 18 counties participate in the program. In 2001 county faculty have trained 750 people. The average first time exam passing rate in 2001 was 77% with an average score of 86; a minimum passing score is 75. In 2002 (as of Dec. 9) 1100 people have registered through the program. We also able to recruit a more county faculty to participate in the program 2003.

Research:

The shelf-life of fresh fruits and fresh-cut fruit products is limited by senescence and other factors contributing to deterioration. The purpose of this study is to learn more about the cellular physiology contributing to the deterioration and senescence of fruits and fruit products. The information determined in these studies will aid in our understanding of why watermelon fruits react adversely to external sources of ethylene. The typical response is rapid and severe watersoaking, brought about by physiological changes affecting several tissue components. The problem is likely of significant importance to the watermelon industry, but estimates of these losses are not available because of the commercial unawareness of ethylene's role in the disorder. The use of food-grade waxes has great potential for extending the shelf-life and export potential of highly perishable tropical fruit including breadfruit.

Florida is the second largest citrus producing region in the world and the largest supplier of orange juice products to the U.S. market. Federal trade policy has focused on a 'Free Trade of the Americas Agreement' which has included discussions on reducing or eliminating the FCOJ import tariff, the loss of which would enable foreign citrus production (e.g., Sao Paulo, Brazil) to become more cost-competitive and potentially reducing Florida citrus growers returns by \$1.20 to \$1.40 per box. Resetting/tree

replacement costs average 13% of the total grove care costs for a citrus operation. The reset analysis computer program will enhance citrus growers tree replacement strategy decisions, and improve production efficiency and returns.

Post-harvest pathogens accumulate at sites where fruits and vegetables are packaged. Water used to wash or handle freshly harvested fruits and vegetables may contaminate them with harmful microbes. The project explores ways to prevent the accumulation of pathogens at packinghouses. Various methods to sanitize wash or handling water will be explored. Completion of the project is expected to lead to two additional hurdles for controlling fruit contamination: washing with peroxyacetic acid or acidified sodium chlorite and then treating packaged fruit with dry chlorine dioxide gas.

d. Assessment of Accomplishments

Educating the public and preventing outbreaks of food borne illness in a state that has more than 16 million residents and 50 million visitors annually from around the world is a monumental task. This is not a need area that will be easily or permanently solved. Florida has had some reduction of food borne illness in the last two years, and part of this decrease is because of the research projects and educational programs studied, developed and implemented by IFAS faculty. IFAS will continue to work on strategies in this area to provide a safe and secure food system.

Critical Need Program 19.

Reduction of Physical, Chemical, and Biological Negative Components Introduced into Human and Animal Foods

Research

FLA-ABE-03456
FLA-ABE-03491
FLA-ANS-03833
FLA-FOS-03456
FLA-FOS-03846
FLA-FRE-03418
FLA-FRE-03571
FLA-FRE-03584
FLA-FRE-03597
FLA-HOS-03559
FLA-HOS-03846
FLA-LAL-03286
FLA-LAL-03571
FLA-PLP-03586
FLA-PLP-03588
FLA-PLP-03846

Extension

SMP-FL103
SMP-FL108
SMP-FL121
SMP-FL122
SMP-FL131
SMP-FL135
SMP-FL215/FL715
SMP-FL272
SMP-FL107

Goal 3. A Healthy, Well Nourished Population

C. OVERVIEW

a. Extension and Research Results

Health care is a primary concern for people in the state of Florida because Floridians spend approximately \$45 billion on health care (AHCA). Many of these health-care costs can be reduced if Floridians adopt healthier lifestyles and if they seek and receive care at the appropriate time. High-teen birthrates and high-infant mortality rates continue to be a concern in Florida. In 1996, the teen birthrate in Florida was 37 births per 1,000 females age 15-17, compared with 34 births per 1,000 females age 15-17 for the U.S. as a whole (1999 Kids Count). In 1996, the infant mortality rate in Florida was 7.4 per 1,000 live births, compared with 7.2 in the U.S. (Florida Vital Statistics). Pregnant teens, especially younger teens as well as preteens, are more likely than more mature women to experience health problems during pregnancy and to have low birth weight babies. Although teen pregnancy occurs among all socioeconomic groups, teens from limited resource families are more likely to lack adequate prenatal care and to have low birth weight babies. They are also at high risk of dropping out of school and either relying on public assistance or working in a minimum wage job.

Florida's citizens have the highest cancer rates in the country, related at least in part to a large elder population. Cancer is the second leading cause of death, accounting for almost one in every four deaths in 1997 (Florida Vital Statistics). Diet appears to play a role in the etiology of several types of cancer. Incidence and mortality rates are higher among African Americans than among Caucasians or Hispanic Americans for some forms of cancer.

Cardiovascular diseases are consistently the leading cause of death in the state, accounting for almost one in every three deaths in 1997 (Florida Vital Statistics). Risk factors for heart disease and stroke, including hypertension, elevated serum cholesterol, and obesity are related to diet, exercise, and other lifestyle factors. African Americans are at high risk of developing hypertension and have a higher incidence of obesity and diabetes than Caucasian or Hispanic Americans.

In Florida in 1996, 24% of children lived in poverty, compared with 20% in the U.S. Twelve percent of children experienced extreme poverty in 1996, compared with 9% in the U.S. (1999 Kids Count). Studies show that living in poverty is detrimental to children of all ages, as well as their parents. Hungry children are two to three times more susceptible to health problems than non-hungry children. There are more children health problems (low-birth weights, developmental and growth delays), school problems (lower scores, poor attendance), and more family stress under these circumstances of poverty (William T. Grant Foundation: Research Briefs). Even short periods of under nutrition can affect children's behavior, cognitive development and future productivity. Lack of proper nutrition among children can manifest in a number of ways, including growth failure, physical weakness, high susceptibility to anemia, and lead poisoning (Center on Hunger, Poverty and Nutrition Policy at Tufts University). In the midst of an abundant food supply, a significant proportion of the population continues to experience hunger or food insecurity, lacking food in sufficient quantity and quality for adequate nutrition. 11.5% of households in Florida reported experiencing insecurity; 3.8% reported experiencing moderate hunger; and 1.5% reported experiencing severe hunger (USDA-FNS data). Working to reduce these statistics, IFAS extension personnel are involved in a multi-state program on hunger and food security in America.

Florida ranks number 10 in states with food insecure households. (The percent of households that are food insecure in Florida is 11.5%, over the U.S. average of 9.7%). The existence of these conditions in the poor population costs the taxpayers through medical care costs, and costs the individuals through lost learning and earning power. Nutritional risk factors increase proportionately with poverty levels, as do nutrient

imbalances resulting from poor eating habits. Five of the ten major causes of death have been directly related to dietary factors: diabetes, heart disease, stroke, atherosclerosis, and some types of cancer (Florida Statewide Public Health Information Network, 1998). One multi-state program involves extension faculty working on chronic disease prevention through a better understanding of the correlation of good nutrition and the reduction of some serious health issues.

Providing food or food stamps through food assistance programs is not the total answer to the problems of hunger. Many families receive this assistance but lack the knowledge to make wise food choices and the skills to stretch the food resources to feed the family for the entire month. Through the Family Nutrition Program (FNP), Florida Cooperative Extension, in cooperation with the Florida Food Stamp Program, provides educational intervention in food and nutrition for current food stamp recipients, individuals and families. The purpose of the Food Stamp Program is to ensure that needy families have the resources to purchase an adequate supply of nutritious foods. Of the total Florida population for FY98, Food Stamp Program participants were 1 in 10. Approximately 48% of food stamp recipients in Florida are children and 10% are people 65 years or older. With shrinking budgets and increasing social hardships, the Family Nutrition Program is a critical element in the ongoing effort to educate low-income families, allowing them to increase nutritional awareness and intake on a fixed or limited budget.

The FNP targeted audience varies based on priority needs and identified resources as determined by each participating county. The FNP program is designed so that each county can reach the broad scope of economically disadvantaged people who are at risk of hunger, food insecurity and poor nutrition. These audiences include youth, battered women, homeless persons, migrant workers, teen mothers, senior citizens, families with and without young children, various ethnic groups, persons with disabilities, people who are unable to find employment, and working people with low incomes who are eligible for or participating in the Food Stamp Program. Hunger and food insecurity are public policy issues addressed throughout the state by way of community leaders, grass-roots organizations, federal and state agencies outreach, policymakers, and other stakeholders.

In North Florida, the nutrition and health of families is being influenced by limited Resources, financial instability, an increase in the number of female-headed households with low incomes, a high rate of illiteracy, and a lack of information regarding basic Nutrition and Health principles. The nutritional needs of pregnant teens and pregnant females with limited resources are of great concern since they are at greater risk of having low birth weight infants than females of higher socio-economic status. The nutritional needs of older adults are also of great concern since they may also have limited resources with which to make food-related decisions.

Health related programs are designed to reach a large diverse population and to appeal to a wide variety of audiences. They can be adapted for use with persons of different ethnic backgrounds. Some materials are provided to county faculty in Spanish.

b. Successes

Extension:

During FY 01-02 a total of 5753 youth were enrolled in the 4-H EFNEP counties.

These youth were reached through 59 organized clubs, 103 special interest groups and 53 school enrichment groups.

Research:

The exotic mosquito, *Aedes albopictus*, has become well-established in the southeastern United States during the past 15 years. It is now the most common, container-inhabiting mosquito in the region. This project examines the impact of *Aedes albopictus*, the so-called Asian tiger mosquito, on other mosquito species and investigates the host blood feeding patterns of *Aedes albopictus* and its potential for vectoring various pathogens. In recent years, several species of exotic mosquitoes have become established in the United States. All of these exotic mosquitoes are container-dwelling species. Our studies on the *A. albopictus* invasion have provided new insights on the factors influencing the spread of exotic mosquitoes.

c. Benefits

Extension:

Five people attending the health fair in Gadsden county were found to have high blood sugars and related health problems and were admitted to the hospital for treatment. These individuals were not aware of their blood sugar levels.

Thirty counties (in four districts) conducted in-depth programming in food, nutrition and health (not including EFNEP or FNP) and reported outcome data. In these 30 counties, 18,324 persons participated in educational programs designed to promote healthy lifestyles, reduce disease risk, and/or reduce health complications of chronic diseases. In addition, during fiscal year 2001-2002, the Expanded Food and Nutrition Education Program reached a total of 12,864 youths and adults, and the Family Nutrition Program made a total of 530,892 direct contacts. An additional 739,100 indirect contacts were generated through articles in newsletters/newspapers and exhibits/displays at local fairs, Food Stamp offices, health departments, libraries, and schools.

Research:

The seasonal transmission of mosquito-borne viruses (St. Louis encephalitis; eastern and Venezuelan equine encephalitis) to humans and domestic animals is currently unpredictable. This project will identify biotic (mosquito vectors, arbovirus biology, and avian amplification host biology) and abiotic (rainfall and temperature) factors that can be tracked to help predict human infections. Infection of humans and domestic animals by mosquito transmitted viruses poses an important public health threat in Florida. Our development of long-term surveillance protocols allows real-time prediction of epidemic transmission allowing sufficient time for appropriate public health responses including vector control, media contact, and issuance of Medical Advisories and Medical Alerts prior to the onset of epidemic transmission.

Folate requirements for elderly women have not been studied adequately. Poor folate status can increase the risk for chronic diseases such as heart disease - the leading cause of death in postmenopausal women. The purpose of this project is to learn more about the folate requirements of elderly women. It is anticipated that the data from this research project will be used to support decisions about the amount of folate to recommend for elderly women in future revisions of the Dietary Reference Intakes. It also is anticipated that our findings will be used in considering the impact of genetic polymorphisms on folate requirements and potential risk for disease.

d. Assessment of Accomplishments

This goal has met its immediate requirements but will continue to strive to help Floridians to be healthier and better nourished.

Critical Need Program 20.

Improving Human Health and Nutrition

Research

FLA-FME-03299

FLA-FME-03477

FLA-FOS-03513

FLA-FOS-03515

Extension

SMP-FL215/FL715

SMP-FL262

SMP-FL271

SMP-FL273

SMP-FL511

SMP-FL203/FL703

Critical Need Program 21.

Fiber-Related Products (Textiles and Apparel) and Businesses for Protection, Social, and Economic Enhancement

(This critical need area has been deleted)

Goal 4. Greater Harmony Between Agriculture and the Environment

D. Overview

a. Extension and Research Results

The Institute of Food and Agricultural Sciences at the University of Florida and Florida A& M University recognizes the interdependency of natural/agricultural/human based systems and addresses the various aspects of these systems in their research projects and extension programs. Most programs are multi-faceted in nature, making it difficult to strictly compartmentalize the project into one area (e.g., water quality, soil conservation, marketing, regulation, etc.). For example, the overall objectives of the State Major Extension Program focusing on the Practices for Sustainable Agronomic Crop Production in Florida is, "to provide up-to-date information on varieties, management, pest controls strategies and economic analysis of agronomic crops grown in Florida and to evaluate alternate crops to keep them competitive, and to improve the standard of living of all Floridians through environmental stewardship." Beyond this particular State Major Extension Program, other research and extension projects provide information and assistance in related areas such as agricultural law and community development/planning. Thus, UF/IFAS is able to provide comprehensive research and extension programs related to achieving greater harmony between agriculture and the environment.

In addition to the multi-faceted nature of the research and extension programs, UF/IFAS offers a diverse array of programs and on going projects to meet Florida's complex and varied natural systems needs, as well as the needs of rural and urban communities. Using population projections and data from aerial photography and satellite imagery, it is estimated that 130,000 acres per year will be converted from rural to urban uses between 2000 and 2020. Of the 81 kinds of natural communities found in Florida, nearly 80% are threatened by human activities. About 90% of the state's native longleaf pine forests have disappeared and almost 20% of the state's animal species are under some sort of

protection due to decreasing numbers and a potential threat of extinction. Destruction of open space and natural habitats threatens to undermine the state's economic health and reduce the tourist trade, Florida's leading industry. People come to Florida more than to just escape bad weather and deteriorating urban environments. People vacation in Florida in part to enjoy its natural beauty.

The growing urbanization of the state and the increase in tourists has brought to the forefront the role agriculture plays in our state. Through the stakeholder generated activities of UF/IFAS, the importance of agricultural lands have been substantiated. The research indicates agricultural lands provide critical wildlife habitat and open space; maintain water quality through the use of best management practices; maintain soil and air quality; and serve as a critical buffer zone between the urban areas and natural systems. One Hatch research project on "Recyclable organic solids in conservation tillage multiple cropping system" will provide urban areas with an environmentally acceptable method of recycling organic solid waste at the same time it improves the profitability for farm produce and improves the quality of Florida soils

Florida agriculture also is challenged by competing demands for land and water resources and an ever-increasing need to be compatible with the state's sensitive natural resources and environment. The average Florida resident uses 170 gallons of fresh water per day, over 50% more than the average for the United States. Further, use is highest where population is the greatest. Net population growth adds about 650 people per day to the state. In South Florida, where fresh water resources are already under severe pressure, use averages 210 gallons per person per day. About half of all water use in Florida is for lawn and garden irrigation. In essence, we are mining our water supplies. Some water supplies are also polluted. Florida's population cannot be sustained without a safe, abundant water supply. Promotion of the Florida Yards & Neighborhoods program and planning at the community development level can significantly reduce consumption of installed landscapes. Promotion of water conserving dishwasher and clothes washers can reduce consumption in homes.

The number of regulations, laws, rules, and ordinances continues to increase and many of them restrict agriculture in one way or another. Meeting the requirements of these restrictions ranks high among growers and other stakeholders as constraints on production adding cost to production and, thereby diminishing the competitive position of Florida producers. Extension is dedicated to bringing farmers and regulators together in a spirit of working together to solve problems and minimize negative economic consequences. Behavioral changes are already occurring as dairy and vegetable growers strive to improve the information exchange with regulators and find better solutions to problems that impact communities and the environment.

b. Successes

Extension:

Two south Florida Master Planned Community Developers, WCI and The Bonita Bay Group, have continued for the third year to use the 14-hour Build Green & Profit program as a basic continuing education course for delivery to builders working in their communities. Partially on the basis of the BG&P programs, both development groups have continued to strengthen their offerings of more energy and water efficient options in the homes being built in their communities. The Energy Star and Florida Green Building program certification programs are readily available in their various communities.

Continued water reductions have been observed through the FY&N Condo Outreach Program. Of the 82 associations visited in the first year of this program, 74 (approximately 90%) have made positive practice changes. Of these, approximately 85% are adjusting their irrigation systems seasonally, have calibrated their irrigation systems, are capping unneeded irrigation heads or are installing micro-irrigation in tree and shrub beds. All of the 74 are selecting drought-tolerant plants when making landscape changes. This program is so successful that Sarasota County government decided to provide for it a permanently funded county position.

As a result of passing the required examinations, FDACS issued licenses to 445 new applicators in 2002 to apply pesticides on their farm, grove or ranch, or that of their employer, to control pests on crops or livestock.

As a result of passing the required examinations, FDACS issued licenses to 807 public/commercial applicators in 2002 to apply pesticides as a part of their job with a government agency or with a commercial/for hire application business.

An estimated (based on county reports) 5,754 persons attended training in 2002 designed for applicators seeking initial certification/licensing.

The Mobile drinking water laboratory continued to serve the target group. Some 2000 residents in north Florida received 'on the spot' diagnosis, pertaining to their drinking water supply. This has brought increasing awareness from residents regarding the source of their drinking water. Workshops on composting provided training for approximately 150 persons including farmers and agency personnel.

Research:

Trichoderma harzianum and Paenibacillus macerans alone or in combination were able to effectively colonize the roots of BHN422. These commercial biological agents appeared to be successful for suppressing this disease and demonstrate the potential to establish the biological agents prior to exposure to the pathogen in the field.

c. Benefits

Extension:

Organics and Sustainable Living Workshop (June 2002) provided relevant information and hands-on training in organic vegetable and animal production and management, organic fertilizer alternatives, organic standards, composting, vermiculture, community gardens, native plants and medicinal purposes, farming and quality of life, networking opportunity, etc. Facilitators included: Dr. John Irked, University of Missouri-Columbia and participating small farmers

The Florida Sea Grant Urban Boating and Bay Water Management Program completed two separate applications of the Regional Waterway Management System, which address a principal waterway management issue in Florida—balancing phenomenal growth in the boating population with conservation and management of coastal and marine resources. The third and final phase of the Lee County Regional Waterway Management System was completed, covering the CaloosaSmith-Leverree River and adjoining canal systems and tributaries; the remaining portion of Manatee County was finished for Bishop Harbor, the tidal Braden River, and the upper Manatee River. Both counties and the West Coast Inland Navigation District were provided with GIS applications, information, tables, and maps for approximately 343 miles of navigable waterways, 15,524 boats, 31,692 moorings, 15,815 shore facilities, 3553 boating-related signs, and channel centerline depths. The Regional Waterway Management System provides the counties

with a planning tool and decision options to prioritize and evaluate management alternatives on a regional scale.

Among other things, efforts to liaise with key governmental agencies resulted in improved planning for FL316, implementation of management plans to protect Florida's marine resources, and garnering of over \$70,000 in funds and in-kind contributions for environmental education on topics that included marine invasive species and stormwater management. Efforts yielded increased understanding of key issues in all cases as shown by the results of surveys.

In Volusia County continued and renewed interest in using fully enclosed subirrigation and microirrigation as alternatives to seepage irrigation practices (additional 400 acres were installed in Flatford Swamp Watershed) was reported. In addition, improvements recommended in water table monitoring on commercial subirrigated turf production have resulted in reduction in volumes applied while attaining more uniform applications.

Research:

Using mating disruption for managing the tomato pinworm and UV-reflective soil mulches for whiteflies and the viruses they transmit will reduce the need for conventional pesticides. Using an action threshold will maximize the effectiveness of insect growth regulators for whitefly control. Monitoring insecticide resistance in insects will help ensure the availability of key insecticides for insect management on vegetables.

Vegetables in Florida are attacked by numerous insect pests inflicting direct damage through feeding on leaves, stems, flowers and fruit and inflicting indirect damage through transmission of plant diseases. The purpose of the project is to develop management systems that are economical, practical and effective. To accomplish this the biology and population dynamics of pests are studied, methods for estimating and monitoring pest and beneficial insects are developed, appropriate management tactics are developed, and management systems are evaluated.

Scapteriscus mole crickets, native to South America, are the worst pest insects of pasture and turf-grasses in Florida. Chemical pesticides provide only temporary control, are very expensive, and are potentially harmful to the environment. This project studies how to enhance effects of two biological control agents that already have been established in parts of Florida. It investigates prey-specificity of a third biological control agent, which has been imported but not yet released. Natural and assisted spread of *Steinernema scapterisci* and *Larra bicolor* to additional areas should reduce pest mole cricket populations. Repeated demonstration of such reduction should persuade ranchers and turf managers to use biological control.

Conventional analytical techniques for pesticides in water are expensive and cumbersome requiring frequent repetitions for sample analysis. This project develops analytical techniques for the extraction of pesticides from all water types which are rapid, inexpensive, sensitive and reliable. This year's work has demonstrated that a much-improved technique for extracting and shipping pesticide residues in water is now available for use by those laboratories engaged in determining the impact pesticide runoff or leaching might have on surface water quality.

Plant nutrition is a major limiting factor in the production and use of ornamental plants in Florida. The purpose of this project is to study tropical ornamental plant nutritional disorders as well as their causes, prevention, and treatment. The reddish leaf blotch disorder of ixoras can be controlled with appropriate P and K fertilization. Nursery nitrate

runoff can be reduced or eliminated without sacrificing plant quality by using ebb and flood subirrigation. Most plants can be grown just as well with much less phosphorus fertilization. Production can be tailored using fertilization rates and light intensity. The efficiency of water-soluble fertilizers can be improved in highly leached soils by incorporating clinoptilolitic zeolite. Fe chlorosis can be successfully treated in ixora using chelates such as FeEDDHA on alkaline soils or foliar sprays with FeDTPA. The Fe toxicity problem in marigolds and geraniums can be eliminated by using FeEDDHA instead of the highly toxic FeEDTA or FeDTPA.

d. Assessment of Accomplishments

Water quality, environmental protection, and sustainability of the natural resource base are items of concern to Florida stakeholders. In the area of water quality, for example, agricultural, industrial, household and other hazardous chemicals; urban storm water runoff; and erosion sedimentation are causing both point and non-point pollution of ground and surface water. Since 50% of the nation's drinking water comes from aquifers, it is imperative that efforts be made to protect and maintain this important natural resource. This is especially true in Florida, where approximately one-third of landforms are wetlands and the drinking water is mostly drawn from shallow underground aquifers. In fact, over 90% of Florida's drinking water comes from the state's aquifer systems, which in some areas are only 10 feet below the surface. The state's increasing population, now almost 16 million, continues to put a high demand on available water resources such as water. In 1990, for example, some 7,530,000 gallons of fresh water were withdrawn daily for domestic and other uses. Approximately 63% of this was groundwater. IFAS Research and Extension is meeting the goals to improve water quality and the availability of potable water within the state.

Critical Need Program 22.

Precision Agriculture

Research

FLA-BRA-03492

FLA-BRA-03832

Extension

SMP-FL116

SMP-FL129

Critical Need Program 23.

Organic Agriculture

Research

FLA-AGR-03427

FLA-ENY-03788

FLA-HOS-03457

Extension

SMP-FL273

Critical Need Program 24.

Sustainable and Environmentally Safe Management of Soil Resources

Research

FLA-BGL-03504

FLA-BGL-03711

FLA-BGL-03925

FLA-BGL-03925

Extension

SMP-FL111

SMP-FL121

SMP-FL214/FL714

SMP-FL107

FLA-BRA-03544
FLA-BRA-03832
FLA-ENY-03788
FLA-FTL-03544
FLA-JAY-03748
FLA-SWS-03459
FLA-SWS-03596
FLA-SWS-03688
FLA-SWS-03897

Critical Need Program 25.

Integrated Pest Management Biological Pest Management

Research

FLA-APO-03364
FLA-BGL-03364
FLA-BGL-03496
FLA-BGL-03504
FLA-BRA-03364
FLA-BRA-03524
FLA-DOV-03586
FLA-ENY-03402
FLA-ENY-03490
FLA-ENY-03493
FLA-ENY-03788
FLA-ENY-03796
FLA-ENY-03860
FLA-ENY-03934
FLA-FTL-03386
FLA-FTL-03807
FLA-HOM-03364
FLA-HOS-03402
FLA-IMM-03364
FLA-LAL-03490
FLA-LAL-03493
FLA-LAL-03788
FLA-PLP-03490
FLA-PLP-03498
FLA-PLP-03603
FLA-PLP-03623
FLA-QUN-03364
FLA-SWS-03919

Extension

SMP-FL103
SMP-FL108
SMP-FL111
SMP-FL116
SMP-FL121
SMP-FL122
SMP-FL129
SMP-FL131
SMP-FL273

Critical Need Program 26.

Animal Waste Management

Research

FLA-ABE-03285
FLA-ABE-03596
FLA-SWS-03596

Extension

SMP-FL103
SMP-FL121
SMP-FL122

Critical Need Program 27.

Water Resources Quality Conservation

Research

FLA-ABE-03593
FLA-BGL-03711
FLA-BRA-03492
FLA-BRA-03544
FLA-BRA-03832
FLA-FOS-03548
FLA-FTL-03544
FLA-FTL-03711
FLA-IMM-03622
FLA-LAL-03492
FLA-LAL-03759
FLA-LAL-03832
FLA-LAL-03896
FLA-SWS-03459
FLA-SWS-03688

Extension

SMP-FL103
SMP-FL105
SMP-FL108
SMP-FL111
SMP-FL116
SMP-FL121
SMP-FL122
SMP-FL131
SMP-FL214/FL714
SMP-FL315
SMP-FL316
SMP-FL411
SMP-FL269
SMP-FL107
SMP-FL316

Critical Need Program 28.

Interactions Among Agriculture Biosystems, Weather and Climate

Research

FLA-BGL-03496
FLA-BRA-03492
FLA-ENH-03543
FLA-ENY-03860
FLA-JAY-03609
FLA-LAL-03492
FLA-LAL-03496
FLA-LAL-03759
FLA-PLP-03305
FLA-SWS-03711

Extension

SMP-FL103
SMP-FL108

Critical Need Program 29.

Environmental Quality in a Changing Landscape

Research

FLA-ABE-03593
FLA-AGR-03427
FLA-AGR-03594
FLA-BGL-03711
FLA-BRA-03544
FLA-BRA-03832
FLA-ENH-03543
FLA-ENH-03564
FLA-FRE-03411
FLA-FTL-03539

Extension

SMP-FL103
SMP-FL129
SMP-FL214/FL714
SMP-FL273
SMP-FL315
SMP-FL316
SMP-FL317
SMP-FL411
SMP-FL113
SMP-FL114

FLA-FTL-03807
FLA-LAL-03832
FLA-SWS-03459
FLA-SWS-03711
FLA-SWS-03897
FLA-SWS-03919
FLA-WEC-03618

SMP-FL119
SMP-FL124
SMP-FL420
SMP-FL316

Critical Need Program 30.

Enhancement of Environmental Quality in Animal Production

Research

Extension

SMP-FL102
SMP-FL103

Critical Need Program 31.

Nutrient Management

Research

FLA-BRA-03832
FLA-PLP-03305

Extension

SMP-FL103
SMP-FL105
SMP-FL116
SMP-FL129

Goal 5. Enhanced Economic Opportunity and Quality of Life for Americans

E. OVERVIEW

a. Extension and Research Results

Florida has a large and growing population with a diverse economy. The key to Florida's future is to maintain the quality of life and a viable economy for its citizens. Community environmental sustainability is one of the major challenges facing Florida. The following data show the importance of reducing the environmental impacts of urban development on Florida's ecosystems and natural resource base. While Florida's net population increases are 2% per year, three counties rank among the six fastest growing counties in the US. Florida's top three counties include Flagler, Hernando, and Osceola Counties with growth rates of 207.7%, 148.5% and 141.9%, respectively, since 1980. It is estimated that Florida's population increases by 450 people per day and that 450 acres of forested land are cleared each day. Approximately one-third of Florida's upland forests have been cleared for urban growth and agriculture. If even 10% of the forested land that is cleared each day were subjected to a construction, which reduces habitats destruction and loss of native species, negative impacts on over 150,000 acres of land would be prevented over a ten-year period.

Florida communities need local leaders who can work with boards, commissions, government agencies and not-for-profit organizations. The availability of local leaders is a prerequisite to economic development and provides a means to achieve sustaining communities. Effective leadership facilitates economic development through collaboration, partnerships, and coalition building. SMP FL 513, Building Community

Leadership for Economic Development and Public Issues Education is a Florida extension program designed to improve the well-being of urban, rural and non-metro Floridians by: (1) enhancing community economic vitality through developing a cadre of local leaders who will focus on community uniqueness, resources and potential, (2) analyzing demographic, social and economic attributes of communities to help leaders and residents better understand their strengths and weaknesses and opportunities for economic development, (3) building human capacity of urban and rural residents for participation in labor force and entrepreneurial activities (4) improving the ability of local leaders to conduct the process of establishing informed public policy through issues education.

Economic opportunity in Florida is greatly dependent on small business development. Many small business enterprises are started each year and although some are still in operation after five years, most are not. The entrepreneurs that start small business enterprises need education and training if they are to remain viable. These small business owners are encouraged through extension education and training programs available in their community. Local coalitions often work in partnership with exist to help assist and help small business owners get the necessary education to survive and grow. Several Florida State Major programs have been designed to improve small business development.

In addition to economic opportunity, the quality of life in Florida is determined by the economic well being of its families. First and foremost, Florida families need affordable housing. Adequate housing is the most costly item in the average family budget. Typically, more than a third of a Florida's family combined income is required to cover house payments or rent, furnishing, utility and repair costs. Although home ownership is often less costly than renting, families often have difficulty buying a home because of poor money management and credit use practices. The Sadowski Affordable Housing Act is providing funds (\$250,000/county/year/minimum) for all Florida counties to provide affordable housing. The use of the funds is determined by partnerships in each county that include the private sector of building contractors and bankers, not-for-profit organizations, and the constituents to whom the program is directed. Besides housing, SMP FL 270, an 1890 program provides educational opportunities for community residents to improve their economic and social well being by utilizing existing grass-root community organizations as a mechanism for delivery and receipt of services related to community development activities.

Personal bankruptcies continue to increase, up about 23% in Florida since 1999. A Princeton Survey (2000) found that on a national average about 64% of household with an income of \$20,000 to \$50,000 live pay-check to pay-check. For families with an income under \$20,000, 79% live pay-check to pay-check. Another study found that over half of all households paid credit card bills late one or more times during the past year. Americans are spending 14.3% of their take-home pay on consumer debts. Household debt is 98% of annual disposable income. That is, almost all of household income is committed before it is earned up from 80% in the 1980s.

The concern with the transition of Florida's youth to the world of work is not unique to this state. The workplace through the United States is undergoing dramatic shifts. There are rapid changes in technology and an expanding need for an educated, flexible and multi-skilled workforce. Over the course of the next 15 years, over 80 percent of all new jobs will be produced in the service sector. Few will be created in the goods producing sector, the industry that served as the economic foundation of many communities, particularly rural ones. Because many of these service jobs tend to require more

education and skills, communities and individuals, particularly Florida's rural youth, are faced with fewer and fewer career opportunities. Using programs related to joint SMPs 201/701 (1890 and 1862 programs) Florida youth receives the preparation they need for the world of work.

In Florida communities there are over three million children under 18 and in 1992, more than 23 percent of these children lived in poverty. Poor children are more likely to be undernourished, to receive inadequate health care, and live in an environment that threatens their health and safety. The increase in women's labor force participation results in more young children being cared for at least part of the day by someone other than a parent. Working parents want good quality childcare in their absence, but this is often not available for low-income parents. Consequently many parents leave their children in less than adequate care in order to continue to work or they leave the labor force in order to take care of young children but struggle to provide their families' basic needs. In Florida nearly two-thirds of women with a child under the age of 6 are in the labor force and approximately 77% of mothers with children under 18 works outside the home, resulting in more children in daycare or staying home alone. New legislation is moving welfare recipients into the workforce, but only a small fraction of welfare recipients' new jobs pay above-poverty wages. Role overload and stress due to both work and family responsibilities, lack of adequate and affordable childcare, and limited resources are compromising families' well being. Using strategies developed through SMP FL515, Successful Parenting/Family Development in Florida, Extension professionals are working with families to help improve coping skills of newer working families who previously received welfare and increase their knowledge of how to achieve and maintain self-sufficiency, balance work and family and select quality child-care and after-school programs.

As world-wide transportation becomes faster and more efficient and the United States continues to open America to international trade, Florida, as a major port of entry for planes and ships becomes more susceptible to plants, animals, pests and diseases and increasing threats from bioterrorism. These impacts have a negative effect on the environment, the economy and quality of life. Looking for ways to reduce the potential for destruction, IFAS faculty are involved in finding solutions to some problems that have plagued mankind for centuries. For example, in one multi-state research project IFAS scientists are studying the invasion of North America by *Aedes albopictus*, looking at its feed patterns and its potential for vectoring various pathogens that effect human health.

b. Successes

Extension:

In collaboration with the 4-H County Faculty, approximately 24 weeks of residential camping programs were completed this year at the four 4-H Centers. This represents participation by 60 of the 67 County Extension programs in Florida. These camps host over 2,500 Florida youth in five-day (typical) residential camping programs that provide training in environmental education, leadership development skills, and other outdoor/ recreational skills.

Fifteen (15) counties reported conducting educational youth programs for 1371 youth focusing on selecting nutritious food choices, food preparation skills, best practices in food safety. A variety of educational methods were used including day camps which such themes as AFun with Foods@ or ACulinary Camp for Kids@; school enrichment programs in three counties used curricula to teach youth to make healthy breakfast choices.

Research:

Trends in delinquency, violent felonies, and school violence point to a need for interventions aimed at reducing and/or preventing violent acts. The purpose of this study is to prevent the development of violence in children and families by targeting the risk factors related to violence (i.e., early and persistent child behavior problems, family management problems, and poor home-school linkages). The results of these series of studies will help guide program development in violence prevention and rural mental health service delivery. Specifically, these projects are uncovering service delivery issues that complicate, and mediate, the effectiveness of said programs while pointing out successful strategies for preventing problems of conduct and social relations among children.

c. Benefits

Extension:

During 2001 and early 2002 a formal research study “Assessing Environmental Literacy in a Non-formal Youth Program” was undertaken to evaluate the effectiveness of the statewide 4-H Environmental Education program against the objectives described in the SMP 714/214 description. The purpose of this project was to obtain data on the level of environmental literacy among Florida 4-H youth participating in non-formal environmental education activities. A previous study was undertaken in 1998 to examine the same variables related to the development of environmental literacy and the results of both studies were compared. On examination of data from 1998 with the 2001-02 studies, we find that the differences in scores between the treatment and control group for most of the predictors of responsible environmental behavior have improved in the 2001-02 study from those reported in the 1998 study. Therefore, it would appear that there is an improvement in the 4-H environmental education program via the curricula used or teaching methods employed from the 1998 study, with regard to the goal of environmental literacy. This study suggests that the environmental education program used in Florida 4-H can increase the ecological knowledge of participants. The data also suggest that other variables (i.e., environmental issue awareness; knowledge and skill in the use of environmental action strategies; and evaluation of environmental issues) thought to be strong predictors of responsible citizenship behavior were not increased by a significant level but the means were orderly and consistent in the desired direction of achievement.

Florida Sea Grant developed a Five-Year Strategic Plan for the West Coast Inland Navigation District. The plan reflects the District's evolving role as the local sponsor of federally authorized waterway maintenance programs for a four county area. The plan presents goals and objectives, for the planning period of 2002-2006, for priority areas (Waterways and Anchorages, Inlets and Beaches, Emergency Management, Infrastructure Maintenance and Improvements, Dredge material Management, Sustaining the Environment, Permitting, and Coordination) that encompass the broad range of the District's responsibilities to the Southwest Florida community as mandated in Florida Statutes, Chapter 374 (2000) and Florida Laws 98-526 (1998).

A quarter million juvenile scallops were released into natural areas surrounding the work sites near Gomez Rocks (Crystal River) and the Homosassa Bird Rack. These restoration efforts over the past 4 years have been successful, resulting in reopening a recreational divers season this past year by the Florida Wildlife Commission (FWC). This news was gladly received by the Citrus County Tourist Development Council and all the businesses (motels, restaurants, boat/dive rentals) which previously depended on scallop season tourist trade for a good part of their annual incomes. Prior to the closure of the recreational scallop season in 1995, the total economic benefit to the communities of Crystal River and Homosassa was estimated at between \$3 -5 million annually. A design

team member assisted the Citrus County Tourist Development Council in the design of a survey instrument which would help determine the economic impact of the newly opened recreational scallop season to Citrus County businesses. This survey, which went to over 600 hotels, motels, restaurants, dive centers, communication) indicated that equipment sales and 78 scallop collecting boat rentals brought in increased profits for the community. The industry expects an even bigger impact next year as word spreads regarding the newly open season.

The affordable housing program is a very successful and beneficial program. Fifteen counties report programs dealing with home ownership. The down payment subsidy awarded qualified homebuyers is provided by non-extension agencies. Extension teaches the financial component dealing with purchasing and owning a home. It also addresses the responsibilities of home ownership. Extension does not teach all affordable housing programs in the state. Over a 10 year period there has been less than one-percent repossession rate for homeowners taught by extension. It is over 5 percent for groups taught by other organizations.

Forty-four counties reported programs in Family Economic Stability. Six counties reached 622 individuals with structured programs in Consumer Education teaching consumers how to comparison-shop, to protect themselves from identity theft and about consumer protection laws. Ten counties participated in a program designed to educate consumers about telemarketing fraud and to provide consumers with strategies for dealing with telemarketers. Pre and posttest showed that learning had occurred and follow-up evaluation showed behavior change.

With support from the design team, in 2002, thirty-nine counties have consistently conducted programs under the state major program FL_515, County faculty report having reached 37,713 participants conducting 5,300 learning events. They have offered a number of parenting programs targeted to different audiences, including single parents, teen parents, working parents, grandparents, divorced parents, incarcerated parents, and parents court ordered to attend because of child abuse and neglect.

Research:

This project will investigate responses of individuals to horticultural environments as well as specific horticultural programs designed to improve quality of life. Therapeutic and educational effects will be explored through knowledge, attitudinal, and evaluative inventories. The results of this study have two impacts: 1) Motivation to purchase and use gardening supplies and equipment shows a gender basis and that level of specialization influences gardening decisions. 2) Demographic information on Master Gardeners will permit more effective and efficient training programs.

A Florida constitutional amendment passed by voters in 1994 eliminated the use of commercial entanglement nets in state waters, thereby affecting thousands of families employed in the commercial industry, as well as a "way of life" passed down from one generation to another. The purpose of this research is to provide qualitative and quantitative information about the family impacts of the net ban. This information has been provided to policy makers who may be involved in similar decisions in Florida and other states. This information has been provided to other scholars of fishing families and communities through conference presentations and publications. At least four dissertations/theses have been impacted by this work.

d. Assessment of Accomplishments

Florida has met Goal 5 requirements, but will continue to strive to reach more of the population's needs in this area.

Critical Need Program 32.

Community Economic Development

Research

FLA-ENH-03543

FLA-FRE-03418

FLA-FRE-03488

FLA-FRE-03599

FLA-FRE-03752

Extension

SMP-FL116

SMP-FL216/FL716

SMP-FL270

SMP-FL315

SMP-FL513

SMP-FL515

SMP-FL317

SMP-FL510

SMP-FL107

Critical Need Program 33.

Family and Consumer Sciences (Quality of Life)

Research

FLA-ENH-03669

FLA-FRE-03418

FLA-FRE-03488

FLA-FRE-03584

FLA-FRE-03660

FLA-FTL-03423

FLA-FTL-03607

FLA-FYC-03488

Extension

SMP-FL215/FL715

SMP-FL216/FL716

SMP-FL267

SMP-FL270

SMP-FL273

SMP-FL315

SMP-FL512

SMP-FL513

SMP-FL515

SMP-FL114

SMP-FL510

SMP-FL212/FL712

Critical Need Program 34.

Youth and Human Development

Research

FLA-FYC-03782

Extension

SMP-FL213/FL713

SMP-FL214/FL714

SMP-FL215/FL715

SMP-FL216/FL716

SMP-FL217-FL717

SMP-FL218-FL718

SMP-FL273

SMP-FL512

SMP-FL203/FL703

SMP-FL211/FL711

SMP-FL212/FL712

Critical Need Program 35.

Disaster Preparedness

Research

Extension
SMP-FL119
SMP-FL124

IV ~RESEARCH IMPACT STATEMENTS

FLA-ABE-03285

Title: Anaerobic Decomposition of Energy Crops, Wastes, and Metals

Critical Needs: 12, 26

National Objectives: 1.1, 4.2, 4.3

Key Themes: 1. biofuels biobased products
4. Agricultural Waste Management, Hazardous Materials, Nutrient Management, soil quality,

Summary:

Methane and other chemicals may be derived from anaerobic fermentation biomass and wastes. Toxic chemicals and metals may be transformed under certain conditions in the environment. The purpose of this project is to develop reactor designs and operating conditions for conversion of biomass and wastes to methane, compost, and other useful products. The potential for environmental degradation of toxic chemicals and biocorrosion of metals is also being investigated.

Progress:

Anaerobic Digestion of Biomass and Organic Wastes. Research continued here and at the University of Queensland on development and optimization of the patented University of Florida sequential batch anaerobic composting (SEBAC) process. This process was developed for conversion of high solids (>20%) organic feedstocks including energy crops and solid wastes. During the report period numerous experiments were run on the organic fraction of municipal solid wastes separately and blended with biosolids. Conversion was typically about 50% with a methane yield of 0.22 L/g volatile solids. Aerobic composting of blends of organic wastes and the organic fraction of MSW was investigated at the commercial Sumter Co. Florida rotating drum/windrow facility with USEPA Region 4 funding. Wastes blended with the organic fraction of MSW included biosolids, dairy, food, and layer. The MSW provided a bulking agent and the other wastes provided a source of nutrients. The conversion and compost quality were evaluated using physical, chemical, and biological analyses. A project was initiated to look at the technical feasibility of using the SEBAC process for processing organic wastes generated during long-term space missions. An example of such a mission would be a trip to Mars with a crew of six and a six-year duration.

Biodegradability of Energy Crops and Wastes. Our laboratory employs the biochemical methane potential assay for evaluating the extent and rates of conversion of biomass and waste samples. During this project period this method was employed to evaluate the BMP of several waste components expected to be of interest in long term space missions. The samples included paper and several inedible crop residues (wheat, tomato, potato, peanut, sweet potato, and rice). These data will be employed to predict extent and rates of conversion in actual digester runs discussed above. The influence of temperature on degradation of cellulose added to landfill leachate samples was investigated. The site of leachate collection was known to reach temperatures as high as 60°C which is thought to be the upper limit for many microorganisms. We observed that methanogenic activity

was higher at 55°C than at 60°C suggesting that operating procedures should aim at preventing the higher temperature.

Anaerobic Biodegradability of Xenobiotic Compounds Bleaching of paper results in release of chloroform into groundwater. We investigated the degradation of chloroform in soil microcosms set up from soil samples collected from paper mill grounds. The results showed that chloroform is degraded in 2-7 weeks depending upon soil, organic matter content, and anaerobic conditions. Research was completed on the fate of mercury in landfills. It was concluded that mercury is volatilized after discharge into landfills in the form of batteries, fluorescent bulbs, and other mercury-containing wastes. Under anaerobic conditions mercury is converted to elemental and methylated mercury forms which are volatile and undoubtedly emitted as atmospheric pollutants. These data suggest that mercury measurements in landfill samples underestimate the importance of that pollutant.

Impacts:

Anaerobic processes are expected to have a major impact on environmental quality. Anaerobic digestion is a sustainable of regeneration of nutrients and recovery of energy and compost from wastes generated on earth and during space missions. Anaerobic processes also play a major role in degradation of toxic compounds released into the environment and corrosion of metals. An understanding of these activities will reduce potential health problems and costs related to metals corrosion.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ABE-03456

Title: Improvement of Thermal Processes for Foods

Critical Needs: 19

National Objectives: 2.2

Key Themes: Food Quality, Food Safety, Food Accessibility and Affordability

Summary:

Microorganisms permitted to live in food products may contaminate those foods. Keeping foods safe from microbial contamination generally requires some type of processing. This project explores advanced engineering methods for designing new, better processing of foods, with emphasis on thermal processing. Considerations include speed, energy efficiency, predictability, and minimal change of food properties with processing.

Progress:

The project objective was to develop mathematical models for the analysis, design, and optimization of thermal processes used in food preservation through the use of computer simulation. Results from the 5-year life of the project can be summarized by the following accomplishments: 1) Development of new improved methods for determining thermal inactivation kinetics of bacterial spores exposed to dynamic temperature heat treatments. 2) Development of mathematical heat transfer models capable of predicting internal temperature response to external temperature variations in packaged foods exhibiting conduction and convection modes of heat transfer in containers of any size and shape. 3) Incorporation of these models into recently developed thermal process simulation software for predicting internal product temperature and lethality in response to process deviations with canned food products exhibiting a wide range of heating

characteristics. 4) Demonstration of intelligent on-line computer control of canned food sterilization processes making use of the thermal process stimulation model. This control system would be capable of automatically extending process time to compensate for any unexpected temperature deviations that might occur during the scheduled process while delivering the precise target level of sterilization required without unnecessary over processing.

Impacts:

This project has introduced thermal process simulation software to the food canning industry that will result in increased safety assurance of sterilized canned foods to the consuming public at high quality and low cost as well as improve manufacturing efficiency and global competitiveness of the industry.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ABE-03491

Title: Parameter Sensing and Control Systems for Drying Agricultural Commodities

Critical Needs: 19

National Objectives: 2.1

Key Themes: Food Handling

Summary:

Efficient curing/drying of important Southern Region agricultural commodities requires effective sensors and techniques for continuous measurement of critical parameters. This projects implements control systems and collects and evaluates data documenting effectiveness and efficiency of sensors/control systems in curing/drying the various commodities involved.

Progress:

Lack of funding and research interest shift to cooling horticultural crops resulted in minimum effort during the past year. As part of Regional Project S-266, the loss of most of the regional membership due to reassignment or retirement prevented cooperative efforts.

Impacts:

Primary impact related to improved drying controls for peanut drying through use of computer controls.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-ABE-03492

Title: Microirrigation of Horticultural Crops in Humid Regions

Critical Needs: 2, 7

National Objectives: 1.2

Key Themes: Agricultural Profitability, Adding Value to New and Old agricultural Products, Precision Agriculture

Summary:

Microirrigation systems can help conserve water, increase crop production and economic

return, and maintain high water quality, but systems must be properly designed, managed and maintained to achieve these benefits. The purpose of this project is to develop management systems using microirrigation techniques to apply water and nutrients to horticultural crops while minimizing adverse impacts on water quality, to document economic benefits and to determine effects on water resources.

Progress:

A study of irrigation for container-grown ornamental plants was continued. Plants were grown in multi-pot boxes that collected excess rain and irrigation for later use. Several papers related to this study were submitted and published. First season (spring 2001) of microirrigation/fertigation project at an organic farm was completed and the experiments are continued during this fall. Effluent from an anaerobic digester was used as an organic fertilizer in this system. Various chemical treatments were evaluated as line clogging prevention methods. A proceeding paper was published and presented at an annual symposium. A study on evapotranspiration models for Florida has been completed and four refereed papers were submitted during this year. One is in print and one is accepted. A drip irrigation research project consisting of four irrigation treatments and three nitrogen treatments was conducted on various vegetable crops. The experiment on watermelon was completed in the spring of 2001. Chapter 8 of *Vegetable Production Guide* [make italics] was rewritten and significantly changed from the previous years based on new information.

Impacts:

Microirrigated multi-pot boxes provided significant water savings in all seasons. In some seasons plants were grown using only water harvested from the rain. A model of water use for plants grown in the new production system is being developed. Several publications were published and submitted. The chemical treatments against clogging of a drip tape with effluent injection on organic vegetables were successful for two out of three drip tapes evaluated in spring of 2001. Injection of chlorine, acid and/or ozone resulted in similar tape performance. We observed decrease of total flow rate due to some plugging but the uniformity was high for two drip tapes out of three tested in the experiment. There was a significant difference in overall clogging among three types of tapes used in the experiment. Results from the first year of drip irrigation and N application have shown that watermelon yields responded quadratically to irrigation rates. the interaction irrigation rate x N rate was not significant for early and total marketable. The effect of N rate was significant for early yield but not for total yield.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-ABE-03593

Title: Development and Application of Comprehensive Agricultural Ecosystems Models

Critical Needs: 27, 29

National Objectives: 4.2, 4.3

Key Themes: Water Quality

Summary:

Agricultural management practices can be used to reduce the impacts of agricultural production on water resources, but it is difficult to quantify these effects. This project develops and tests hydrologic and ecosystems models for use in assessing the impacts of agricultural practices on water resources.

Progress:

A new field study was initiated at a 5000-acre commercial vegetable farm in the Suwannee River Basin. Biweekly sampling of soil water content and soil water nitrogen was conducted by taking soil cores over the top 90cm at 10 locations throughout one 140-acre vegetable field. Periodic plant biomass sampling was conducted to obtain moisture content, dry matter content, total nitrogen content and weight of all plant components. Biweekly sampling of the 13 wells installed in and around the field was conducted. An on-site weather station that measures rainfall, temperature, and solar radiation was downloaded weekly. Field sampling will continue at this site over the next 2-3 years. Field data collected to date shows that groundwater nitrate declined over the cover crop-peanuts-cover crop (no change) rotation which occurred from April 1999 through April 2000. However, groundwater nitrate increased significantly over the corn-cotton-potatoes rotation which occurred from June 2000 through June 2001. of approximately 300 kg/ha N applied to the spring 2001 potato crop on the order of 100 kg/ha N was taken up by crop and on the order of 200kg/ha N leached below root zone. Soil water nitrate concentrations ranged from 100-450 mg/l in the top 1 m of soil and declined to approximately 25-50 mg/l at the 5m depth, which is consistent with well water nitrate concentrations. These data are currently being used to develop recommendations for alternative vegetable water and nutrient management practices intended to reduce the leaching of nitrate to groundwater. The data will also be used in crop growth and subsurface flow and transport models to make long-term predictions for crop yield, water and nitrogen leaching for alternative vegetable water and nutrient management practices. An object-oriented, nitrogen and phosphorus process module (ACRU-NP) was designed in the Unified Modeling Language (UML) and implemented in the Java programming language as an extension to the ACRU2000 modeling system. The nitrogen and phosphorus component, process and data objects used in ACRU-NP were patterned after transformation and transport concepts used in the GLEAMS model.

Impacts:

The nitrate load to the Suwannee River in the middle Suwannee Basin is created almost exclusively through groundwater discharge to the river. Knowledge gained from this project will help develop BMPs for vegetable farms in the Suwannee River Basin that will reduce nitrate leaching to groundwater. Development of BMPS will be essential to meet the nitrate TMDL that will ultimately be established for the Suwannee River.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ABE-03596

Title: Animal Manure and Waste Utilization, Treatment and Nuisance Avoidance for a Sustainable Agriculture

Critical Needs: 26

National Objectives: 4.2

Key Themes: Soil Quality,

Summary:

Manure from production of meat, milk and eggs can contribute to nitrogen and phosphorus in both groundwater and surface water if they are not properly managed and utilized. This is particularly important in the sandy soils and vulnerable water resources in Florida. This project evaluates new and more effectively engineered systems for

processing animal manures into useful products, such as compost and nursery potting media, and for removing nutrients from stormwater runoff from animal production facilities.

Progress:

A constructed wetlands and overland flow system was placed in operation on a 200-cow commercial dairy farm in Central Florida. The system consisted of two wetland cells (0.13 ha each) planted with arrowhead and pickerel weed. The effluent from the second wetland cell was pumped to an overland flow system (0.34 ha) planted with Floralta limpgrass. Influent to the system was from the third cell in a lagoon system that handled wastewater from the milking parlor and from a drainage ditch that captured lot runoff and effluent from the overland flow system. Results showed only a 25% removal of total phosphorus and a 61% removal of total nitrogen in the system. Most of the phosphorus removal was in the overland flow system, and most of the nitrogen removal was in the constructed wetlands system. Laboratory and pilot scale tests were performed using aluminum and iron compounds to remove nutrients from dairy farm wastewater.

A commercial chemical and biological treatment system was tested on wastewater from the University of Florida Dairy Research Unit. the system utilized reactors filled with dolomitic limestone and lava rock. Although previous testing on wastewaters with a lower nutrient content had shown promising results for the system, it did not perform better than control treatments on dairy wastewater that contained high levels of nitrogen and phosphorus in the modes of operation that were tested. the treatments included aeration to promote nitrification and denitrification and the use of different numbers of reactors. A project on composting of scraped dairy manure was completed. Testing was conducted in bench scale reactors and in a demonstration bin composting system on a commercial dairy farm. Scraped dairy manure in Florida is very wet, and a bulking agent must be added to help reduce the moisture content and to provide porosity to the composting material. the mixtures which performed the best were the sawdust and manure at 67% and 71% moisture, pine mulch and manure at 64% and 65% moisture, yard waste and manure at 65% and 74% moisture, and peanut hulls and manure at 63% moisture. These mixtures performed better than mixtures with lower moisture content. the addition of coastal Bermuda grass hay did not provide enough porosity to the manure/hay matrix to allow for an efficient composting process. A research/demonstration waste management system was installed on a 1600 cow commercial dairy farm near Zephyrhills, Florida. the system included a sedimentation basin, holding tank, mechanical screen, tangential flow separator, plate clarifier and a large horizontal drum composter. The drum composter had a volume of 90 cubic meters. The objective was to recover as many solids as possible from the wastewater and produce a potting media (peat substitute) that could be sold to the plant nursery businesses in the area. Screened solids at 70 to 75% moisture content were successfully composted in the drum composter in three days. Nematode-free certification was obtained from the State. Evaluations of the material as a replacement for peat in potting media in laboratory and greenhouse tests were very successful.

Impacts:

Constructed wetlands and overland flow systems were shown to be effective in removing nutrients from dairy farm runoff. Composting systems for dairy manure were successfully demonstrated on commercial farms. A saleable peat replacement product was created from screened dairy farm wastewater. These results give economic incentives to removal of nutrients from dairy farms and to reducing nutrient losses to the environment.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-ABE-03824

Title: Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine and Dairy Facilities

Critical Needs: 9

National Objectives: 1.2

Key Themes: Animal Health

Summary:

Livestock heat stress limits production in warm climates such as Florida's. Air pollution in livestock housing can cause health problems for workers and livestock. This project studies systems for ventilation and air pollution control methods for livestock housing

Progress:

A tunnel ventilated dairy barn and an air conditioned dairy barn were monitored for cow milk production and health. Air quality and energy usage were also monitored. The tunnel ventilated system appears to be effectively cooling cows and to be economically feasible. The air conditioned barn effectively cooled cows, but economic factors are still being evaluated. A study of pressures on cow hoofs and causes of lameness in dairy cows is continuing.

Impacts:

Heat stress is a major factor limiting livestock production in Florida. The studies of new methods to cool dairy housing will result in additional housing choices for dairy producers. Lameness has a significant impact on cow health and production. the results of this study will be used to develop improved types of flooring and improved methods of treating lameness.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-AGR-03374

Title: Genetic Improvement of Forage Grass Species

Critical Needs: 5, 8

National Objectives: 1.2

Key Themes: Rangeland/Pasture Management, Plant Genomics

Summary:

Many forage grass species are not genetically adapted to Florida conditions. This project aims to genetically modify grass species to improve their utility in grazing systems.

Progress:

A long-term phenotypic selection program was continued in a tall fescue population for adaptation and productivity under Florida conditions. A nursery of approximately 1250 individual plants was established in the field during early fall. Selection of approximately 125 individuals was made the following spring prior to anthesis. The selected individuals were allowed to interpollinate and seeds were harvested on an individual plant basis in summer. These seeds were then used to continue this program with equal numbers of progeny seedlings being established from each parent for a new nursery. A tall fescue performance trial was established at two locations in Florida-- Gainesville and Jay. These were identical tests and all entries were commercial cultivars except for two experimental populations developed at Gainesville. At Gainesville, one of the Florida

experimental breeding population produced significantly higher yields for the season than the commercially available entries. This trial will continue to be harvested during the upcoming growing season. At the other location, an extremely dry year allowed only one harvest of the material. No statistical differences were detected in this test. Seven experimental annual ryegrass populations were released as named cultivars. Ten other ryegrass populations were selected for cold tolerance, crown rust and gray leaf spot resistance and high forage and seed yields. Persistence studies continued with several turf and forage tall fescue populations.

Impacts:

The development of experimental populations of forage grasses will help animal producers economically manage their operation. This research is focused either on developing new cultivars of cool season grasses for use during the winter or developing new cultivars of tropical grasses which have a longer growing season, in essence prolonging their productivity during the early part of the winter.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-AGR-03427

Title: Recyclable Organic Solids in Conservation Tillage Multiple Cropping Systems

Critical Needs: 1, 2, 23, 29

National Objectives: 1.2, 4.1, 4.2

Key Themes: Biobased Products, Urban Gardening, Land use

Summary:

Alternative uses of urban yard waste can alleviate up to one-third of landfill disposal sites. This research examines tillage, cropping systems, soil quality, crop nutrition and crop yield in conservation tillage multiple cropping systems and from recycling urban yard waste on agricultural land. Additional research is also devoted to subtropical corn breeding.

Progress:

Yard waste, which includes such things as grass clippings, leaves, pine needles, sticks, and other woody material, accounts for approximately 14% of municipal solid waste produced in Florida and 13% nationally. One viable alternative to landfill disposal is the application of this waste to agricultural land. The objectives of this study were to evaluate the impact of residual and new yard waste compost (YWC) applications on sweet corn (*Zea mays*) yield and soil properties. This study was superimposed on an existing experiment that was initiated in 1993. Over four years, a total of 1076 Mg/ha YWC was added to the soil of the amended plots. Beginning in 1998, residual treatments were split and received additional YWC which were either incorporated into the soil or applied as a mulch depending upon the previous old YWC treatment. The final split plots included one of three fertilizer treatment based upon extension recommendations. Plant nutrient and heavy metal analyses of the YWC showed compliance with EPA guidelines. Under reduced fertilizer regime, the old YWC incorporated and mulch treatments had higher sweet corn ear yield, diagnostic leaf weights, whole plant dry weights, diagnostic leaf area, LAI, ear height, and plant heights the first year. In the second year, the old YWC incorporated and mulch treatments were greater than the control for each of these measurements irrespective of the fertilizer treatments. Both old and new YWC treatments

generally improved water-holding capacity and bulk density of the soil. Soil nutrient concentrations, with the exception of Cu and Fe, also tended to be higher from the YWC additions. These improvements in soil quality most likely resulted in the greater sweet corn yield and other growth measurements observed. This research proved that YWC of this type is environmentally safe to recycle on cropland while making improvement in soil quality and crop yield.

Impacts:

Yard waste compost(YWC) had acceptable levels of heavy metals and soluble salts for recycling on farmland. YWC improved soil quality (water-holding capacity, bulk density, and levels of essential plant nutrients) and was correlated with increased sweet corn yield and quality. Therefore application of this waste as compost to agricultural land is a viable alternative to landfill disposal.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-AGR-03594

Title: Formation, Sprouting and Longevity of Hydrilla Tubers

Critical Needs: 17, 29

National Objectives: 1.2, 4.1

Key Themes: Invasive Species, Wetlands Restoration and Protection, Riparian Management

Summary:

The submersed aquatic weed hydrilla invades waterways of the southeast U.S., displacing native vegetation and adversely impacting irrigation, flood control, recreation and public health. Long-term control strategies must include depletion of populations of hydrilla tubers. This project examines factors that influence the production, longevity and germination of hydrilla tubers, with the objective of improving long-term control of hydrilla populations.

Progress:

Vegetative propagules or tubers formed from 5- to 15-cm deep in the hydrosol during short-day conditions allow dioecious hydrilla to perennate and survive management programs. The physiological stimuli for tuber production have been determined to be closely related to abscisic acid content of underground rhizomes. The factor or factors influencing sprouting of tubers, detached and free-living in the hydrosol, have not been determined. It has been hypothesized that changes in oxygen content of overlying water, temperature changes, redox potential changes in the hydrosol or even light penetration to the hydrosol stimulates sprouting, particularly following either herbicide or mechanical removal of the hydrilla canopy. Studies conducted with hydrilla growing in 30-cm tall, 10-cm dia PVC pipes showed that none of the environmental factors noted above affected sprouting of tubers in the relatively deep soils of these containers(CRIS Report 2001). Hydrilla tubers in these test containers sprouted at a 20% rate 20 weeks following application of herbicide or mechanical treatments which were no different than the sprouting rates in the untreated controls. An identical study was conducted in shallow plastic flats in which the soil was only 14-cm deep. Tubers sprouting 20 weeks after herbicide treatment was 5X higher(50%) than in the untreated controls(10%) or in the mechanical removal treatment. This is the first study that we have conducted that showed

a treatment effect on tuber sprouting. Culture of hydrilla in these shallow flats very noticeably concentrates hydrilla roots and tubers along the bottom of the containers. It is hypothesized that the death and decay of the hydrilla, and subsequently the hydrilla roots by the herbicide treatment, along the bottom of the flats resulted in a change in the redox potential in the microhabitat of the tubers which stimulated sprouting.

Impacts:

Since its introduction into the US in approximately 1960, hydrilla has become the most serious and expensive to manage submersed aquatic weed in many areas of the country. It is now found growing in the wild to Maine along the east coast and from California to Washington state on the west coast. The control of hydrilla will become more efficient and more cost effective if we had a more thorough understanding of the physiological and ecological basis for its reproduction, which is the purpose of this project.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-AGR-03667

Title: Molecular Improvement of Peanut and Sugarcane

Critical Needs: 2, 5

National Objectives: 1.2

Key Themes: Plant Genomics, Plant Germplasm

Summary:

Peanut is a difficult crop to genetically-engineer. Sugarcane varieties are susceptible to sugarcane mosaic virus. The purpose of this project is to develop an effective transformation system for elite peanut cultivars and to use sugarcane transformation technology to produce viral-resistant transgenics.

Progress:

Peanut production in the southeastern US is severely threatened by tomato spotted wilt virus (TSWV). Phorate causes marginal necrotic lesions on peanut leaves that may induce host defense genes. To understand the components of a phorate-induced response in peanut that may condition acquired resistance to tomato spotted wilt, we have used differential display of mRNA to identify gene products that are regulated by phorate treatment. Thirty-one out of a total of fifty-three clones were down regulated and the remaining twenty-two were up regulated. All fifty-three clones were sequenced and analyzed. the sequences were subjected to data base comparison using BLAST and showed strong similarities with known sequences whose products are involved in a variety of cellular functions. A sub-set of these genes will be used to engineer peanut for resistance to TSWV. We have also characterized at the transcriptional level three major peanut allergen genes and soon will be initiating a study to eliminate expression of these allergens in peanut. We are also continuing our studies on peanut tissue culture and transformation methodologies. For our sugarcane research, transgenic sugarcane plants containing a SCMV-E coat protein gene continue to be evaluated in the field and have been characterized at the molecular level.

Impacts:

Peanuts and sugarcane that can be improved for pathogen resistance without the need for external inputs such as pesticides will lead to a more environmentally-friendly and economic approach to disease control. Additionally, production of a peanut that is allergen-free or has reduced levels of allergens will benefit consumers who suffer from peanut allergies.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-AGR-03706

Title: Reproductive Biology and Gametophytic Selection in Higher Plants

Critical Needs: 4, 5

National Objectives: 1.2

Key Themes: Plant Production Efficiency

Summary:

An understanding of plant reproductive biology is essential so that the genetic influence on physiological processes can be assessed, appropriate strategies involving manipulation of genetic transmission can be developed and gametophytic systems can be adapted for pollutant assays. All aspects (pollen diameter, in vitro and in vivo pollen germination and tube growth, stigma and style biochemistry and physiology, temperature effects on these variables) of the reproductive biology on various model test species (corn, sesame, tomato) will be examined.

Progress:

Eastonce Gwata, a graduate student of Drs. Boote and Wofford, collaborated with me and used my equipment to compare pollen morphology and germination of nodulating and nonnodulating soybeans. The results of this research have been accepted and are in the process of publication in THEORETICAL AND APPLIED GENETICS.

Impacts:

Studies on the genetics of pollen transmission will be continued with publication of the most significant and meaningful results anticipated. Tests will be conducted with various crops to determine the practical value and use of the research findings.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-AGR-03713

Title: Plant Genetic Resources Conservation and Utilization

Critical Needs: 5, 7

National Objectives: 1.2

Key Themes: Plant Germplasm,

Summary:

This project will seek to (1) identify domestic and international sources of plants germplasm and establish liaison contacts for acquisition and exchange of plants valuable for agronomic, medicinal, and industrial use. (2) evaluate introductions of plant species uniquely adapted to Florida for climate adaptation, pest resistance and other desirable traits. (3) conduct research to identify new species with agronomic potential and appropriate management practices.

Progress:

Plant breeding and selection research continued with buffalo clover (*Trifolium reflexum*), primarily focused on germplasm collections from Georgia and Florida crossed with other

accessions from around the SE USA. F3 selections were made in the greenhouse for early flowering, pink and red flowered plants. Seed production of buffalo clover as a wildflower alternative for Florida is being evaluated in the 2002-03 growing season at two farmer locations. The experimental diploid red clover population FLMR7 was approved for release as a cultivar by the Florida Agricultural Experiment Station (FAES) in 2002 and foundation seed increase is in progress. An additional cycle of recurrent phenotypic selection in a tetraploid red clover (*T. pratense*) population was completed. Primary selection criteria were seedling vigor, adaptation to Florida conditions, and improved seed production. Four elite selections of rhizoma perennial peanut (*A. glabrata*) were established in replicated forage yield trials at the Plant Science Research Unit (PSRU) at Citra, FL. Field evaluation of 30 plant introductions of pinto perennial peanut (*Arachis pintoii*) was initiated in 2001 and continued into 2002-03. Primary criteria of evaluation include spread and weed competitiveness, disease susceptibility, frost and freeze tolerance and seed production. A segregating population of *Lotononis bainesii* developed by a Uruguayan cooperator was established as spaced plants at the Agronomy Forage Research Unit (AFRU). Initial observations indicated excellent spread by spaced plants, but lack of nodulation with native rhizobia. Primary criteria of evaluation will include frost tolerance, winter survival, and disease resistance. A holding nursery of ten tall grasses for bioenergy and a crossing block of 20 tall castor bean (*Ricinus communis*) ecotypes collected over peninsula Florida were grown at the Plant Science Research Unit (PSRU) at Citra, FL. Ten recurrent selection nursery populations of annual ryegrass (*Lolium multiflorum*) and five populations of tall fescue (*Festuca arundinacea*) were planted at the AFRU. Three ryegrass populations, FLX2001 (New) 4x LR mid-late; FLX2001 (New1) 4x LR late; and FLX1997 (New) 4x late were approved for release by the FAES and foundation seed production is in progress.

Impacts:

Research under this project is targeted at identification of new and alternative crops to provide production options for farmers and ranchers in Florida and the Southeastern USA.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-AGR-03726

Title: Evaluation of Forage Germplasm and Forage Management Practices

Critical Needs: 8, 17

National Objectives: 1.2

Key Themes: Agricultural competitiveness, Grazing/Pasture Management

Summary:

Improved warm season and cool season forages are needed for cattle production in Florida. This project aims to develop improved forage cultivars and management practices for livestock producers in Florida.

Progress:

1. Four seasons of data collection on the "New Grass Test" have been completed. This test includes both bermudagrass and bahiagrass cultivars. Samples for forage quality were collected in 2001 and have been analyzed. A final report will be written in 2003. 2. A perennial grass establishment study continues. 3. A perennial grass establishment weed control study continues. 4. A late summer stockpile study of summer annual grasses with legume mixtures was completed this fall.

Impacts:

Florida livestock producers will be able to select the the most productive and highest quality warm season perennial grass for their use. The fall forage gap may be filled by strategic planting of annual forages and provide a source of high-quality forage for grazing replacement heifers until winter forages are ready. Better establishment weed control will provide greater assurance of rapid establishment of pure stands of grass which translates into quicker and greater returns on new grass plantings.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-AGR-03854

Title: Selection and Adaptation of Grass and Legume Species for Forage Production in the Southern Coastal Plain and Peninsular Florida

Critical Needs: 8

National Objectives: 1.2

Key Themes: Agricultural Competitiveness, Grazing/Pasture Management

Summary:

Winter forage production in Florida is limited by short days and cold winter temperatures which impact production of tropical forage grasses. The purpose of this project is to breed and select for tropical forage grasses which are less affected by short days and cold winter temperatures.

Progress:

Research continued to compare the effects of various mitotic spindle poisons in tissue culture on the effectiveness of doubling the chromosome number of Pensacola derived bahiagrass. All mitotic spindle poisons evaluated--colchicine, trifluralin, and oryzalin--yielded tetraploid clones. At present, about 50 clones have been verified as tetraploid by root-tip chromosome counts. Percentage success of treatments (number of verified tetraploid clones/total plants transplanted to field) ranged from 0 to 3.6. Percentage success of tetraploid production, averaged over rates within a compound, for colchicine, trifluralin, and oryzalin was 3.1, 2.5, and 1.0, respectively. The colchicine and trifluralin treatments appeared to be somewhat superior to oryzalin when ranked as a percentage of regenerated plants. Results to date show that measurements of leaf stomatal size are correlated with ploidy level, but verification of ploidy level by mitotic root-tip chromosome counts is necessary on some clones that have intermediate stomatal sizes. The number of flowering heads produced by verified tetraploid clones in the establishment year in a field spaced plant nursery was significantly lower than on a corresponding group of verified diploid clones from these same experiments. Although leaf width measured at the base of fully expanded leaves was significantly wider on 40 tetraploid clones than on 40 corresponding diploid clones, the ranges for leaf width overlapped and this trait did not appear to be useful as a preliminary indicator of tetraploidy. The research to evaluate the effectiveness of nitrous oxide as a chromosome doubling agent in bahiagrass yielded one verified tetraploid clone among 16 seedlings produced from these treatments. Selections were made for low growing rough turf type clones. Variability in response to frost and freezing temperatures was also observed. Research with *Setaria sphacelata* for Florida was reduced to evaluation of one population selected for cold temperature tolerance.

Impacts:

This research should lead to the development of bahiagrass cultivars with improved production and persistence under growing conditions in the southeastern USA.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ANS-03552

Title: Dna Microsatellites to Predict Bovine Calpastatin Gene Activity

Critical Needs: 10

National Objectives: 1.2

Key Themes: Animal Genomics,

Summary:

1. Screen bovine genomic library in Lambda Dash II. 2. Screen bovine genomic library in yeast artificial chromosome (YAC). 3. PCR SINE sequences in isolated contigs. 4. PCR microsatellite tandem repeats. 5. Subclone microsatellites into amplification vector. 6. Amplify. 7. Sequence positives to determine nucleotide flanking sequences. 8. Develop PCR primers to screen genomic DNA. 9. Screen beef cattle herds for polymorphic alleles segregating with calpastatin. 10. Associate polymorphic alleles with taste panel and Warner-Braxler tests. 11. Develop breeding programs that select favorable polymorphic attributes. 12. Alternately, clone multiple copies of animals with desired polymorphic attributes as breeding stock.

Progress:

1. Screen amplified bovine genomic libraries to isolate calpastatin gene. 2. Probe intronic flanking regions of isolated gene for microsatellites. 3. Sequence calpastatin gene to physically isolate/map microsatellites. 4. Determine/measure polymorphic variations of microsatellites at calpastatin locus. 5. Assess potential of using alleles in microsatellites to improve beef quality.

Impacts:

DNA microsatellites with potential polymorphic alleles segregate with the bovine calpastatin gene. The use of polymorphic DNA alleles may offer an approach for selecting the trait of meat tenderness and potentially other MAS traits of economic importance to the Florida beef cattle industry.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ANS-03572

Title: Byproduct Feedstuffs: Rumen Degradability of Carbohydrate and Fat Fractions and Effects On Feed

Critical Needs: 9, 12

National Objectives: 1.2

Key Themes: Animal Health, Adding Value to New and Old Agricultural Products,

Summary:

1. Analyze soluble fiber and neutral sugar contents of dried citrus pulp collected across

the harvest season from a variety of sources. 2. Measure differences in fermentation rates and products between citrus pulp and hominy feed. In vitro fermentations of original samples, ethanol-insoluble residues, and neutral detergent production measurement system. Type and amounts of volatile fatty acids produced will be compared between and within feed type and substrate. Rates of carbohydrate (soluble fiber and neutral detergent fiber) fermentation will be determined from the gas production curves and compared among and within feeds and carbohydrate type. 3. In vitro fermentations with six fat sources (fish oil, tallow, poultry fat, calcium soaps of poultry fat, whole cottonseed, and corn oil) will be used to determine the pattern of biohydrogenation of fats and their effect on neutral detergent fiber digestibility at 0, 12 and 24 hours of fermentation. Fats will be incorporated into hominy, corn silage, or alfalfa hay before being mixed together and subjected to in vitro fermentation. Following fermentation, samples will be subjected to fatty acid analysis. 4. A nitrogen balance trial with lactating dairy cows will be conducted to assess the effect of the substitution of soluble fiber for starch. On isonitrogenous corn silage- and alfalfa-based rations, citrus pulp will be substituted for hominy feed.

Progress:

Byproduct feeds tend to contain a variety of non-neutral detergent fiber (non-NDF) carbohydrates (NFC) other than starch. However, starch is the predominant NFC fed in much of the country. Data on the fermentation product yield from the non-starch NFC, such as sugars and soluble fiber, is lacking. The yield of microbial crude protein (CP) from sucrose, corn starch, and citrus pectin was examined using trichloroacetic acid (TCA) precipitation of batch cultures. The substrates were NFC+bermudagrass NDF (40:60). Microbial CP (TCACP) was estimated as TCA-precipitated CP corrected for the TCA-precipitated CP content of substrates at 0 h, and the mean of fermentation blanks from each hour. Medium pH did not decline below 6.49 in any fermentation tube. Comparisons of maximal yields based on the hour in which the measured mean yield was greatest for each substrate in each fermentation indicated that $Sta > Suc = Pec > iNDF$ ($P < 0.05$). All substrates showed increases in TCACP to their maxima, followed by declines in TCACP. This likely reflects the relative dominance of production or degradation of microbes about the point of substrate limitation. Unlike other substrates, Suc had no detectable lag and presented a more persistent TCACP yield curve than the other non-NDF carbohydrates (NFC). Regression analysis of TCACP yield over time for iNDF vs. other substrates, Pec + Sta vs. Suc, and Pec vs. Sta indicated that the compared curves were not parallel ($P < 0.05$). The patterns of TCACP yield over time were cubic for iNDF and Suc, and quartic for Pec and Sta. The maximal yields of TCACP predicted from the regressions were Sta: 34.0 mg at 15.6 h, Pec: 29.9 mg at 13.5 h, Suc: 25.5 mg at 12.6 h, and iNDF: 13.6 mg at 19.3 h. The NFC carbohydrates examined differed in both maximal yields and temporal patterns of yield of TCACP. The proportion by weight of microbially "usable" carbon and weight of monomers released upon hydrolysis of the starch and pectin appears to be related to their differences in microbial CP yield. In a subsequent collaborative study with Dr. Paul Weimer of USDA testing three levels of sucrose fermented in vitro with bermudagrass NDF, dextran content, TCACP yield, and organic acid yields increased linearly with increasing sucrose substrate. Efficiency of microbial CP yield and microbial CP+organic acid+dextran yields per milligram of sucrose substrate decreased with increasing sucrose substrate. The linear increase in products with increasing sucrose suggest that nutrient yield can be predicted from substrate available. However, the sucrose is not converted to fermentation products with the same efficiency at all levels of substrate.

Impacts:

Describing the temporal differences among fermentable carbohydrates in their yields of products, including organic acids and microbial protein, is an essential starting point for predicting the yield of metabolizable nutrients to the cow. Differences noted in microbial CP yield for sucrose, starch, and pectin are in agreement with and help to explain the results of animal feeding trials. Currently, microbial yield from these three non-NDF carbohydrates are treated as being equivalent. This information will be used to modify animal feeding recommendations and they open the door for investigations into appropriate carbohydrate and protein supplementation strategies to meet animal nutrient requirements. This information can be used to help reduce nutrient excretion by animals through more accurate ration formulation and better feed efficiency.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-ANS-03596

Title: Animal Manure and Waste Utilization, Treatment and Nuisance Avoidance for a Sustainable Agriculture

Critical Needs: 26

National Objectives: 4.2

Key Themes: Land Use, Nutrient Management, Agricultural Waste Management

Summary:

The effect of adding flocculants to dairy flushwaters to precipitate manure fertilizer nutrients, especially P[potassium?], will be evaluated along with management systems to assist farmers to concentrate manure nutrients for export off-farm. Several anaerobic digestion systems will be tested for reducing odor. Reducing N[nitrogen?] excretion by improving rumen utilization of dietary carbohydrate and protein will also be investigated.

Progress:

Previous research has contributed to improved estimates of manure nutrient excretions and provided information to guide producers to reduce dietary nutrient inputs and, consequently, excretions as the first step in whole-farm nutrient management. Research under primary leadership of K. R. Woodard and L. E. Sollenberger, Agronomy Dept. U.F. Florida, shows that year-round forage systems can prevent loss of N to groundwater from waste effluent sprayfields. The purpose was to measure forage N removal and nitrate-N leaching out of the rooting zone for two, year-round forage systems during four, 12-month cycles. Soil at the site is an excessively drained, Kershaw fine sand. The average annual loading rates of effluent N were 450, 610, and 810 lb/acre per cycle. During the first three cycles, average N removed by the bermudagrass-rye cropping system (BR) was 415, 472, and 522 lb/acre per cycle for the low, medium, and high loading rates, respectively. For the corn-forage sorghum-rye system (CSR), N removals were 286, 292, and 338 lb/acre per cycle, respectively. The higher N removals of the BR system were attributed to higher N concentration in bermudagrass (range: 1.9 to 2.2 %) compared to that in corn and forage sorghum (range: 1.1 to 1.3 %) of the CSR system. Nitrogen removal by the rye components of both systems did not differ. Over the four-cycle period, N removal for rye ranged from 48 to 78 lb/acre per cycle. Dry matter yield declined in the fourth cycle for bermudagrass but N removal continued to be higher in BR than CSR. The BR system was much more effective at preventing nitrate-N leaching. For CSR, nitrate-N concentration in soil water (five feet below surface) increased steeply during the period between the harvest of one forage and canopy closure of the next, peaking within a few days of canopy closure and subsequently declining. We conclude

that the BR system was better than CSR at preventing nitrate-N loss to groundwater in dairy effluent sprayfields.

Impacts:

Many Florida dairies will use no-till, sod-based forage programs with Tifton 85 bermudagrass as the primary forage in a two- or three-crop system to scavenge and utilize high levels of manure N efficiently. This system will be used especially in deep sand soils to protect against leaching of nitrate N to groundwater.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-ANS-03651

Title: Breeding to Optimize Maternal Performance and Reproduction of Beef Cows in Southern Region

Critical Needs: 2, 9, 14,

National Objectives: 1.2

Key Themes: Agricultural Competitiveness, Adding Value to New and Old Agricultural Products, Agricultural Profitability, Animal Production Efficiency

Summary:

The reproductive and maternal capacity of brood cows is the most important economic component of beef cattle production in the Southeast. Breed crosses that are productive in other parts of the U.S. often are unadapted to Florida. The purpose of this study is to evaluate the maternal and reproductive performance of new breeds and crosses of beef breeds that may be more productive than existing crossbred females.

Progress:

In the U.S., numerous temperate adapted beef breeds are available but breeds adapted to warm climates are mostly limited to the Brahman. Limited information is available on two alternative breeds that are new to the U.S: the tropically adapted Senepol (*Bos taurus* breed from St. Croix, U.S.V.I.) and the tropically adapted Tuli (Sanga breed from Zimbabwe). A study is being conducted at the Subtropical Agricultural Research Station to evaluate reproductive and maternal performance of Brahman-, Senepol-, and Tuli-sired F1 cows. In 1992 and 1993, Angus cows were bred by artificial insemination to sires of these three breeds. Heifers that were produced from these matings were exposed to fertile Angus bulls from weaning until they were 2-yr-olds or palpated pregnant. As 2-yr-olds and thereafter, crossbred cows were exposed to Charolais bulls in multiple sire breeding herds during 90-d spring breeding seasons. Senepol crossbreds had calves that were heavier at birth ($P < 0.01$) than calves born to Brahman crossbreds or Tuli crossbreds as 2-yr-olds and that were heavier ($P < 0.05$) than calves born to Brahman crossbreds as 3-yr-old cows and older. Brahman crossbreds had a lower ($P < 0.05$) percentage of births that required assistance as 3-yr-olds and older than Tuli crossbreds. Brahman crossbreds (3-yr-old and older) weaned heavier ($P < 0.05$) and taller ($P < 0.01$) calves than either Senepol or Tuli crossbreds. Senepol crossbreds weaned heavier ($P < 0.05$) calves than Tuli crossbreds. Brahman crossbred cows were heavier and taller at fall palpation than the other breed groups as 7-yr-olds ($P < 0.1$). Senepol crossbreds were heavier and taller than Tuli crossbreds as 7-yr-olds ($P < 0.1$). Senepol crossbreds had lower ($P < 0.05$) calf crop born and weaned than both Brahman and Tuli crossbreds. Calf crop born and weaned for Tuli crossbreds did not differ ($P > 0.1$) from Brahman crossbreds. Calf survival rate for calves of Brahman crossbreds was higher ($P < 0.1$) than for Tuli

crossbreds. Breed differences for calf crop born and calf crop weaned were dependent upon the year, as evidenced by the low means for Senepol crossbreds in 1998 through 2001 and the low means for Brahman crossbreds in 1999. Tuli crossbreds had lower ($P < 0.1$) percentage calf survival than the other breed groups in 1996, and Senepol crossbred cows had the lowest percentage calf survival ($P < 0.05$) in 1998. Tuli crossbreds had the highest percentage of cows with perfect calving and weaning records. The percentage of Brahman crossbreds with perfect weaning records was only slightly lower than Tuli crossbreds. The reproductive performance of Tuli crossbreds was as high as or nearly as high as that for Brahman x Angus cows for many traits. The smaller mature size of Tuli crossbreds relative to the other breed groups may be advantageous for this production environment. However, the weaning weights for calves of Tuli crossbreds were lower than those for calves from both Brahman and Senepol crossbreds, but probably still at an acceptable level. The lower reproductive performance of Senepol crossbreds and the higher birth weight of their calves were undesirable.

Impacts:

The Tuli breed may be an option for beef cow-calf producers in subtropical areas of the United States, especially as calf crop born and weaned of Tuli-Angus F1 cows appear to be similar to that of the highly productive Brahman-Angus F1 cows.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-ANS-03659

Title: Metabolic Relationships in Supply of Nutrients for Lactating Cows

Critical Needs: 12

National Objectives: 1.2

Key Themes: Animal Health, Animal Production Efficiency,

Summary:

Experiments will evaluate the effect on animal performance and nitrogen utilization of substituting neutral detergent-soluble fiber for starch in the rations of lactating dairy cows. Future experiments will include evaluation of different sources of carbohydrate supplementation on efficiency of nitrogen utilization, animal performance, and variation in fermentation products available for the animal's use.

Progress:

In the interest of better characterizing metabolizable nutrient supply to animals, the following research efforts were accomplished: development and delivery of a nutritionally relevant analysis system for partitioning of non-neutral detergent fiber carbohydrates (NFC), demonstration through in vitro fermentations and an animal feeding study that the classes of NFC differ in the metabolizable nutrients that they supply and that this can alter lactation performance, demonstration in vitro that sucrose can increase the rate of fiber digestion, demonstration that pH and protein source can alter the yield of microbial protein from sucrose fermentations in vitro, demonstration that cottonseed hulls can alter intake and rate of passage and, accordingly, nutrient flow in dairy cattle. Overall, the research and extension program devoted to this project offered information for nutritionists on the content of NFC in feedstuffs and a start on a system to determine appropriate proportions of the various NFC fractions to feed to maintain animal performance and health.

Impacts:

The carbohydrate analysis system we developed is currently used by commercial feed

analysis laboratories for use by nutritionists in the field. It is also in use in university research laboratories. Used in combination with the information developed on animal use of the different carbohydrates, it allows a more objective method for diet formulation to enhance animal performance, health, feed efficiency, and potentially decreased nutrient excretion.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-ANS-03768

Title: Nutritional Systems for Swine to Increase Reproductive Efficiency

Critical Needs: 2, 12, 14

National Objectives: 1.2

Key Themes: Animal Production Efficiency, Agricultural Competitiveness, Agricultural Profitability

Summary:

PIC line C-15 or C-22 gilts or sows will be randomly assigned to experimental treatments from outcome groups based on weight and parity. Data collected will include parity, sow weights at breeding, 110 days of gestation, 1 and 21 days postpartum, and at weaning. Sow feed intake will be recorded during lactation and reported for days 0-21 postpartum and from day 21 postpartum to weaning. Number and weights of piglets at birth (total and live), after cross-fostering, 21 days, and at weaning will be recorded. Days to first estrus following weaning will also be determined.

Progress:

Supplementation of sows with tripicolinate has provided promising increases in litter size. This study was conducted to evaluate multiple levels of Cr (0, 200, 600, and 1,000) at five universities. A total of 439 litters were included in the data set. There was a tendency for an increase in litter size with increasing Cr levels ($P=.14$). The data indicated that Cr supplementation at 200 ppb yielded litter size increases similar to those reported in the literature. Numerical increases in litter size beyond that observed at 200 ppb may suggest merit in continued research to evaluate higher supplementation rates (i.e., 1000 ppb) since these were fed for up to three parities in sows with no detrimental effects. An experiment involving 25 experiment stations was conducted to assess the degree of uniformity of diet mixing among stations and to assess the variability among station laboratories in chemical analysis of mixed diets. The results suggest that the uniformity of diet mixes varies among experiment stations, that some stations miss their targeted levels of nutrients (especially zinc), and that the variability among experiment station labs in analysis of dietary Ca, P, and Zn in mixed diets is quite large. The results imply that variation in animal performance across dietary treatments could, in some instances, be due to mixing error rather than animal variation. Extreme care must be taken in nutrition experiments to minimize mixing errors so as not to draw erroneous conclusions regarding dietary treatment effects.

Impacts:

With Florida being a minor swine producing state, improvements in litter size only have marginal impacts economically for the state. However, for the individual producer 0.5 to 1.0 additional pigs per litter could equate to an additional \$40-80.00 per sow.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-ANS-03818

Title: Improvement of Beef Cattle in Multibreed Populations: Phase III

Critical Needs: 2, 10

National Objectives: 1.2

Key Themes: Agricultural Competitiveness, Agricultural Profitability, Animal Production Efficiency

Summary:

The goals of this project include the following:: prediction of genetic values of purebred and crossbred animals in multibreed populations, estimation of genetic variation and combining ability of animals in multibreed populations, devising of new and more precise genetic-statistical models to predict the genetic values of animals and their combining ability in populations of animals composed of purebred and crossbred animals.

Progress:

Work done during this period included 1) acquisition, collection, and editing of national and international experimental and field beef and dairy multibreed data sets; 2) research on unibreed and multibreed genetic evaluation and estimation of additive and nonadditive genetic effects in dairy and beef multibreed data sets from various countries; 3) efforts towards the development of a long-term research collaboration with Thai researchers for the genetic evaluation of beef and dairy cattle in upgraded multibreed populations; and 4) development of dedicated software for editing multibreed data sets, finding connected sets, and evaluating animals for additive and nonadditive genetic effects in USA, Chilean, and Thai multibreed cattle populations, with emphasis on upgraded multibreed populations composed of more than two base breeds. Collection of reproduction, growth, and carcass data from the Angus-Brahman multibreed herd of the University of Florida continued in 2002. Single-trait multibreed additive predictions from this herd found that 1) sire additive direct genetic predictions for growth traits tended to increase whereas sire maternal genetic predictions tended to decrease from Angus to Brahman; 2) for steers slaughtered at similar backfat thickness endpoint (.4 in), sire additive direct genetic predictions for hot carcass weight, ribeye area, yield grade, and shear force tended to increase, and marbling and tenderness tended to decrease from Angus to Brahman; and 3) sire nonadditive genetic predictions for growth and carcass traits showed no trend from Angus to Brahman. Updated multibreed data sets were obtained in Thailand (Holstein-Brahman-Other Bos taurus and Bos indicus breeds) and Chile (Holstein, Canadian Holstein, New Zealand Holstein, Chilean Holstein, Chilean Friesian, and Holstein x Friesian). Collaboration with Thai researchers resulted in one Ph. D. dissertation, four refereed publications, six mimeographs [monographs??], three international presentations, and major modifications to four pieces of software. Results from a multibreed genetic model showed that nonadditive variability for milk traits was smaller than additive genetic variation, and that sire additive, nonadditive, and total multibreed predicted genetic values were highly correlated under Thai conditions. Collaboration with Chilean researchers resulted in four presentations to international meetings; editing and exploratory analysis of the Chilean Holstein multibreed dataset; single and multiple trait exploratory analysis using multibreed genetic evaluation methodology; and the development of dedicated software for editing, finding connected sets, estimating sire and breed group subclass means, estimating multibreed variances and covariances, and predicting multibreed genetic values. Preliminary results suggest that the variation for milk traits among Holstein sires might be smaller than that among non-Holstein sires under Chilean conditions.

Impacts:

This research had both national and international impact. International collaborations with researchers from Chile, Colombia, and Thailand have continued to produce useful research and development results in beef and dairy cattle. Experimental and field data sets obtained from these countries have contributed with invaluable information to further the development of more flexible genetic evaluation strategies and computational software for use with a variety of multibreed populations.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ANS-03821

Title: Synchronization of Estrus in Cattle of *Bos Indicus* Breeding

Critical Needs: 9, 2

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Profitability, Animal Production Efficiency

Summary:

Cattle that have some *Bos indicus* breeding are less responsive to estrus synchronization products than cattle of *Bos taurus* breeding and therefore have a decreased reproductive efficiency to estrus synchronization programs. This project will evaluate different combinations of estrus synchronization products in cattle of *Bos indicus* breeding to enhance the success rate of AI and eventual development of a timed-AI protocol.

Progress:

Experiment 1. Non-lactating *Bos indicus* x *Bos taurus* cows were used to determine the efficacy of different prostaglandin (PGF) treatments in combination with GnRH and melengestrol acetate (MGA) for timed-AI. On day 0 of the experiment cows received GnRH and MGA (0.5 mg/cow/d) on d 1 to 7. On d 7 cows received either a single injection of PGF (LUTALYSE; n = 297), a single injection of Estrumate (n = 297), or half-doses of PGF (LUTALYSE; 12.5 mg; n = 275) on d 7 and 8. On d 10 cows were timed-AI and received GnRH. Timed-AI pregnancy rates were similar between single-PGF (36%), split-PGF (39%) and Estrumate (41%). The type of PGF 7 d after GnRH did not influence timed-AI pregnancy rates.

Experiment 2. Lactating *Bos taurus* x *Bos indicus* cows (n = 1183) were synchronized with either estradiol benzoate (EB) + progesterone (P) or GnRH at the start of an MGA treatment. On day 0 of the experiment, cows were divided into two groups (A = 635 cows; B = 548 cows). Within each group, half the cows received either GnRH or 2 mg of EB + 100 mg of P (EBP). Group A received MGA (0.5 mg/cow/d) on d 0 to 7 (MGA day 0) while Group B received MGA from d 1 to 7 (No MGA day 0). On d 7 all cows received PGF (Lutalyse). Cows were timed-AI and received GnRH 72 to 80 h after PGF. Pregnancy was determined approximately 60 d after timed-AI with ultrasound. More ($P < 0.05$) GnRH (38.3%) cows became pregnant to timed-AI than EBP cows (28.8%), irrespective of when MGA started. There was no advantage in timed-AI pregnancy rates between starting MGA on d 0 (31.8%) compared to d 1 (35.8%) when GnRH and EBP treatments were combined. However, cows treated with GnRH that did not receive MGA on day 0 had greater timed-AI pregnancy rate (41.1%) compared to GnRH that received MGA on day 0 (35.8%). Timed-AI pregnancy rates were similar for EBP with MGA on d

0 (27.9%) and no MGA d 0 (29.9%). therefore, when MGA is combined with GnRH + PGF, MGA should be started the day after GnRH and when MGA is combined with EBP it does not matter when MGA is started.

Experiment 3. Lactating Angus (n=449) and *Bos taurus* x *Bos indicus* cows (n = 340) were synchronized with estradiol benzoate (EB) + progesterone (P) or GnRH and MGA. On d 0 cows were randomly assigned to receive either GnRH or 2 mg of EB + 100 mg of P (EBP). All cows received MGA (0.5 mg/cow/d) on d 1 to 7. On d 7, all cows received PGF (Lutalyse). Cows were timed-AI and received GnRH 72 to 80 h after PGF. Pregnancy was determined approximately 60 d after timed AI using ultrasound. Data were analyzed separately for Angus and *Bos taurus* x *Bos indicus* cows. Timed-AI pregnancy rates for Angus cows were similar ($P > 0.01$) for GnRH (44.8%) than EBP (39.6). In contrast, more *Bos taurus* x *Bos indicus* cows synchronized with EBP (38.8%) became pregnant to timed-AI than GnRH (32.1%). Response to estrous synchronization systems may be influenced by cattle breed type. Although cow numbers were limited, GnRH + PGF programs appear to work better in *Bos taurus* cows while EBP + PGF work better in *Bos taurus* x *Bos indicus* cows.

Impacts:

This research has several important implications for beef producers. First, producers can expect similar timed-AI pregnancy rates when either a single PGF, split-PGF, or Estrumate are used in the GnRH + PGF protocols in cattle of *Bos taurus* x *Bos indicus* breeding. Second, producers should start MGA the day after GnRH in the GnRH + PGF protocol when synchronizing cattle of *Bos taurus* x *Bos indicus* breeding to achieve optimal timed-AI pregnancy rates. these points will allow producers to make effective and more profitable decisions when selecting synchronization systems for timed-AI in cattle of *Bos taurus* x *Bos indicus* breeding. Furthermore, it confirms that producers can effectively use timed-AI and achieve acceptable pregnancy rates. Since estrus detection is a very labor intensive and expensive, by eliminating it, process can significantly decrease their operating expenses when synchronizing and inseminating beef cows.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ANS-03833

Title: The Poultry Food System: a Farm to Table Model

Critical Needs: 19

National Objectives: 2.2

Key Themes: Food Safety, Foodborne Pathogen Protection, Food Quality, Food Security

Summary:

This project addresses four critical areas that impact today's poultry industry: discoloration in poultry meat and eggs, biologically impaired meat quality, irradiation impact on poultry meat quality, and production and processing factors that affect the safety of poultry products. The purpose of this project is to identify solutions to these four critical areas as they relate to poultry meat and egg quality and safety.

Progress:

(keep caps)The survival of *Salmonella typhimurium* on commercial hicken reast eat treated with High Energy Electron Beam Irradiation and Stored at 4 C for 14 Days: the

bactericidal effects of electron beam irradiation will be evaluated in this study. Fresh chicken breast meat will be purchased from a local poultry processor, inoculated with *S. typhimurium*, packaged in Styrofoam trays and over wrapped with a polyvinyl chloride film and subjected to either 0, 1, 2 or 3 kilogray (kGy) dosages of irradiation. All packages will be transported to the irradiation facility (and returned to the Microbiology Laboratory) in ice chests containing crushed ice. Upon arrival to the Meats Laboratory, the packaged samples will be stored at 4 C and analyzed for Salmonella after 0, 2, 4, 6, 8, 10, 12 and 14-day intervals. Direct plating and enrichment methods will be employed. Three replications of the study will be conducted. This study is a collaborative effort between the University of Florida and USDA Richard B. Russell Research Center Poultry Processing Unit, Athens, GA. The research is being conducted by Keawin Sarjeant, a masters of science student, Department of Animal Sciences, Supervisor, S.K. Williams.

Impacts:

This research will provide valuable information that will contribute to enhancing producer and consumer safety of ready-to-cook poultry meat. The work will also reveal the effects of irradiating ready-to-eat poultry at levels below the 3kGy maximum allowable dosage for poultry.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-ANS-03912

Title: Enhancing Production and Reproductive Performance of Heat-Stressed Dairy Cattle

Critical Needs: 2, 9,

National Objectives: 1.2

Key Themes: Agricultural Competitiveness, Agricultural Profitability, Animal Health, Animal production Efficiency,

Summary:

Heat stress is a major limiting factor in dairy production systems that acts to reduce milk yield and reproductive performance. This project will provide insight into the biological changes induced by heat stress which decrease performance of lactating dairy cows. This information will be used to develop management practices to reduce the negative effects of heat stress. Particular emphasis will be placed on using embryo transfer or other technologies to enhance pregnancy rates during heat stress.

Progress:

Heat shock, which can compromise development of preimplantation bovine embryos, also increases the percentage of blastomeres labeled as TUNEL-positive and increases activity of group II caspases that cleave DEVD substrate (i.e., caspase-2, -3, and -7). It is hypothesized that the TUNEL labeling represents apoptosis. Furthermore, since the increase in TUNEL-positive blastomeres is limited, it is hypothesized that this apoptosis is beneficial to the survival and continued development of the embryo after heat shock. To test these hypotheses, effects of z-DEVD-fmk, an inhibitor of groupII caspases was evaluated. On day 4 after insemination, embryos > 16 cell stage were preincubated in KSOM containing vehicle (0.5-1% DMSO) or 200 micromolar z-DEVD-fmk at 38.5 C for 15 h. Embryos were then either maintained at 38.5 C or exposed to 41 C. In experiment 1, caspase activity was determined using PhiPhiLux-G1D2, a fluoroprobe that incorporates the group II caspase-recognition sequence DEVD. the pixel fluorescence intensity per unit area was determined in 39-59 embryos/treatment. In the absence of z-

DEVD-fmk, heat shock increased caspase activity. In the presence of z-DEVD-fmk, there was no increase in caspase activity (treatment x temperature, $p < 0.01$). In experiment 2, the percentage of TUNEL-positive cells was evaluated in 15-25 embryos/treatment. Heat shock for 9 h increased the proportion of TUNEL positive cells from 4.3% at 38.5 C to 26.0 % at 41 C. However, z-DEVD-fmk blocked this effect of heat shock (2.2% at 38.5 C vs 3.0 at 41 C) (treatment x temperature, $p < 0.01$). In experiment 3, heat shock for 6-9 h reduced the percentage of embryos developing to the blastocyst stage from 19.6% at 38.5 C to 10.0% at 41 C. the reduction in development caused by heat shock was magnified in the presence of z-DEVD-fmk (19.6% at 38.5 C vs 3.0% at 41 C) (treatment; treatment x temperature, $p < 0.05$). In conclusion, group II caspases mediate heat-induced apoptosis in bovine embryos. Moreover, inhibition of these caspases has a detrimental effect on embryonic resistance to heat shock.

Impacts:

These results illustrate the importance of apoptosis as a survival mechanism for preimplantation embryos exposed to heat shock.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-APO-03364

Title: Biology and Management of Arthropod Pests of Vegetables

Critical Needs: 17, 25

National Objectives: 1.2, 4.2

Key Themes: Innovative Farming Techniques, Organic Agriculture, Integrated Pest Management, Pesticide Application,

Summary:

Insects routinely present problems in the production of cabbage and other cole crops. Insecticide resistance and cancellation of insecticide registrations have limited the ability to manage these insects with insecticides alone. This project examines the integration of traditional and new insecticides with the use of parasites and predators, cultural control, host plant resistance, and action thresholds to reduce the overall use of and dependence upon insecticides.

Progress:

Augmentative releases of the parasite *Diadegma insulare* could be an important component of a management program for the diamondback moth, an important pest of cabbage and related crops. However, unlike several other species of diamondback moth parasites, *D. insulare* is not readily available from commercial insectaries. One apparent reason for this is that it has been exceedingly hard to keep in continuous culture. One obvious and characteristic symptom encountered in problem cultures of *D. insulare* is the increase in the number of males relative to the number of females over several generations, which leads to the production of insufficient numbers of females to maintain a level of culture that is useful. We have developed a method of culturing *D. insulare* that maintains a healthy sex ratio and allows for the production of several thousand individuals per week. This level of production is sufficient to provide material for the studies needed to facilitate the use of this important parasite in the management of the diamondback moth.

Impacts:

Providing methods to increase the production of *Diadegma insulare* will allow the large-scale studies necessary to facilitate the use of this important parasite in the management

of the diamondback moth. The increased use of parasites in the management of the diamondback moth will lead to less dependency on insecticides.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-APO-03413

Title: Development of Improved Carrot Varieties for Florida

Critical Needs: 4, 5, 17

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Small Farm Viability, Plant Production Efficiency

Summary:

Development of high-quality carrot cultivars requires the incorporation of resistance to numerous disease that affect carrot production. the mission of this project is to study important diseases of carrot and the pathogens that incite them and to search for sources of resistance among cultured carrots or the Plant Introduction Service *Daucus* collection. Development of methodology to screen germ plasm and to incorporate resistance genes into carrot are important aspects of this project.

Progress:

Florida carrot improvement research was terminated in 1999. Carrot production in central and south Florida was discontinued in 1999 because of the restoration of Lake Apopka and the purchase of all carot farming areas and major packing facilities by the State of Florida. Since then there has been small-scale and sporadic Florida carrot production near the Georgia-Florida border, but this production is closely tied to the Georgia vegetable industry and Georgia agriculture where mineral soils and growing conditions are entirely different than those that predominated in Florida on organic soils. Thus, different cultivars are being used. However, the basic requirements for carrot cultivars such as nutritional quality, flavor, yield, and disease resistance remain important. Inbred parents and breeding lines under development by USDA and the California and Florida Agricultural Experiment Stations will probably not be used in Florida, but they will continue to provide valuable parental material for the development of improved carrot cultivars for other US carrot production areas. the advances in carrot quality, disease resistance, and genetics of disease resistance developed cooperatively by the Florida and California Agricultural Experiment Stations and the USDA Carrot and Onion Improvement Program under this project will now be applied to the development of cultivars for areas other than Florida.

Impacts:

Significant carrot production in Florida no longer exists. Fortunately, recent trends by the USDA and State Agricultural Experiment Station are to release inbred parents and carrot breeding lines to commercial breeders who will use them to develop diverse regionally-adapted hybrid cultivars. the research accomplishments of this project will continue to benefit the US and worldwide carrot industry and continue to provide improved carrots to the consumer.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-APO-03523

Title: Management of Diseases of Tropical Foliage Plants

Critical Needs: 7, 17

National Objectives: 1.2

Key Themes: Agricultural Profitability, Ornamental/Green Agriculture, Plant Health, Plant Production Efficiency, Tropical Agriculture

Summary:

Significant yield losses caused by plant pathogens are common in the ornamental foliage and bedding plant industries. The purpose of this project is first to identify and describe the diseases limiting production. Second, to develop chemical, nonchemical and integrated methods for control of foliage and bedding plant diseases. Subsequently, to disseminate this information on diseases and their management to extension personal and to growers.

Progress:

Since the inception of this project, research has been conducted for the ornamental plant industry on biological control, plant resistance, pesticide efficacy tests, international regulatory issues regarding pathogen movement, and taxonomy of fungal and bacterial pathogens. The following are specific accomplishments under this project: 1) Discovered and described a new *Xanthomonas* disease on ornamental Asparagus ferns using classical, molecular, and biochemical techniques. 2) Compared 588 strains of three closely related species of *Xanthomonas* and *Stenotrophomonas* (*Xanthomonas maltophilia*) using cellular fatty acid analyses. 3) Discovered and described a distinct subpopulation of *Ralstonia* (*Pseudomonas*) *solanacearum* (Race 1, Biovar 1); which is entering Florida from Costa Rica in infected ornamental propagative stock. 4) Using internal growth rates in plants, metabolic fingerprinting, pulse-field RFLP, and fatty acid composition described the *Xanthomonas* pathovar *hederae*, which infects English ivy and closely related species. 5) Conducted research on a morphological and genomic comparison of isolates of *Cylindrocladium* from spathiphyllum and leatherleaf fern. 6) Studied the ecology of *Colletotrichium acutatum*, the causal agent of anthracnose on leatherleaf fern. 7) Conducted research on the use of biological control of Rhizoctonia root rot of flowering and bedding plants using species of Bacillus. 8) Examined twenty of the most popular cultivars of Dieffenbachia for resistance to *Xanthomonas campestris* pv. *dieffenbachiae*, *Erwinia chrysanthemi*, *Fusarium solani*, and *Myrothecium roridum*. 9) Looked for resistance in potted anthurium cultivars to anthurium blight caused by *Xanthomonas campestris* pv. *dieffenbachiae*. 9) Examined cultivars of Spathiphyllum plants for resistance to *Cylindrocladium* root rot. 10) Worked with growers to determine if recycled water was promoting Erwinia soft-rot outbreaks in nurseries.

Impacts:

The ornamental industry in Florida has a wholesale value of over \$1.7 billion. Research conducted in this project on pathogen epidemiology and movements, taxonomic differences within pathogens, and host resistance makes it possible to give sound recommendations on disease control. Thus, this research directly affects productivity of the State's horticultural industry.

Source of Federal Funds: Hatch

Scope: State Specific

Title: Introduction and Evaluation of Ornamental Plants

Critical Needs: 2, 5, 7

National Objectives: 1.1

Key Themes: Ornamental/Green Agriculture, Managing Change in Agriculture, Agricultural Profitability

Summary:

The ornamental industry is continually in need of new plant materials to expand their markets. This project examines growth and performance of new plants that may have commercial ornamental potential.

Progress:

Accessions of *Epipremnum* and *Monstera* are being evaluated for desirable horticultural characteristics and fertility. We also obtained several new *Barleria* cultivars to trial grow and evaluate for breeding potential.

Impacts:

Evaluation of new germplasm is important to the continued refinement of an industry. Development of new cultivars indicates the progressive nature of an industry as well as providing better products for the consumer

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-BGL-03364

Title: Biology and Management of Arthropod Pests of Vegetables

Critical Needs: 17, 25

National Objectives: 1.2, 1.4, 4.2,

Key Themes: Plant Health, Plant Germplasm, Biological Control, Integrated Pest Management, Pesticide application,

Summary:

Arthropod pests cause significant losses to South Florida vegetable crops. This project will determine appropriate control strategies for these pests, including cultural, chemical, biological controls and host plant resistance.

Progress:

Research on resistance in cos lettuce to banded cucumber beetles and serpentine leafminers indicates that the mechanism of resistance is associated with lettuce plant latex. Beetles feeding on resistant varieties have significantly shorter lives and produce no viable eggs. Research results indicate that some susceptible lines may actually contain substances that act as feeding stimulants to cucumber beetles. Resistant varieties show localized inducible resistance with results lasting at least 48 h after initiation by feeding damage. Pesticide trials in sweet corn showed that pre-emergence treatments were ineffective for controlling lesser cornstalk borer in the wake of our drier, warmer winter and spring seasons. Use of insecticides in commercial scale field trials was reduced from an average of 13 to 1 per crop for control of fall armyworms when growers grew resistant transgenic compared to susceptible standard sweet corns. Natural enemy densities were slightly higher in transgenic than in standard sweet corn fields. Several years of traditional breeding work have led to the release of a sweet corn (Shrunken Zapalotico Chico) with ears highly resistant to feeding by armyworms and earworms. *Euxesta stigmatias*, the 'corn silk fly', presents a problem to sweet corn growers throughout Florida, because available sweet corn varieties that are resistant to the worm complex still

need to be protected against this fly pest. Research is currently directed toward identifying partial and complete resistance to this fly pest in available sweet and other corn types from throughout the Americas.

Impacts:

Insect resistance in cos lettuce will save growers money and reduce handler and environmental impact. Corn research findings and transgenic sweet corn resistant to worm pests will lead to reduced pesticide use. Our newly released sweet corn offers a shrunken 2?? type variety with a high level of resistance to worm pests without reliance on proteins foreign to the natural corn gene pool.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-BGL03496

Title: Polyphasic Analysis of Xanthomonads Associated with Horticultural Crop Plants in Florida

Critical Needs: 25, 28,

National Objectives: 4.2

Key Themes:

Summary:

The ecology and economic impact of *Xanthomonads* species on tomato, pepper and lettuce will be examined. The goal is to reduce losses for producers from this group of pathogens.

Progress:

The faculty member has prepared a new project FLA-BGL-03937. No further progress to report on this project.

Impacts:

Bacterial leafspot of lettuce caused by *Xanthomonas campestris pv. vesicatoria* continues to be a major problem in the Everglades Agricultural Area of southern Florida. Field observations that Romaine-type lettuce is more susceptible to this disease were confirmed by greenhouse experiments. It was shown that wide variation in susceptibility exists, with some butterhead cultivars showing less than one-half the amount of leafspot, with potential yield loss mitigation of over 50 %.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-BGL-03504

Title: Biological Control and Management of Soilborne Plant Pathogens for Sustainable Crop Production

Critical Needs: 17, 24, 25

National Objectives: 1.2, 4.2

Key Themes: Managing Change in Agriculture, Plant Health, Biological Control, Soil Quality,

Summary:

This project investigates the loss of methyl bromide for managing soil-borne diseases in tomatoes. It also will investigate alternative biological and cultural methods for managing soil-borne diseases.

Progress:

Trichoderma harzianum and *Paenibacillus macerans* alone or in combination were able to effectively colonize the roots of BHN422. *Trichoderma harzianum* and *P.mar* (just italics, no other change) alone or in combination significantly affected the growth of tomato transplants in the greenhouse and after outplanting into the fields thirty days later. Both in the greenhouse and the field, petiole numbers were increased. *Trichoderma harzianum* and *P.marcerams* significantly reduced FCRR severity compared to the untreated control in the nonfumigated treatments. No differences were observed between the biologicals and the untreated control in the methyl bromide treated plots.

Impacts:

These commercial biological agents appeared to be successful for suppressing this disease and demonstrate the potential to establish the biological agents prior to exposure to the pathogen in the field.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-BGL-03711

Title: Turfgrass Fertility Management and Environmental Impact

Critical Needs: 24, 27, 29

National Objectives: 4.1

Key Themes: Soil Quality, Water Quality, Riparain Management, Land Use, Natural Resources Management

Summary:

Nitrogen and phosphorus fertilization are essential for production of attractive, healthy turfgrasses in south Florida. However, the fertilization must be conducted in such a manner as to minimize nitrogen and phosphorus losses in runoff waters. This project is designed to identify fertilization techniques that minimize nitrogen and phosphorus losses in runoff waters from golf and home lawn turfgrass and to identify fertilization and other practices that promote stable, well-covered, and attractive football fields.

Progress:

Sodium can be detrimental to maintenance of soil structure. However, sand soils have no structure and are largely unaffected by Na. Gypsum is widely used in Na-affected soils to reduce the deliterious effects of Na. Frequently, this costly technology is specified for turfgrass grown in native sand soils or in sand-based greens in Florida. It may be unnecessary in Florida because it addresses conditions that do not occur in sand soils. Nevertheless, turf managers in Florida often express concern about the levels of Na observed in soil tests, even though the soil is neither sodic or saline. The concern

frequently involves worries about the effect of Na on turfgrass K nutrition. An investigation of the role of Na and gypsum on bermudagrass and overseeded grass appearance and growth, and on soil chemical and physical properties, has been undertaken at the Ft. Lauderdale Research and Education Center. Tifway bermudagrass on native sand soil (Hallandale fine sand, a siliceous, hyperthermic lithic psammaquent) and Tifdwarf bermudagrass overseeded with *Poa Trivialis* during the winter on a USGA sand-based green, have been fertilized since February, 2001, for the green, and since August, 2001, for the native soil, with N at 10 g m⁻² month⁻¹ from ammonium nitrate, and with various combinations of K and Na ranging from 0 up to 5 g m⁻² month⁻¹ of K, and up to the same molar equivalent of Na, applied as KCl or NaCl, for the purpose of assessing the effect of Na on turfgrass performance. Plots have been visually rated monthly. Clippings and soil samples have been collected quarterly and analyzed for K and Na, among other constituents. In a separate study, gypsum has been applied monthly since December, 2001, at 25 and 50 g m⁻² to plots on an athletic field at the University of Miami which is irrigated with water ranging in salinity from approximately 2 to 3 ds/m, and containing appreciable (250 mg L⁻¹) Na, for the purpose of investigating the effects of gypsum on turfgrass performance, nutrient content, and soil chemical and physical properties. To date, few treatment effects have been observed. A K deficiency appears to be developing in the Tifway plots that have not received K for one year, and a growth response to K fertilization is observable on the the Tifdwarf/winter overseeded green, with plots receiving no K for over 18 months clearly showing K deficiency and a visual response to K fertilization. For the most part, however, Na fertilization has had little effect on increasing or decreasing the tissue K. Potassium fertilization increased tissue K over that of the unfertilized control, and Na in clippings was greatly decreased by any rate of K fertilization. Gypsum fertilization has not affected turfgrass growth, color, or soil physical properties in the study at the University of Miami (UM). In conclusion, to date sodium has not had an adverse effect on the grasses when K fertilizer is applied, and gypsum at the UM site has not affected bermudagrass growth or soil physical properties, even though appreciable Na is supplied in the irrigation water.

Impacts:

Concerns about sodium in non-sodic sand-based Florida athletic fields and golf courses may be unfounded, and gypsum use on these soils may be unnecessary.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-BGL-03826

Title: Genetic Manipulation of Sweet Corn Quality and Stress Resistance

Critical Needs: 1, 2, 5,, 14, 17

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness, Agricultural Profitability, Plant Production Efficiency, Plant Health , Plant Germplasm

Summary:

Sweet corn is one of the largest vegetable crops in the U.S. It is affected by a number of diseases and pests that reduce production and food quality. The breeding and development of germplasm, populations, inbreds and hybrids that have improved disease and pest resistance. the NE-124 Regional Hatch project is a nationally coordinated

research program that involves both private and public sector researchers. The central purpose is to address an array of diseases, pests and quality issues affecting sweet corn production nationwide as well as internationally.

Progress:

OBJECTIVES: A. Genetics and Plant Breeding: To pursue germplasm acquisition, enhancement, distribution, and identification of new genes or novel allelic combinations useful in sweet corn improvement. B. Crop and Pest Management: To reduce environmental impacts of sweet corn production while maintaining or improving product quality. APPROACH: Research efforts focus primarily on the development of host plant resistance in maize to the corn silk fly and the fall armyworm. The maize diseases of concern include common rust, southern rust, northern corn leaf blight and southern corn leaf blight. Conventional plant breeding methods include recurrent mass selection, pedigree breeding and backcross breeding are used to accomplish the objectives.

SUMMARY (move paragraph up) Sweet corn is one of the largest vegetable crops in the U.S. It is affected by a number of diseases and pests that reduce production and food quality. The breeding and development of germplasm, populations, inbreds and hybrids that have improved disease and pest resistance. the NE-124 Regional Hatch project is a nationally coordinated research program that involves both private and public sector researchers. The central purpose is to address an array of diseases, pests and quality issues affecting sweet corn production nationwide as well as internationally.

PROGRESS: (move paragraph up) In this research year the IFAS sweet corn breeding program submitted for release two composite maize population. Three sweet corn populations were approved for release including NE-EDR sh2, NE-EDR su1 and NE-EDR bt1.

Impacts:

Disease and insect resistance will ultimately help reduce pesticide input into the environment.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-BGL-03925

Title: Biological Control of Soilborne Plant Pathogens for Sustainable Agriculture

Critical Needs: 24, 25

National Objectives: 4.2

Key Themes: Biological Control, Soil Quality

Summary:

One of the most serious soilborne diseases limiting tomato production in southern Florida is Fusarium Crown and Root Rot (FCRR). FCRR has reduced commercial yields up to 15 percent. Several disease control strategies including methyl bromide have met with limited success in managing FCRR in the field. The purpose of this project is to evaluate commercial bacterial and fungal microorganisms for promoting plant growth and suppressing FCRR under fumigated and non-fumigated field conditions.

Progress:

This research investigated the influence of *Trichoderma harzianum* and *Paenibacillus macerans* on tomato transplant growth and reduction in Fusarium Crown and Root Rot development under non-fumigated and methyl bromide fumigated field conditions. *Trichoderma harzianum* and *P. macerans* alone or in combination were able to

effectively colonize the roots of the tomato cultivar BHN 422. The number of colony forming units per gram of fresh root tissue was about 500000 for *T. harzianum* alone, 1000000 *P. macerans* alone and in combination, 14000 propagules of *T. harzianum* and 6000000 propagules of *P. macerans*. *Trichoderma harzianum* and *P. macerans* alone or in combination significantly affected the growth of tomato transplants in the greenhouse and 30 days after transplanting into fields with a previous history of Fusarium Crown and Root Rot. In the greenhouse, petiole numbers were increased between 6 percent and 6 to 9 percent, heights 5.5 to 26 percent and 8 to 18.8 percent, stem caliper 16 to 26 percent and 10 to 15 percent, leaf area 6 to 49 percent and 7 to 22 percent, petiole fresh weight 11 to 33 percent and 25 to 38 percent in comparison to the control before being transplanted to Field Sites A and B, respectively. Root fresh weight was increased by 50 percent in comparison to the control for Site B. In the field, petiole numbers were increased between 6 to 9 percent and 3 to 5 percent, heights 2 to 6 percent and 2 to 8 percent at Sites A and B, respectively. Stem caliper was increased by 1 to 7 percent in comparison to the control only at Site B. *Trichoderma harzianum* and *P. macerans* significantly reduced FCRR severity. *Trichoderma harzianum* reduced the severity of FCRR by 12.8 percent and *P. macerans* 9.2 percent in comparison to the non-treated control in the non-fumigated treatments. Although no significant differences were observed between the biologicals and the non-treated control in the methyl bromide treated plots at Sites A and B, *T. harzianum* alone and in combination with *P. macerans* reduced Fusarium Crown and Root Rot between 7.2 to 14.5 percent at site A and between 3.8 to 5.2 at Site B. *Paenibacillus macerans* alone significantly affected the total number of tomato fruits produced only under non-fumigated conditions at Field Site B. there were 38 percent more fruits harvested in comparison to the non-treated control. This treatment was not significantly different from *T. harzianum* alone or the biocontrol combination, and these treatments had 20 to 22 percent more fruit harvested. Although the total fruit weight was non-significant in comparison to the non-treated control, these biocontrol treatments increased total fruit weight between 17 to 42 percent. these results help to support the selected use of microorganisms used for biocontrol to reduce Fusarium Crown Root Rot. However, these results demonstrate the difficulty in obtaining consistent differences among these microorganisms for biological control under field conditions. Further research is needed to investigate better monitoring techniques of formulated biocontrol agents in the field and application strategies.

Impacts:

These biological control microorganisms have the potential for promoting plant growth and yield while suppressing Fusarium Crown and Root Rot

Source of Federal Funds: Hatch

Scope: State Specific

FLA-BRA-03364

Title: Biology and Management of Arthropod Pests of Vegetables

Critical Needs: 17, 25

National Objectives: 1.2, 4.2

Key Themes: Biological Control

Summary:

Vegetables in Florida are attacked by numerous insect pests inflicting direct damage through feeding on leaves, stems, flowers and fruit and inflicting indirect damage through

transmission of plant diseases. The purpose of the project is to develop management systems that are economical, practical and effective. To accomplish this the biology and population dynamics of pests are studied, methods for estimating and monitoring pest and beneficial insects are developed, appropriate management tactics are developed, and management systems are evaluated.

Progress:

The following areas were emphasized: 1) the relationship between the density of silverleaf whitefly nymphs and symptoms of irregular ripening of tomato were positive and linear. 2) Life table studies of the silverleaf whitefly on tomato showed that mortality due to natural enemies ranged from 7-46 percent. 3) Silverleaf whitefly nymphs were found most numerous on the 7-8th leaf from the top of tomato stems. Using this sampling site, a density of 0.5 nymphs/10 terminal leaflets was found to be an action threshold for applying insect growth regulators to control the whitefly and avoid irregular ripening. 4) Accessions of *Lycopersicon hirsutum* and *L. pennellii* demonstrated antibiosis and antixenosis toward the silverleaf whitefly. Compounds found in trichome exudates were repellent and induced mortality by residual and fumigant exposure. 5) UV-reflective plastic soil mulches reduced the number of silverleaf whitefly adults alighting on tomato plants and delayed the incidence of plants with whitefly-vectored virus. 6) Liquid and tag formulations of sex attractant pheromone provided mating disruption of the tomato pinworm for 7-8 weeks. 7) The application of selected plant growth promoting rhizobacteria to growth media of tomato transplants resulted in delayed incidence of whitefly-vectored virus, when the plants were grown in the field. 8) Captures of silverleaf whitefly adults on yellow sticky traps placed horizontally in staked tomatoes at or two feet above canopy level were significantly related to the increase in numbers of adults sampled on foliage over 24 hrs; however, coefficients of variation were low, ranging from 0.2 to 0.4. 9) A resistance-inducing protein applied weekly to commercially grown tomatoes in two field trials resulted in increases in yield of about 17 percent over non-treated plants. 10) The incidence of tomato plants with symptoms of silverleaf whitefly-vectored virus in the field was reduced by 25-35 percent when the plants were encircled with squash relative to when the plants were not encircled with squash. 11) A laboratory method using cut cotton petioles in varying concentrations of imidacloprid solutions was developed for estimating the susceptibility of silverleaf whitefly adults to the systemic insecticide. In two years of monitoring, the resistance ratios of populations of whitefly adults from 4 of 11 sites relative to a susceptible laboratory colony ranged from about 8 to 15. 12) A laboratory bioassay was developed and used to screen about 40 products or combinations of products for repellency to silverleaf whitefly adults. Paraffinic oil resulted in fewer plants infected with whitefly-vectored virus in greenhouse cage studies. 13) No resistance of pepper weevil adults to oxamyl was detected among 8 field populations using a laboratory method. 14) Sound trapping for adult mole crickets and a trachinid parasitoid, yellow pan trapping for aphids and whiteflies, and yellow sticky card trapping were conducted during the duration of the project. 15) Insecticides and insecticide combinations were evaluated in field trails for control of the silverleaf whitefly, armyworms, the pepper weevil and the pickleworm.

Impacts:

Using mating disruption for managing the tomato pinworm and UV-reflective soil mulches for whiteflies and the viruses they transmit will reduce the need for conventional pesticides. Using an action threshold will maximize the effectiveness of insect growth regulators for whitefly control. Monitoring insecticide resistance in insects will help ensure the availability of key insecticides for insect management on vegetables.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-BRA-03492

Title: Microirrigation of Horticultural Crops in Humid Regions

Critical Needs: 7, 22, 27, 28

National Objectives: 1.2, 4.1, 4.2

Key Themes: Precision Agriculture, Water Quality

Summary:

the need to conserve water resources has become an important issue in recent years. The use of microirrigation systems has been shown to reduce water applications by as much as 50 percent compared to other irrigation systems. The purpose of this project is to develop new management practices which can make microirrigation more functional and profitable for use on horticultural crops.

Progress:

a) The yield response of 'Camarosa' strawberry to three biostimulant products was evaluated during the fall-winter-spring (Oct. 1999-Mar. 2000) seasons. Production system was the full-bed polyethylene mulch with micro- (trickle-) irrigation. Treatments were arranged in a randomized complete block, replicated four times. Biostimulant products were 'Atonik' (*mononitrophenolate*) (Asahi Chemical Co., Japan) and Amino-Quelant-K (AQ-K) (L-alpha-amino acids) (Bioiberica S.A., Spain). The 'Atonik' was applied as a pre-transplant dip, then as a foliar spray applied weekly or bi-weekly intervals throughout the 160-day-long season. The 'TSR' was applied via the irrigation tube in the root zone at transplanting, then five more times at 14-day intervals. The 'AQ-K' product was applied via the irrigation tube at 15 and 5 days before the first harvest, followed by foliar application at 5 days, 15 days and 25 days after the first harvest. In the control plots the plants were sprayed with water. Fruits were harvested weekly, from 22 Nov. 1999 to 29 Mar. 2000. Fruit yields were similar with water and biostimulant treatments. b) A study was conducted to determine the effectiveness of using containerized transplants (as opposed to conventionally-used bare-rooted transplants) for annual hill strawberry production in central Florida. the use of bare-rooted transplants normally requires substantial irrigation water to establish the transplants in the field (30-50% of the total seasonal needs for irrigation). This study investigated the effect of transplant size (four sizes classes) and type (bare-rooted and containerized) and establishment overhead irrigation amounts (0, 37 cm, and 118 cm (conventional)) on transplant survivability and early and total seasonal fruit yields. The results showed that containerized transplants survived regardless of irrigation or transplant size treatments, while bare-rooted transplant had high survivability only where overhead irrigation was used. Yield results showed that containerized transplants had a two-fold higher early season yield over bare-rooted transplants. c) Caladium tuber production primarily occurs on subirrigated organic soils in central Florida. Limited work has been conducted as to the optimum water table level to maintain in production fields. Earlier field work showed that although producers attempted to control water table levels in production areas, very little control was accomplished for a number of reasons. Besides this, the level at which to maintain the water table was unknown. In order to determine this level, a study was conducted to investigate the effect of water table level on caladium tuber production. Treatments used were 30-, 45-, and 60-cm water table depths. A field-located drainage

lysimeter system was used to maintain treatment levels. Results showed the highest depth (30 cm) had significantly higher production levels as long as flooding was not allowed to occur. These results indicate the importance of maintaining proper water table levels in the fields for maximum tuber production.

Impacts:

a) Biostimulant applications did not increase strawberry yields. Therefore, under optimum nutritional conditions and irrigation regimes, the application of biostimulant products is not recommended. b) The impact of using containerized transplants could be huge financially if earlier fruit production occurs, but environmentally the water savings could be as much as 6 billion gallons less water being applied to establish transplants compared to current practices. c) The impact of knowing where to maintain water table levels will result in more efficient use of water and improved tuber production. Improvement of the means by which water tables are controlled would further improve the consistency of high levels of production, thus improving the financial state of producers.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-BRA-03524

Title: Identification, Management and Control of Viruses Infecting Ornamental and Related Crops

Critical Needs: 5, 7, 17, 25

National Objectives: 1.2, 4.2

Key Themes: Plant Health, Plant Germplasm, Emerging Infectious Disease, Biological Control,

Summary:

Diseases caused by viruses can be a problem in ornamental and foliage crops. The purpose of this project is to identify viruses causing problems in ornamental and foliage crops and to develop management

Progress:

Research was conducted to identify the causal agent of grassy tuber disease of caladium. We modified previous protocols to extract viroid RNA from caladiums. We used these techniques and found at least one viroid that is associated with grassy tuber disease. The viroid appears to be unique and distantly related to chrysanthemum chlorotic mottle viroid. Molecular and biological characteristics support its possible identity as a new viroid belonging to the Avsunviroidae family, genus Avsunviroid. Further molecular characterization is in progress to confirm these data.

Impacts:

The results of this research should enable us to selectively detect the causal agent of grassy tuber disease, accurately diagnosis grassy tuber disease, make effective management recommendations for the control of grassy tuber, and work with the tissue culture industry to produce caladiums free of grassy tuber disease.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-BRA-03544

Title: Improved Nutrition and Irrigation of Ornamental Plants

Critical Needs: 4, 7, 14, 24, 27, 29

National Objectives: 1.2, 4.2

Key Themes: Plant Health, Ornamental/Green Agriculture, Integrated Pest Management, Water Quality, Nutrient Management

Summary:

The approximate value of ornamental products in Florida is over \$1.3 billion. Management of fertilizer and water resources is critical for a profitable return on production investments and protection of the environment. This project examines the effectiveness of the latest fertilizer technologies and irrigation practices affecting production of ornamental crops. These studies also determine the effects of new production strategies on water conservation, environmental compatibility, pest management, and plant quality.

Progress:

Irrigation and drainage practices for the majority of caladium (*Caladium x hortulanum* Birdsey) growers in central Florida have developed over the years as rather undefined water management strategies. We completed a two-year study to develop best management practices for irrigating field caladiums. Water table depths of 30-, 45-, or 60-cm were established in field lysimeters to establish a baseline for optimal sub-irrigation programs. The cultivar White Christmas was used in the first year of the study and represents a vigorous fancy leaf caladium variety. There was a 33- (45-cm water table) or 70- (30-cm water table) percent increase in weight of tubers compared to weight of tubers grown with a 60-cm water table. Yields in the second year with Florida Cardinal also increased by 28 or 70 percent for 45-cm or 70-cm treatments compared to the control (60 cm). the production index, an estimate of the value of harvested tubers, increased 24 (yr 1) or 26 (yr 2) percent with a water table depth of 45 cm, and 42 (yr 1) or 34 (yr 2) percent with a 30-cm water compared to the control. Daily evapotranspiration rates were also determined during the entire 8-month growing season so that actual daily water requirements could be estimated. This information will be necessary for the development of new irrigation/drainage designs that optimize water conservation. In addition, permits for new wells require water use rates to define pumping needs. In general, the greatest daily water use was around 0.25 cm with a water table of 30 cm. Two to four times less water was used with a 60-cm water table. 2.) In order to assess the efficiency of mole drains, shallow wells were placed every 9 m diagonally across a caladium field to monitor water movement in and out of the field. Results indicate that reliance upon this traditional method of drainage/irrigation will not be acceptable for optimal water management. 3.) Understanding how fertilization influences the outbreak of thrips populations would provide growers with information to integrate crop production practices into control strategies for thrips management. The main objectives of this research project are to correlate the relationship between foliar nutrient content of nitrogen and phosphorus in Impatiens with thrips populations and incidence/severity of feeding damage and to define fertilization regimes which result in plants that are nonpreferential for thrips feeding while still resulting in timely crop production with optimum flowering and plant quality. Although there were trends for the number of thrips relative to fertilization practices, differences in plant size and flowering compromised the commercial importance of these findings. That is, some differences in thrips populations may have been due to plant size rather than nutritional status. Cooperative tests at Kansas State University also indicated that nutritional status of the plant had a minimal effect on

thrips populations and severity of feeding and plants for all treatments were within acceptable commercial standards for quality.

Impacts:

1) Specific information on irrigation requirements for caladium tuber production can lead to the development of best management practices which optimize yield for this high value crop. 2) Understanding how fertilization influences the outbreak of thrips populations would provide growers with information to integrate crop production practices into control strategies for thrips.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-BRA-03554

Title: Flower Initiation and Development of Floriculture Crops

Critical Needs: 2, 5, 7,

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Profitability, Home Lawn and Gardening, Ornamental/Green Agriculture, Urban Gardening, Plant Germplasm

Summary:

The value of ornamental crops in Florida is over \$1.3 billion. Since most ornamentals are currently being sold in flower, it is critical to know all the factors that cause plants to flower. This project examines the effects of environmental (such as light, temperature, and photoperiod) and biotic (such as growth hormones) factors that can be manipulated to induce plants to flower so that producers will be able to market high-quality plants, in flower, in a reasonable and profitable length of time.

Progress:

1.) *Eustoma grandiflorum* (*lisianthus*) has become a significant new bedding, pot, and cut flower since its introduction into the floriculture trade in 1980. One limitation to its acceptance has been the small window of time for flowering with the current commercial cultivars. *Lisianthus* rosette when seedlings are grown at average temperatures of 25 to 28 C, temperatures that are common in many production areas during much of the growing season. In addition, many cultivars are obligate long day plants, again limiting the season for flowering. We have a breeding program to select for heat tolerant and day neutral *lisianthus*. Cultivars released from this program can be flowered year-round. During the 5 years of this project, 8 pot cultivars were released in the Maurine series and 3 semi-dwarf bedding plant cultivars in the Florida series. Current efforts are being directed at development of cut flowers and double flowering cultivars. 2.) Bacterial blight of Geranium, caused by *Xanthomonas campestris* pv. *Pelargonii*, is a devastating disease for growers of seedling and cutting Geraniums. Soft rot caused by *Erwinia* is a common problem in propagation (mist) greenhouses. These bacterial diseases are difficult to control with chemical bactericides. In addition, chemical pesticides are not considered environmentally friendly and bacteria have typically developed resistance to new pesticides quickly. A novel approach which uses h-(host-range) mutant bacteriophages as an alternative control strategy for these bacterial diseases was proposed. A mixture of 5-h-mutant phages was developed to treat bacterial blight on geranium seedlings. Disease incidence and severity were less for plants treated daily with phages than for those treated

with copper sulfate pentahydrate. Phages specific for *Erwinia* have been isolated and are being processed to select for h-mutants. 3.) Black-eyed Susan, *Rudbeckia hirta L.*, is a wild flower native to much of the U.S., including Florida. It was hypothesized that ecotypes of black-eyed Susan have developed that perform better in specific locations. We compared the performance of 3 ecotypes of black-eyed Susan under three AHS Heat Zones in Florida. Plants from seed of a Texas ecotype were the largest and showiest (the greatest number of flowers and largest flowers) but the shortest-lived compared to the north Florida and central Florida ecotypes. Under more intensely managed garden conditions, the central Florida ecotype may be a highly desirable wildflower due to its vigor and durability under subtropical or tropical summers. 4) In order to correlate the relationship between foliar nutrient content of nitrogen and phosphorus in impatiens with thrips populations and severity of feeding damage, fertilization regimes were tested to produce plants that are nonpreferential for thrips feeding while still resulting in crops with optimum flowering and plant quality. Florida and Kansas results indicate thrips preference was not correlated to tissue levels of N or P, but rather to plant and flower size.

Impacts:

Impact Statement Developing information on the requirements for flowering of new species of plants can lead to development of new crops that are profitable to produce. With specific information on flowering, breeding efforts can then be used to expand the potential use of these new crops.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-BRA-03609

Title: Introduction and Evaluation of Ornamental Plants

Critical Needs: 2, 7, 14

National Objectives: 1.2

Key Themes: Adding New Value to New and Old Agricultural Products, Agricultural Profitability, Home Lawn and Garden, Ornamental/Green Agriculture, Plant Germplasm, Urban Gardening

Summary: New plant materials need to be evaluated for their floricultural use. Genetic diversity needs to be incorporated into existing floricultural crops. This project will collect and evaluate new plants and make preliminary crosses to increase the availability of new floricultural crops. Plant production management systems will be initiated for each new plant cultivar.

Progress:

Florida producers of cut flowers and flowering pot plants require a continuous flow of new cultivars in order to maintain current markets and to expand production/sales. New cultivars may be advanced breeding selections of crops currently under production or newly introduced novel crops that are adaptable to Florida growing conditions, climate, and that are resistant to crop pests. 1) A caladium breeding program emphasizing bright colorful leaves, multiple leaf development, and large, good quality tubers was established in 1976. Hybridizations among commercial caladium cultivars and their subsequent culture and selection on muck and sandy soils have resulted in the release of 11 new cultivars with the first release in 1988. The cultivar Florida Moonlight (a large white

fancy-leaved caladium) was released to the industry in 2002. This cultivar prefers partial to full shade conditions in the landscape and makes an excellent potted plant when tubers are de-eyed for production in 10 to 15 cm pots. Seven advanced breeding lines were increased for potential release within the next three years. F1 seedlings were produced from parents with known fusarium resistance. After preliminary screening, over 50 lines of the 1500 seedlings are being subjected to macro-propagation for further screening due to little or no tuber rot observed in inoculated tubers. 2)A lisianthus selection and breeding program was begun in 1985 with the goal of developing heat-tolerant, basal branching, bedding (dwarf) and pot plant (semi-dwarf) cultivars. Maurine Blue and Florida Blue lisianthus cultivars were released in 1995, and by 2002 there have been nine pot types in the Maurine series and four dwarf bedding types in the Florida series. They have been developed as the first heat-tolerant cultivars whose seedlings can be grown at 28 to 31C without rosetting, making them highly desirable for production in Florida. Two dwarf bedding plant selections are being evaluated for release in the Florida series. They have bicolored flowers, white with a dark purple or pink rim. They should be released in 2003 as the first bi-color, heat-tolerant, bedding plant lisianthus. they are day neutral, allowing production year-round in Florida. Current research is for double flowering pot and bedding plant types, and a new cut flower program was initiated for fall flowering, heat-tolerant tall cultivars of lisianthus. 3)A comprehensive program for evaluating seed propagated bedding plants was initiated in 1984 and expanded in 2000 to include fully replicated cultivar evaluations with and without pest management. Over three hundred cultivars were evaluated that included Impatiens, Tagetes, Pansy, Viola, Petunia, Pelargonium, Ageratum, Begonia, Celosia, Pentas, Dianthus, Eustoma, Nicotiana, Gazania, Antirrhinum, Helianthus and other miscellaneous annual seeded bedding plants. 4) Eleven Trachelium cultivars were evaluated for cut flower production in Florida. New genetics provided significant improvements over older cultivars.

Impacts:

Determining the performance of floricultural crops under Central Florida conditions provides valuable information for crop selection and production of these crops by growers, as well as aiding decisions for use of selected varieties by landscapers and homeowners. Breeding efforts are also enhanced with the potential to develop new varieties with improved performance.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-BRA-03764

Title: Strawberry Cultivar Development

Critical Needs: 5, 6,

National Objectives: 1.2, 4.2

Key Themes: Risk Management, Plant Genomics, Plant Germplasm, Agricultural profitability, Adding Value to New and Old Agricultural Products

Summary:

Susceptibility to twospotted spider mite is one of the most serious problems facing the west central Florida strawberry industry. the purpose of this project is to develop cultivars that are tolerant to twospotted spider mite.

Progress:

A hybrid biological/miticidal control method (hexythiazox and bifenthrin in the early season and Phytoseiulus persimilis in the later season) of two-spotted spider mite management achieved control of mites more slowly than each method used independently, probably because of low mite densities present at the time of predator release. A culture of two-spotted spider mites possessing a 10X factor of resistance to abamectin did not possess such resistance after 6 months in culture without exposure to abamectin. In field experiment, fungicides BAS UBF and cyprodinil (37.5%)/fludioxonil (25%) and thiram did not significantly reduce numbers of Phytoseiulus persimilis predators, milbemectin reduced the predators to a density below an untreated check, but not significantly below densities from abamectin, acequinocyl and bifenazate controlled two-spotted spider mites similarly, and programs of abamectin, milbemectin plus hexythiazox, acequinocyl, hexythiazox plus abamectin plus hexythiazox, abamectin plus fenbutatinoxide, or bifenazate controlled spider mites adequately over a 6-week period.

Impacts:

Two-spotted spider mites and other arthropods limit strawberry production in Florida. Data from these experiments can be useful to select integrated methods of pest management that will result in efficient crop management practices.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-BRA-03832

Title: Microirrigation Technologies for Protection of Natural Resources and Optimum Production

Critical Needs: 2, 22, 24,27, 29, 31

National Objectives: 1.2, 4.2

Key Themes: Adding Value to New and Old Agricultural Products, Precision Agriculture, Natural Resources Management, Nutrient Management, Water Quality

Summary:

Irrigated agriculture is facing increased public pressure and institutional regulation for water quality concerns and conservation of natural resources. This project examines the management improvements (such as nutrient management and water conservation) that are a result of using microirrigation practices

Progress:

a) 'XR3 Camelot' peppers were grown with or without 22 t/ha shredded yard waste and 1x or 1.75 x N and K (where 1x N and K was 134 N and 112 K kg/ha). Early yields of US Fancy and marketable grade fruits were best with 22 t/ha yard waste and 1.75 N and K treatment. Seasonal (4 harvests) yield of US Fancy and marketable grade fruits were best with 22 t/ha yard waste and 1x or 1.75x N and K treatment. Marketable total yields for the season were similar with or without yard waste and with 1x or 1.75x N and K application. b) 'Florida 47' tomato was grown with or without soil-applied 'eN-ZONE' (Azotobacter) and 'C-CAT' (fulvic acid) biostimulants at 1x or 1.3x N and K rates (where 1x N and K was 224 N and 372 K kg/ha). Early yields of US Fancy fruit was 32% higher and marketable fruit was 24% higher with the soil-applied biostimulant and 1x N and K rate than with water control and 1.3x N and K rate. Fruit yields for the season (4 harvest) were similar for all treatments. c) 'X3R Camelot' pepper yields were similar with or without soil-applied 'eN-ZONE' and 'C-CAT' biostimulants. Marketable total yields were

76% higher with 1.3x than with 1x N and K rate. d) A 3-year study was completed determining the effectiveness of using grassed filter strips for nutrient and sediment management of runoff from microirrigated citrus and microirrigated and subirrigated tomato production. Results showed that any water quality improvement afforded by use of grassed filter strips is a primarily a byproduct of the major advantage of their use - temporary on-site retention of runoff water. The degree to which a filter strip would be effective depends greatly on its design, installation and most importantly, management. Effective use of filter strips require attention to adequate vegetation, maintained at a recommended height. In the case of the citrus site, use of effective better management practices (BMPs) such microirrigation and fertigation greatly enhance the runoff retention usefulness of the filter strips since more effective temporary storage can occur when the filter strip is dry before rain . e) With the use of irrigation water with increasing salinity levels (caused by salt water intrusion into irrigation wells) becoming more likely (especially in coastal regions) and the availability of treated wastewater increasing, a study was conducted to determine how commercially available tomato varieties react to saline conditions. The study utilized five salinity treatments (one being municipal treated wastewater) ranging from 200-2100 mg/L TSS and four tomato varieties (Agriset, Florida 47, FL 7885, and Solar Set) for evaluation. The study was conducted simultaneously in a field-located drainage lysimeter installation and in a greenhouse setting, both using simulated microirrigation systems. Results indicate that while all varieties are susceptible to the highest salinity level, FL 7885 was more tolerant of salinity levels above 800 mg/L TSS and that FL 47 showed more sensitivity to increasing salinity.

Impacts:

a) The use of small amounts of shredded yard waste under the microirrigation tubing will increase earliness and fruit size of bell peppers. b) The application of 'eN-ZONE' and 'C-CAT' biostimulants through the microirrigation tubing may allow to reduce N and K fertilizer application by 30% and increase the early yield and fruit size of tomatoes. c) Filter strips could potentially provide the benefit of sediment and nutrient trapping as a side benefit. In the case of the citrus site, use of effective better management practices (BMPs) such microirrigation and fertigation greatly enhance the runoff retention usefulness of the filter strips since more effective temporary storage can occur when the filter strip is dry before rain. . Certainly there are limitations to the temporary runoff retention abilities of the filter strips, but they seem to be a lower cost alternative to permanent high cost retention ponds. d) Determination of tomato varieties with tolerance to rising saline content in irrigation water will result in more options for producers to choose if they are faced with having to use lower quality water. This could encourage use of lower quality water for irrigation as opposed to using water that could be available for other uses, thus resulting in more conservative of this vital natural resource.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-DOV-03586

Title: The Epidemiology and Control of Strawberry Diseases

Critical Needs: 6, 17, 25,

National Objectives: 1.2, 4.2

Key Themes: Risk Management, Plant Health, Biological Control, Integrated Pest management, Pesticide Application

Summary:

Certain microbes cause diseases on strawberry. This project studies these microbes and develops new and improved methods for controlling their diseases.

Progress:

A total of 53 treatments in three different studies were evaluated for control of Botrytis fruit rot on strawberry caused by *Botrytis cinerea*. It was found that reduced rates of fungicides can be applied early in the season without significantly reducing control and that bloom applications of specific Botryticides are most effective during the late season. Further research on the timing of bloom applications for control of Botrytis fruit rot was conducted using individually tagged flowers. A significant positive correlation was found between the time after flowering that fungicides were applied within 7 days of flower opening to effectively control Botrytis. A total of 21 fungicide treatments were evaluated for control of powdery mildew. Insufficient disease developed to evaluate control. However, treatments with sulfur or potassium carbonate caused phytotoxic reactions and significantly reduced yields. Extensive research was conducted on *Colletotrichum* species that cause disease on strawberry. We found that isolates of *Colletotrichum gloeosporioides* from weeds can cause crown rot on strawberry fields in Florida and from non-strawberry hosts around those fields form a single interbreeding population. *Colletotrichum acutatum* was identified as causing a root rot in Florida and field studies confirm that this disease can dramatically reduce yields. Epidemiological studies on anthracnose fruit rot caused by *C. acutatum* suggest that the pathogen can colonize the plant in the nursery without causing symptoms, then colonize the tissue when it senesces in the fruiting field and produces conidia. These conidia are then dispersed to flowers and initiate epidemics of the fruit rot. Fungicides that control colonization of the foliage also control anthracnose fruit rot.

Impacts:

This research studies the causes and control of plant diseases on strawberry. Both chemical based and cultural methods are developed and evaluated for use by commercial growers to help them produce strawberry fruit and reduce pesticide use. These new control methods will reduce production costs and increase profitability for strawberry growers.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-DOV-03764

Title: Strawberry Cultivar Development

Critical Needs: 5, 6, 17

National Objectives: 1.1, 1.2

Key Themes: Plant Genomics, Plant Germplasm, Plant Health, Adding Value to New and Old Agricultural Products

Summary:

Low early season yield, lack of fruit firmness, and susceptibility to anthracnose fruit rot are three of the most serious problems facing the west central Florida strawberry industry.

The purpose of this project is to develop cultivars that produce high early season yields of firm, anthracnose-resistant fruit.

Progress:

Approximately 10,000 new genotypes were evaluated in a fruiting field trial at the Gulf Coast Research and Education Center-Dover during the 2001-2002 season. Two hundred and twenty (220) of these genotypes were selected for inclusion in future clonal trials. FL 96-9 x FL 97-51, FL 97-39 x FL 99-37, FL 98-95 x FL 97-84, FL 97-51 x FL 97-197, and FL 97-51 x FL 97-129 were the crosses that produced the highest percentage of seedlings with acceptable fruit quality. Three hundred and forty (340) selections were evaluated in an observational (stage 2) trial containing one or two 10-plant plots per selection. FL 95-14, FL 95-269, FL 96-59, FL 97-83, FL 99-8, FL 99-56, 99-117, FL 99-140, 99-164, 00-7, 00-45, and 00-59 received high marks for fruit attractiveness and will be evaluated in a replicated trial during the 2002-03 season. FL 95-256 performed well in grower trials and was released in April as 'Carmine'.

Impacts:

Genotypes such as 'Carmine' and FL 95-269, which are better adapted to fall and winter production than some standard cultivars, could add millions of dollars worth of value to the west central Florida strawberry industry.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-ENH-03543

Title: Establishing Trees in Urban Landscapes

Critical Needs: 28, 29, 32

National Objectives: 4.1, 5.2

Key Themes: Energy Conservation, Community Development,

Summary:

Trees will be grown in containers and in the ground to simulate conditions in a nursery. They will be transplanted to a simulated landscape site, typically a sandy, well-drained soil. Growth measurements after transplanting will include root, trunk and shoot growth as well as xylem potential in selected cases.

Progress:

Live oak (*Quercus virginiana*) trees were grown to about a 2.5 in (6 cm) caliper in various container and field production systems, then transplanted to a landscape with and without mycorrhizae-forming spores under two irrigation regimes. Trees grew at nearly the same rate in the nurseries, regardless of production method. However, root distribution was altered. Low profile, air root-pruning containers had fewer roots on the outside surface of the root ball than traditional plastic containers. Application of mycorrhizae-forming fungi to the backfill soil at planting in a landscape had no impact on live oak the first 30 months after planting. However, nursery production method and irrigation frequency following planting had a huge influence on tree survival. Irrigating 2.5 in (5 cm) caliper live oak for only 6 weeks after planting in spring in a slightly drier than normal year resulted in 43% tree death rate. Irrigating twice each week through the first summer after planting in spring kept all trees alive. Under limited irrigation conditions, trees from containers died sooner and more trees died than field-grown B&B trees. Root-pruned field-grown B&B trees survived better than all others following transplanting. Trees planted from all nursery production methods survived and grew similarly provided they were irrigated regularly through the first growing season. Under

limited irrigation, landscape managers would obtain the most live trees by planting root-pruned, field-grown B&B nursery stock. Southern magnolia (*Magnolia grandiflora*) planted as 3.7 l (1 gal) liners into sandy soil did not respond to nitrogen applications above 19.5 g N/m² (4 lbs N/1000 ft²)/year the first two years after planting. Seedling magnolia and 10-13 cm (4-5 in) caliper field-grown live oak (*Quercus virginiana*) trees receiving nitrogen responded the first year of application by growing faster than those that received no nitrogen. Nitrogen source had little impact on growth or tissue nitrogen concentration (1.4%) of 10-13 cm (4-5 in) caliper live oak in the first three years after field transplanting. Any fertilizer containing nitrogen promoted growth. Field-grown trees that were not root pruned during production had poorer survival following digging in the summer and winter than those receiving either of two root-pruned treatments. In contrast, summer and winter survival was similar for root-pruned trees, indicating that live oak can be dug in summer as well as the more traditional winter period as long as trees are root pruned during production. Trees pruned with fabric under the liner at planting in combination with spade pruning survived better than traditional spade root pruned trees.

Impacts:

The savings from existing urban trees in Florida may be equivalent to more than three 100-MW power plants. With this much at stake, efficient practices that retain and add to urban tree canopy are vital to the economy in Florida. We found that trees grow at nearly the same rate in nurseries regardless of production method. This is useful because it allows urban tree managers to make better-informed decisions on tree selection. We have also determined that application of soil amendments such as mycorrhizae-forming fungi and other organic materials to the backfill soil at transplanting had no impact on post-transplant stress, growth, or survival after planting trees in urban landscapes. However, the nursery production method did impact survivability and growth under real-world conditions. Under limited irrigation conditions root-pruned field-grown trees that were dug and held in the nursery for ten weeks before transplanting to a landscape had the greatest survival of all production methods following transplanting; trees from containers died in greater numbers (55%) and sooner than field-grown B&B trees (14%). Following transplanting to the landscape growth rate of surviving trees was not affected by nursery production method. Under limited irrigation conditions common to most landscapes, planting field-grown B&B trees that were root pruned regularly in the nursery and dug ten weeks before transplanting to the landscape provided for the most live trees per dollar.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENH-03544

Title: Improved Nutrition and Irrigation of Ornamental Plants

Critical Needs: 7, 15

National Objectives: 1.2

Key Themes: Ornamental/Green Agriculture, Risk Management

Summary:

Nutritional regulation relative to growth, environmental effects, and cultural practices are increasingly important economically to Florida's ornamentals industries. This project

aims to establish optimal nutrient and water delivery practices for Florida's ornamental industry.

Progress:

Seedling live oaks (*Quercus virginiana* Mill.) were transplanted in October 2001 to #25 plastic containers with a 40% pine bark, 60% New Peat, and 10% sand substrate amended with 3 kg per cubic meter limestone and 0.6 kg per cubic meter Sure-Gro 0-0-7K. Fertilizer treatments were initiated by applying Nutricote Total 17N-3P-7K Type 270/70 fertilizer slightly below substrate surface at a rate of 27, 95 or 162 grams nitrogen per container. Irrigation water was applied once (continuous) or twice (cyclic) per day to trees that received each nitrogen application rate. Continuous and cyclic irrigation events provide the same total amount of water per day to each tree. For continuous irrigation, the total amount of water applied daily was applied in the late afternoon. For cyclic irrigation, the total amount of water applied daily was divided into a late morning and late afternoon application. Trees were arranged within 8 blocks or groups that represented the 6 treatments. Suction lysimeters were located in containers of all treatments in 4 blocks. Liquid extract from within the container was removed by vacuum weekly for 3 weeks, then every third week immediately after irrigation. Extract nitrate nitrogen was measured. Eight trees (4 cyclic and 4 continuous irrigation) were not fertilized. Tree heights were measured initially and after one year. Increases in tree heights after one year were similar for all nitrogen application rates regardless of irrigation schedule. Extract nitrate nitrogen was similar for continuous and cyclic irrigation and concentrations for the 95 and 162 grams nitrogen rate were generally excessive (greater than 100 mg per liter) after 4 and 2 months, respectively. Fertilizer was reapplied in October 2002 based on monitoring substrate nutrition. Research conducted throughout the duration of this project has resulted in development of water and nutrient-conserving plant production systems for container-grown plants. Plant production systems that were evaluated included multiple pot boxes, funnel containers, mats, flats, wicks and subirrigation. the amount of water applied for several systems can be reduced at least 50% when compared to traditional overhead sprinkler applications. Plant response may vary due to fertilizer, water, and substrate interactions; however, the ability to produce marketable plants with a reduced irrigation application volume is a positive impact considering the limitations that regulations have imposed on water use. Additionally, research was conducted to study nutrient leaching and/or runoff with various container production systems. Results obtained with production surface underlay materials, substrate amendments, water and fertilizer application rates, and water and fertilizer delivery methods provided the framework for managing production systems that have minimal nutrient runoff and/or leaching.

Impacts:

Irrigation and nutrition research from this project has resulted in management strategies or BMPs such as monitoring substrate nutrition to make environmentally conscious decisions regarding fertilization. The amount of fertilizer applied and timing of reapplications should be based on achieving desirable substrate nutritional levels in order to prevent excessive application or leaching of fertilizer.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-ENH-03564

Title: Micropropagation Protocol Development for Production of Native Wetland, Aquarium and Water Garden Plants

Critical Needs: 5, 7, 11, 14, 29

National Objectives: 1.1, 1.2, 4.1

Key Themes: Plant Genomics, Natural Resource Management, Wetlands Restoration and Protection

Summary:

The market for aquatic and wetland plants used as ornamentals and for habitat restoration is one of the fastest growing segments of environmental horticulture. Ecologically sound and efficient production methods are required. This project determines the feasibility of developing commercially viable and ecologically sound micropropagation protocols for genotypic characterization, selection and production of native wetland, aquarium and water garden plants.

Progress:

Micropropagation protocols have been completed for the aquatic/wetland plants: *Pontederia cordata*, *Eleocharis montana*, *Spartina bakeri* and *Sagittaria kurziana* and the dune species *Uniola paniculata*. RAPID analysis of genetic diversity and population structure of four Florida *Uniola paniculata* L. (sea-oats) populations have been submitted for publication. Results indicated genetic differentiation between Atlantic and Gulf coast sea oats populations with limited differentiation between Atlantic coast populations. Similar results were observed in seedling populations. In vitro propagated sea oats genotypes exhibited significant differences in capacity for shoot multiplication, rooting and ex vitro acclimatization. The physiological/anatomical basis for these differences is now being investigated. To assess the field performance of micropropagated sea oats genotypes, 16 genotypes were outplanted at Anastasia Stake Park (Anastasia, FL) and St. George Island, Florida during September 2001. In vitro propagated ecotypes of *Sagittaria latifolia*, collected from Rhode Island, North and South Carolina and three Florida populations, were grown in 5-gal containers in Gainesville, Florida to compare vegetative growth, flowering and corm formation under north Florida conditions. The second growing season repeated experiment of this study was completed in fall 2001.

Impacts:

Development of micropropagation protocols for aquatic/wetland and dune species and site-specific genotypes will eliminate the need for field collection of plant materials and subsequent damage to donor sites. These protocols have been made available to commercial micropropagation labs. Three commercial micropropagation laboratories are using the protocols developed from this research. These data are also important for ecological research on establishment and maintenance of biodiversity and ecological function in restored or rehabilitated habitats. The benefits and limitations of this approach need to be further determined. The sensitivity and reliability of the modified AFLP procedure will enable rapid genetic characterization of diverse plant populations and individuals.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENH-03595

Title: Asexual Propagation of Environmental Plants

Critical Needs: 2, 6,

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Tropical Agriculture

Summary:

To determine the methods and procedures for vegetative propagation of woody plants produced in the nursery industry. The results of this project should facilitate production of difficult to propagate woody plants.

Progress:

1. Rooting of *Eriobotrya japonica* (Loquat) cuttings treated with IBA and BA. Preliminary literature search on vegetative propagation of *Eriobotrya japonica* indicated no previous research or publications. In a 3 ,e 3 factorial experiment four replication of 12 cuttings of loquat were treated with 0, 8000, and 16000 PPM IBA followed by 0, 500, and 1000 PPM BA dip. These were arranged randomly under an intermittent mist system of 10min/5 sec frequency. Although rooting percentage ranged from 32 to 88% within all treatments, a significantly higher number of cuttings (88%) developed prolific healthy roots when treated with 8000 PPM IBA, irrespective of BA treatment. Although number of rooted cuttings treated with 16000 PPM was nearly equal to those of 8000 PPM, their root quality was not within the acceptable range. Cuttings treated with BA alone rooted poorly. Thus, neither BA treatment nor IBA concentrations of greater than 8000 PPM are recommended. 2. Effect of Varying Hormone Treatments and Sexual Dimorphism on Rooting of *Ilex* sp. Cuttings. This experiment was design ed to determine if in dioecious plants such as *Ilex* cuttings of one sex root faster and more profusely than the other of the same species. Four replications of 10 tip cuttings each from male and female plants of a recently discovered Florida native *Ilex* species were treated separately in a 3 ,e3 factorial arrangement of 0, 250, and 500 PPM BA and 0, 5000, and 10000 PPM IBA, with DMSO used as carrier. Rooting response was measured qualitatively by a rating system from 0 (dead) to 6 (superior) and quantitatively by rooting percentage and number of roots. Cuttings treated with a combination of BA and IBA exhibited better rooting response than either chemical alone. Cuttings of female plants had significantly higher rooting percentage and root quality than those of the males. 3. A two-year study of the effects of latitudinal source on early growth and development of in vitro propagated ecotypes of the wetland species *Sagittaria latifolia* was completed. *S. latifolia* genotypes displayed significant differences in rhizome and leaf production, flowering and corm formation under Florida conditions. these differences were attributed to adaptation to latitudinal differences in environmental factors prevailing where the plants were originally collected. Long-term field evaluation studies are required to assess the ecological importance of these ecotypic differences with respect to habitat restoration. Significant differences in in vitro shoot multiplication and leaf length of two genotypes of the dune grass *Uniola paniculata* were observed in response to benzyladenine and indole-3-acetic acid treatments. Micropropagation procedures for *Viburnum odoratissimum* production were developed for use in physiological studies of shoot flush growth.

Impacts:

The treatment methods and procedures described in this report will facilitate vegetative propagation of the plants studied. To the best of our knowledge, vegetative propagation of loquat has not been reported and preferential rooting of cuttings in relation to plant sex has only rarely been noted in the literature. Development of micropropagation protocols for production of diverse aquatic/wetland and dune species and site-specific ecotypes for habit restoration will decrease the need for field collection of plant materials. Several

commercial micropropagation labs are using these procedures to produce native plants for habitat restoration. Information is important for further ecological research on establishment and maintenance of biodiversity and ecological function in restored or rehabilitated habitats.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENH-03600

Title: Morphological and Physiological Responses of Chimeral Plants to Environmental Factors

Critical Needs: 4

National Objectives: 1.2

Key Themes: New Uses for Agricultural Products, Urban Gardening, Ornamental/Green Agriculture

Summary:

The shape and function of plant leaves produced in different environments often differ dramatically. Environmental effects on the way leaves develop can be determined easier using plants with variegated leaves. This project examines how leaves develop in response to different environmental factors.

Progress:

Publications in preparation show that morphological and physiological responses of chimeral foliage plants when plants are transferred from production light levels (500-1,000 micromols) to very low light levels typical of most building interiors (4,8,16 micromols) are consistent within genera but that change in percent of leaf variegation is cultivar dependent. Past research has shown that percent of leaf variegation of new leaves may increase or decrease when production light levels decrease. This response is species dependent and is developmentally integrated over time. Consequently plants transferred from high light environments to low light environments in sequence to their rate of leaf production will exhibit a morphological and anatomical response that is intermediate between the two extremes.

Impacts:

Knowledge of specific cultivar responses will permit commercial growers and interior scapers to grow/use the best plants in specific locations.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENH-03602

Title: Taxonomy and Boissystematics of Cultivated Plants

Critical Needs: 4, 5,

National Objectives: 1.2

Key Themes: Diversified/Alternative Agriculture, New Uses for Agricultural Products

Summary:

This project is concerned with the resolution of relationships, classification, and

nomenclature of cultivated plants. The intent of the project is to facilitate understanding of the cultivated plant groups in horticulture and to ensure the accuracy of their identification in the trade.

Progress:

A Taxonomic Monograph of the Neotropical Species of *Jatropha* (Euphorbiaceae). Genus *Jatropha* consists of about 175-200 species of which more than one-half are native to the New World's seasonally dry subtropical regions and the remainder are African and Indian. A revision of the infrageneric taxa of the genus was published in 1979 (Dehgan, B. and G. L. Webster. 1979. Morphology and Infrageneric Relationships of the Genus *Jatropha* (Euphorbiaceae). Univ. Calif. Press, Botany. Vol. 74). The genus as whole is a variable group of taxa with a number of hybrid complexes. Relationships among these complexes are being determined with DNA and other methods. Significant progress has been made in the study and annotation of nearly 10,000 herbarium sheets from various herbaria. Most natural habitats where species of the genus are to be found have been visited and living and dried specimens have been collected. All taxa under study are currently being illustrated and the many living specimens are being photographed for publication. Publication of the monograph in 2004 is anticipated.

Impacts: Since it is perhaps the most primitive member of the Euphorbiaceae, a thorough study of *Jatropha* and its phylogeny is of considerable significance, both within the family and with respect to related families. Moreover, several species of *Jatropha*, particularly those in the section *Curcas*, are currently under extensive cultivation for production of hydrocarbons and several species are being studied for their medicinal value.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENH-03609

Title: Introduction and Evaluation of Ornamental Plants

Critical Needs: 4, 7, 14, 15

National Objectives: 1.1, 1.2

Key Themes: Tropical Agriculture, Ornamental/Green Agriculture, Agricultural Profitability

Summary:

Florida's climate is ideal for the growth of semi-tropical and tropical plant species. Plant collections throughout the world are needed to evaluate new plant materials for use in Florida's multi-billion dollar ornamental plant industry. This project aims to facilitate statewide reporting of activities involved in collection and evaluation of plant taxa which may be used as source materials for release to industry or other projects. Another goal is to provide listings of plant taxa that are unsuitable because of poor adaptive traits, poor quality factors, or dangers of becoming weed pests.

Progress:

Cool-season turfgrass blends, mixtures, and pure stands totalling 30 entries were overseeded on a 'Tifdwarf' bermudagrass putting green and on a 'TifSport' bermudagrass fairway at Gainesville, FL. National Turfgrass Evaluation Program trials involving 34 seeded and vegetative bermudagrasses, 12 St. Augustinegrasses, and 24 Zoysiagrasses were terminated after four years of growth at Gainesville, FL. Seven bermudagrasses

selected in Hawaii were no better than a 'TifSport' bermudagrass control cultivar after four years of growth at three golf course locations in North, Central, and South Florida.

Impacts:

NO IMPACTS

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENH-03669

Title: Effects of Horticulture, Gardening Experiences, and Green Spaces on Human Populations

Critical Needs: 33,

National Objectives: 5.2

Key Themes: Enhancing Customer Service/Satisfaction, Leadership Training and Development, Community Development, Consumer Management

Summary:

I

This project will investigate responses of individuals to horticultural environments as well as specific horticultural programs designed to improve quality of life. Therapeutic and educational effects will be explored through knowledge, attitudinal, and evaluative inventories.

Progress:

Surveys were mailed to 800 Master Gardeners in Florida and 511 surveys were returned. These surveys were designed to determine Master Gardner levels of gardening specialization and to explain recreation specialization by investigating the motivations and constraints of gardeners. Motivations and constraints have not previously been used to simultaneously explain specialization. The surveys contained questions related to demographic variables, recreation specialization, motivations, and constraints. Data were analyzed using one-way analysis of variance and path analysis. A model of leisure constraints was modified to incorporate motivations, constraints and recreation specializations. Results indicate that Master Gardeners of different demographic categories differed in their motivations for gardening and their levels of specialization. Although motivations and constraints were consistent across all levels of specialization, the importance placed on each component of motivation tended to increase as a person progressed from beginner to expert. Each recreation specialization component also related differently to participant motivation and constraints. In addition, males and females experienced motivations, constraints and gardening specialization differently.

Impacts:

The results of this study have two impacts: 1) Motivation to purchase and use gardening supplies and equipment shows a gender basis and that level of specialization influences gardening decisions. 2) Demographic information on Master Gardeners will permit more effective and efficient training programs.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENY-03402

Title: Integrated Pest Management as an Alternative for Control of Soilborne Pests of Vegetable Crops

Critical Needs: 25

National Objectives: 4.2

Key Themes: Integrated Pest Management

Summary:

A system approach will be used to ensure the consideration of biological, geographical, and social factors pertaining to specific vegetable crops. Key pest organisms will be identified. Efficacy of various chemical and nonchemical tactics will be evaluated in laboratory, greenhouse, and field plots. Synergistic effects from combining and individual tactics will be studied. Another goal is to develop an integrated program for the management of soilborne pests of vegetable crops that minimizes the impact of pesticides on the environment.

Progress:

The effects of commercial preparations of *Pseudomonas chlororaphis* Guignard & savageau and *Streptomyces lydicus* De Boer et al. on plant-parasitic nematodes were compared with a fungicide (fludioxonil) and an untreated control in three field tests in Florida. The test crop was impatiens (*Impatiens wallerana* J. D. Hook), an ornamental bedding plant susceptible to *Meloidogyne incognita* (Kofoid & White) Chitwood and *Rhizoctonia solani* Kuhn, both of which were present in the test sites. Neither of the rhizobacterial treatments affected numbers of any plant-parasitic nematode present at any site. Regardless of treatment, population densities of *M. incognita*, *Dolichodorus heterocephalus* Cobb, *Paratrichodorus minor* (Colbran) Siddiqi, and *Hemicycliophora* spp. increased on impatiens, while *Helicotylenchus* spp. and *Pratylenchus* spp. decreased.

Impacts:

These experiments provided much-needed data on the performance of commercial rhizobacteria against plant-parasitic nematodes.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENY-03419

Title: Toxicology of Agriculturally Important Insect Pests of Florida

Critical Needs: 17

National Objectives: 1.2

Key Themes: Precision Agriculture

Summary:

Insecticide resistance caused by overusage of insecticides is very serious in insects. This project intends to develop new control measures which reduce pesticide usage and delay the evolution of resistance.

Progress:

Glutathione S-transferase (GST) from midgut microsomes of fall armyworm larvae metabolized a variety of model substrates such as CDNB, DCNB, para-nitrophenyl acetate, and para-nitrobenzyl chloride but had no activity toward 1,2-epoxy-3-(para-

nitrophenoxy) propane, 4-nitropyridine-N-oxide, bromosulfophthalein, and alpha,beta-unsaturated carbonyl compounds (e.g., trans-4-phenyl-3-buten-2-one, trans-2-octenal, trans,trans-2,4-decadienal). Microsomal GST activity (toward CDNB) was generally less sensitive to inhibition by different inhibitors than the cytosolic GSTs. Unlike cytosolic GSTs, microsomal GST was not induced by xanthotoxin and indole 3-acetonitrile. The enzyme was not activated by the treatment of microsomes with N-ethylmaleimide. A single GST isozyme was affinity-purified 22-fold from midgut microsomes, which had a subunit molecular weight of 27,000 Da. The transferase has an apparent K_m value of 0.91 mM and a V_{max} of 6.67 micromoles/min/mg protein (toward CDNB). In comparison with microsomal GST, midgut cytosolic GSTs showed a broader substrate specificity and were active toward various alpha,beta-unsaturated carbonyl compounds. Two affinity-purified GST isozymes, GST-1 and GST-2, from the midgut cytosol exhibited the same substrate specificity as the cytosol except that CDNB did not serve as substrate for the enzymes. The purifications were 5- to 133-fold depending on the substrates used. Both isozymes were heterodimers with subunit molecular weights of 26,700 and 28,000 Da. GST-1 had an apparent K_m value of 0.91 mM and a V_{max} of 2.35 micromoles/min/mg protein (toward CDNB). GST-2 showed an apparent K_m of 2.26 M and a V_{max} of 3.00 micromoles/min/mg protein (toward CDNB). GST-2 was not immunologically related to microsomal GST. Both microsomal and cytosolic GST isozymes possessed cumene hydroperoxide peroxidase activity, indicating the antioxidant nature of the enzymes.

Impacts:

The knowledge gained from this research will help us fully understand the molecular mechanisms of detoxification and insecticide resistance. As a result, we will be able to develop more effective methods of pest management.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENY-03490

Title: Biological Control of Selected Arthropod Pests and Weeds

Critical Needs: 17, 25

National Objectives: 1.2, 4.2

Key Themes: Invasive Species, Biological Control

Summary:

Many invasive species of pest insects and weeds cause problems for agriculture and natural areas in Florida and other southern states. This project is attempting to provide permanent, environmentally sound control of a long list of pest species - by the importation of specialist biological control agents. It is part of a Southern Regional (multi-state) project.

Progress:

Metamasius callizona (bromeliad-killing weevil): 70+ adults and pupae of *Admontia* sp., potential biological control agent of *Metamasius callizona*, were imported from Honduras in December 1999. Adult female flies successfully larviposited in bromeliads containing larvae of *M. callizona*, infecting these weevil larvae, and an F1 and beginning of an F2 generation were obtained. In March 2000, a weekend malfunction of the central air-handling system in quarantine -- which had no back-up system -- caused massive

overheating which led to death of the entire stock, a 12-month setback, and budgetary disaster.

Toxoptera citricida (brown citrus aphid): A risk assessment of *Lipolexis scutellaris*, a wasp parasitoid of *T. citricida*, was submitted in spring 2000 to the Ad Hoc committee of UF-IFAS. An application to release *L. scutellaris* in Florida was submitted to FDACS-DPI and approved in June. The first releases were made in June into citrus in Alachua County. Shipping methods were improved so that at release some females indicated their good condition by stinging aphids. About 14,000 *L. scutellaris* were released between 27 June and 1 December 2000 into citrus groves in Marion, Lake, Orange, Polk, Pasco, Indian River, St. Lucie, Lee, Hendry, Collier and Dade counties, a total of about 70 sites.

Diaphorina citri (Asian citrus psyllid): Two parasitoid species, *Tamarixia radiata* and *Diaphorencyrtus aligarhensis*, were imported and evaluated. Permits for release were obtained. About 12,000 *T. radiata* were released in July-December 1999 and another 8000 the following year, for a total of about 20,000. A field trip on 20-21 July 2000 showed that *T. radiata* has overwintered and spread in at least three of the 1999 release sites in southeast Florida (Ft. Pierce, Boynton Beach and Boca Raton). Later, more sites where *T. radiata* had established were discovered. About 5000 *D. aligarhensis* were released in 2000.

Schinus terebinthifolius (Brazilian peppertree): Biological studies and host range tests were conducted in US quarantine and South America with the defoliating sawfly *Heteroperreyia hubrichi*, the stem tip thrips *Pseudophilothrips ichini* and the leafrolling moth *Episimus utilis*. This sawfly has annual population peaks mainly during fall (May) and spring (November) months in Brazil, which suggests it is bivoltine. Mass-rearing procedures were developed for *H. hubrichi* and *E. utilis* in US quarantine. Host-specificity studies (non-choice and multiple choice feeding and oviposition tests) were conducted with the thrips using 30 plant species in 11 families. Although California peppertree, *S. molle*, and mango, *Mangifera indica*, were used as developmental hosts in NON-choice laboratory tests, field surveys in Brazil confirmed these economically important non-target plants are not attacked by *P. ichini* under natural conditions. Biological studies (life tables and nutritional requirements) on the leafroller *E. utilis* also were conducted in the US quarantine laboratory. Studies on the biology and host range of the leaf-galling psyllid *Calophya terebinthifolii*, another promising natural enemy of Brazilian peppertree, were initiated.

Impacts:

Establish biocontrol agents for the Asian citrus psyllid and brown citrus aphid.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-ENY-03493

Title: Development and Integration of Entomopathogens into Pest Management Systems

Critical Needs: 17, 25

National Objectives: 1.2, 4.2

Key Themes: Integrated Pest Management, Biological Control

Summary:

Isolate and identify novel pathogens afflicted with pest insect complexes. Assess biological activity using various in vitro and in vivo bioassays involving both target and

nontarget models. Examine the determinants which regulate the infectivity, virulence and specificity of entomopathogens. Characterize indigenous, exotic and genetically-altered entomopathogens for use in integrated pest management systems.

Progress:

During 2000, we have described the developmental features of a *Helicosporidium* sp. isolated from the black fly *Simulium jonesi*. Morphologically, the *Helicosporidia* are characterized by a distinct cyst stage that encloses three ovoid cells and a single elongate filamentous cell. Bioassays have demonstrated that the cysts of this isolate infect various insect species including the lepidopterans *Helicoverpa zea*, *Galleria mellonella*, *Manduca sexta* and the dipterans *Musca domestica*, *Aedes taeniorhynchus*, *Anopheles albimanus* and *An. quadrimaculatus*. The cysts attach to the insect peritrophic matrix prior to dehiscence, which releases the filamentous cell and the three ovoid cells. The ovoid cells are short-lived in the insect gut with infection mediated by the penetration of the filamentous cell into the host. Furthermore, these filamentous cells are covered with barbs that anchor them to the midgut lining. Unlike most entomopathogenic protozoa, this *Helicosporidium* sp. can be propagated in simple media under defined in vitro conditions, providing a system to conduct detailed analysis of the developmental biology of this poorly known taxon. Significantly, in vivo and in vitro studies demonstrated that this *Helicosporidium* sp. has simple nutritional requirements and was capable of exocellular growth and does not require living cells to support vegetative development. Historically, *Helicosporidium* spp. were considered to be either protozoa or fungi, but have been unclassified since 1931. Recently, a *Helicosporidium* sp., isolated from the blackfly *Simulium jonesi* Stone & Snoddy (Diptera: Simuliidae), has been amplified in the heterologous host *Helicoverpa zea*. Genomic DNA has been extracted from gradient purified cysts. The 18S, 26S, 5.8S regions of the *Helicosporidium* ribosomal DNA, as well as some partial sequences of the actin and tubulin genes, were amplified by PCR and sequenced. Comparative analyses of these nucleotide sequences were performed using Neighbor-Joining methods, and led to the construction of three phylogenetic trees that evaluated the position of *Helicosporidium* sp. within the phylogeny of eukaryotes. All trees depicted *Helicosporidium* sp. as a sister taxon to green algae (Chlorophyta), and this association was always supported by significant bootstrap values. On the basis of this phylogenetic analysis, *Helicosporidium* sp. is clearly neither a protozoan nor a fungus, but appear to be the first described algal invertebrate pathogen. These conclusions led us to propose the transfer of the genus *Helicosporidium* from Protozoa to Chlorophyta.

Impacts:

Research has led to the definition of a novel algal pathogen of invertebrates. Our studies have provided a means to produce this pathogen under in vitro conditions, to infect a wide range of insects with the cyst stage, and have defined the filamentous cell as the invasive stage of this organism.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENY-03592

Title: Integrated Management of Arthropod Pests of Livestock and Poultry

Critical Needs: 17

National Objectives: 1.2

Key Themes: Animal Production Efficiency

Summary:

Examine arthropod distribution - processes and impact of arthropod dispersal to determine whether mechanisms regulating these procedures can be modified in realistic integrated pest management strategies. Research control strategies to reduce pests by surveillance and traps. Research host attraction - host finding and parasite movement for muscoid flies. Assess host-parasite-environment interactions that govern arthropod abundance and injury levels. Design environmentally safe arthropod pest management systems that improve production efficiency and implement technology transfer to producers.

Progress:

The status and nature of horn fly insecticide resistance and develop resistance management strategies: Untreated seasonal herd populations of horn flies were followed. Horn fly, house fly and stable fly counts on an untreated herd has been maintained for the last 10 years. Horn flies, house flies, and stable flies were counted weekly on ten known animals and the means plotted to determine the normal populations of flies. Horn fly populations were high from weeks 19-38 during the year. Very high numbers occurred during years 1991, 1993, and 1998, reaching 2,300. Winter populations never dropped to 0 flies per animal. House fly populations varied greatly with highs reaching means of 42 during the years 1992, 1993, 1995, and 2000. High numbers were seen from weeks 6 through 20 of the year. Low stable fly numbers were present early in the year from weeks 7 to 21. Peak populations were observed in February to May each year.

The cattle-arthropod pest interactions, host finding and maintenance of flies: Semiochemical research continued in 2001 evaluating attractants for flies. Major differences were seen between house flies and blood feeding horn and stable flies. Blood feeding insects showed high attractancy to CO₂, house flies were neither attracted or repelled by it. Heart beat trap test designs are underway adding attractants to the system. Research to evaluate exotic parasite effect on horn flies is continuing in cooperation with the USDA CMAVE at Gainesville, FL.

Impacts:

Reduce the damage caused by flies to livestock and poultry.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-ENY-03694

Title: Managing Plant-Parasitic Nematodes in Sustainable Agriculture with Emphasis on Crop Resistance

Critical Needs: 5, 17

National Objectives: 1.2

Key Themes: Plant Genomics, Plant Germplasm

Summary:

Root-knot nematodes cause serious plant disease on a number of agronomic and vegetable crops in Florida. This project seeks a sustainable solution to the root-knot nematode problem by developing plants with resistance to the nematode.

Progress:

Pasteuria penetrans is suppressive to *Meloidogyne arenaria* race 1 in a peanut field in Levy County, FL. Our objective was to determine the persistence of *P. penetrans* in this site by determining the density of the bacterium following 9 years of growing bahiagrass, rhizomal peanut, and weed fallow. The treatments were chosen to include root-knot nematode nonhosts (bahigrass and rhizomal peanut) and weed hosts, hairy indigo and alyce clover (weed fallow). The plots were established in a randomized complete block design and replicated 10 times in the summer of 1991. The plot size was 38 by 10.6 meters. In 1999, the bahigrass and weed fallow plots were deep plowed, disked, and cv. Florunner peanuts were planted. Glyphosate was sprayed over the rhizomal peanut in the summer of 1999 and they were deep plowed and disked in the spring of 2000. All plots were planted to cv. Southern Runner peanut in the spring of 2000 and cv. Georgia Green in the spring of 2001. In 1999, the initial density of *M. arenaria* second-stage juveniles (J2) was low in all plots and no J2 with endospores attached were recovered. After the first peanut harvest, the only visible symptoms of root knot were in weed fallow plots. Approximately 2.5% of root-knot nematode females recovered from peanut grown in weed fallow plots were endospore filled, and none were recovered from peanut grown in bahigrass plots. In 2001, the percentage of J2 with endospores attached reached the highest levels between June and August (65.3%, 6.5%, and 2.3% from weed fallow, bahigrass, and rhizomal peanut, respectively). The percentage of endospore-filled females recovered from peanut grown in weed fallow plots increased to 51.3% in 2001, whereas the percentages in bahigrass and rhizomal peanut plots were 11.3% and 1.3%, respectively. Peanut yields were significantly higher in rhizomal peanut plots followed by bahigrass, and weed fallow plots over the past 2 years. Peanut roots, pegs, and pods were severely galled in all plots in 2001. In summary, the density of *P. penetrans* increased in all plots over the 3-year period. The incidence of the bacterium seems to be related to the density of the peanut root knot nematode.

Impacts:

the information attained will aid in sustaining root-knot nematode management in the future.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-ENY-03723

Title: Conservation and Laboratory Rearing of Butterflies

Critical Needs: none

National Objectives: 1.2

Key Themes: none

Summary:

Test commercial diets available for the painted lady butterfly and diets available for a number of moths. We will add measured quantities of natural host plant material (crushed, ground, or lyophilized) to diets and place newly hatched larvae (or eggs to hatch) on the diet. We will evaluate the diets by standard measures of feeding and growth. We will also develop laboratory diets for rearing various species of butterflies with special emphasis on swallowtail butterflies. In addition we will define host plant stimulants that may be necessary to get butterfly larvae to feed upon a synthetic diet.

Progress:

The phaon crescent butterfly, *Phyciodes phaon*, can be reared on a completely artificial

diet, but the adult females do not lay eggs when fed this diet. These females, however, have mature ovaries and mature eggs in the ovary at emergence, as do females reared on the host plant, *Phyla nodiflora*. The problem may be a defect in the male internal reproductive structures, and there are some differences in the testes and associated structures between diet-reared males and host plant-reared ones. Efforts to extract a component or components from the host plant that can be added to the diet and correct the oviposition problem have not been successful thus far. The original artificial diet on which the first successful rearing were made contained no added lipids, glucose, or salt mixture, and an addition of olive oil, glucose, and Beck's salt mixture. This improved survival of the larvae and resulted in about 80% successful rearing to the adult stage. Efforts to rear the checkered white butterfly, *Pontia protodice*, were continued in the summer, 2002, but the butterfly still cannot be reared consistently on an artificial diet. One of its major host plants, peppergrass, is not available in the Gainesville area after July, but the adult females lay readily on commercial broccoli and the larvae eat it. However, in three successive years we have lost the colony on broccoli in late summer to disease. It may be that larvae are more susceptible to disease organisms when being reared on broccoli.

Impacts:

Butterflies are important indicators of environmental quality. Larval food plants and nectar plants must be present in the environment to enable butterflies to live in a particular habitat. The capability for rearing butterflies on artificial diets is important to commercial butterfly houses that require a dependable supply of butterflies for display.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENY-03788

Title: Development of Ecological Methods for Nematode Management

Critical Needs: 23, 24, 25

National Objectives: 4.2

Key Themes: Biological Control, Integrated Pest Management, Sustainable Agriculture

Summary:

Field, laboratory, and greenhouse studies will be used to develop and integrate methods for managing and minimizing nematode impact on vegetable, fruit, and ornamental crops. Methods investigated will include cropping systems, cover crops, rotation crops, plant tolerance, solarization, and other novel methods.

Progress:

As an agroecosystem makes the transition from conventional to organic practices, changes in the pest management tactics used are often apparent. Despite varying degrees of efficacy among tactics, the issue of whether or not numbers of insect and nematode pests and their damage will become more severe in an organic system depends on the specifics of the pests and crops involved. Although many conventional systems rely on reactive strategies to deal with pest problems, an alternative approach is to redesign systems so that plant health is maximized, regardless of pest numbers, although this approach takes planning and time. An abrupt transition from conventional to organic may be risky if pest numbers are high and alternative practices are not yet in place. Hybrid systems, involving decreasing levels of conventional tactics and increasing levels of

organic tactics, may be needed before the transitional period begins, in order to bridge the gap and lessen the impact of crop losses during the transitional period. The design of cropping systems with minimal pest impact requires a much more extensive and specific knowledge base than needed for reactive strategies.

Impacts:

A wider selection of cover crops and other nonchemical alternatives are now available for managing plant-parasitic nematode problems. These methods can even be used by homeowners and organic growers, for whom nematicides are not an option. However, effective use of these methods requires good biological and ecological information on nematodes and their host plants.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENY-03796

Title: Biological Control of Scapteriscus Mole Crickets

Critical Needs: 25

National Objectives: 4.2

Key Themes: Biological Control

Summary:

Scapteriscus mole crickets, native to South America, are the worst pest insects of pasture and turf-grasses in Florida. Chemical pesticides provide only temporary control, are very expensive, and are potentially harmful to the environment. This project studies how to enhance effects of two biological control agents that already have been established in parts of Florida. It investigates prey-specificity of a third biological control agent, which has been imported but not yet released.

Progress:

Applications of the beneficial nematode *Steinernema scapterisci* were made in turf and pastures in several additional Florida counties. Populations of this nematode established in 1988/1989 on two golf courses in the Gainesville area were still present 12+ years later, and still infecting pest mole crickets. Beneficial wasps of the species *Larra bicolor* spread of their own accord to additional counties in northern Florida, and were released and established in one central Florida county.

Impacts:

Natural and assisted spread of *Steinernema scapterisci* and *Larra bicolor* to additional areas should reduce pest mole cricket populations. Repeated demonstration of such reduction should persuade ranchers and turf managers to use biological control.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-ENY-03798

Title: Biologically Based IPM Systems for Management of Plant-Parasitic Nematodes

Critical Needs: 1, 2, 5, 17

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Biotechnology, Plant Genomics, Plant Germplasm

Summary:

Plant parasitic nematodes are important plant pathogens of numerous crops grown in Florida. This project aims to survey for nematode biological control agents and to develop them for use in IPM programs.

Progress:

Four bell pepper genotypes from Dr. Judy Thies's program (USDA/ARS, Charleston Vegetable Lab) were evaluated in Florida to determine the heat stability of the root-knot nematode resistant gene. The genotypes were planted in plastic mulch covered beds with drip irrigation, and replicated four times. Two of the genotypes provided resistance to the southern root-knot nematode. There was no indication that high soil temperatures broke the resistance.

Impacts:

Providing Florida bell pepper growers with root-knot nematode resistant cultivars will greatly reduce dependency on soil fumigants, and aid with the sustainability of the crop.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-ENY-03824

Title: Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine, and Dairy Facilities.

Critical Needs: 17

National Objectives: 1.2

Key Themes: Animal Health

Summary:

Insects have finite detection systems for odors. The University of Florida has developed an Olfactometer system to evaluate fly sensitivity to odors. This system is to be used to evaluate odors in conjunction with electronic nose development in the project. The goal of the project is to develop systems for controlling air pollutant emissions and indoor environments of poultry, swine and dairy facilities through the improvement in monitoring systems which support changes in design to reduce pollutants and improve efficiency of livestock management systems.

Progress:

House fly, *Musca domestica*, is a known transporter of bacterial contamination within and between facilities. We began a study in 2001 of wild house flies to determine the presence of bacterial contaminants assumed to originate from the sites that were visited. Samples were assayed with MIDI Fatty Acid and 16S rRNA analysis of bacterial samples cultured on blood agar exposed to wild *Musca domestica* L. The following bacteria were present: *Escherichia coli* 0157, *Bacillus thuringiensis*, *Shigella sonnei*, *Shigella flexneri*, *Staphylococcus saprophyticus*, *Staphylococcus xylosum*, *Acinetobacter baumannii*, *Enterobacter sakazakii*, *Bacillus pumilus*, and *Bacillus cereus* - the last four bacteria listed are new records for house flies. New house fly Olfactometer repellent trials were conducted to evaluate natural oils for effectiveness in repelling flies. Geraniol and

geraniol-nerol treatments on artificial skin were the most significantly effective at 99.9% control for up to 8 hours.

Impacts:

Develop and improve sustainable systems to reduce air pollution emissions from poultry, swine, and dairy buildings and improve indoor air quality.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENY-03860

Title: Interactions among Bark Beetles, Pathogens, and Conifers in North American Forests

Critical Needs: 3, 17, 25, 28

National Objectives: 1.2, 4.2

Key Themes: Biological Control, Integrated Pest Management, Weather and Climate, Forest Resource Management

Summary:

The southern pine beetle is the most serious of the insects affecting pine forests in the South. Outbreaks sometimes kill all pines over thousands of acres. This project investigates the biotic and abiotic factors associated with the explosion of populations from endemic levels to the outbreak state.

Progress:

Continued 8th year of year-round pheromone trap monitoring of *Dendroctonus frontalis* at 3 sites near Gainesville, Florida. Monthly beetle counts declined markedly from the outbreak levels of spring 2001, but generally exceeded the non-outbreak levels of all other years. Pine trees in the area continued to die owing to the prolonged drought, but *Ips* spp. were the predominant beetle colonizing the trees.

Impacts:

Collections of the clerid predator *Thanasimus dubius* exceeded those of all previous years, suggesting that natural enemies were effectively preventing bark beetles from attacking anything but the weakest trees.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-ENY-03924

Title: Development, Evaluation, and Safety of Entomopathogens for Control of Arthropod Pests

Critical Needs: 14, 17

National Objectives: 1.2

Key Themes: Biotechnology, Plant Genomics

Summary:

There is an urgent need to develop and implement cost-effective, environmentally safe alternatives to chemical pesticides for insect control. There is an opportunity to immediately develop and implement entomopathogen technology that will improve food safety, protect biodiversity, enhance water quality and preserve the environment. This

multistate research effort will develop and standardize protocols needed for the development of microbilas as suitable pest controls.

Progress:

The Helicosporidia are invertebrate pathogens that have recently been identified as being non-photosynthetic green algae (Chlorophyta). In order to confirm the algal nature of the genus Helicosporidium, the presence of a retained chloroplast in Helicosporidia cells was investigated. Fragments homologous to plastid 16S rDNA (rrn16) genes were successfully amplified from cellular DNA extracted from two different Helicosporidium isolates. The fragment sequences are 1269 and 1266 bp long, are very AT-rich (60.7%), and are similar to homologous genes sequenced from non-photosynthetic green algae. Maximum-parsimony, maximum-likelihood and neighbor-joining methods were used to infer phylogenetic trees from an rrn16 sequence alignment. All trees depicted the Helicosporidia as sister taxa to the non-photosynthetic, pathogenic alga Prototheca zopfii. Moreover, the trees identified Helicosporidium spp. as members of a clade that included the heterotrophic species Prototheca spp. and Chlorella protothecoides. Phylogenetic analyses inferred from plastid 16S rDNA genes confirmed that the Helicosporidia are non-photosynthetic green algae, making them close relatives to the genus Prototheca (Chlorophyta, Trebouxiophyceae). The acaricidal mycopathogen Hirsutella thompsonii has been found to secrete metabolites that are active against female Tetranychus urticae. Specifically, the rose-colored exudate produced on sporulating cultures of Mexican HtM120I strain sterilized female spider mites in a dose-dependant fashion. Research is currently being directed at partitioning the active component from the HtM120I exudate. The Nomuraea rileyi chitinase gene has been sequenced. The ORF of this gene has been analyzed and identified as a member of the family 18, group III chitinase. The gene has been forwarded to collaborators at the Mahidol University, Thailand for subsequent expression studies. During the summer of 2002, populations of Homalodisca coagulata were sampled at sites in Gainesville, Florida, Quincy, Florida, and Cairo, Georgia. Insects were collected and held in sleeve cages on crape myrtle for 2-4 week for the detection of pathogens. Sharpshooter cadavers were collected and incubated in a warm, moist environment and observed for fungal and bacterial growth. Populations in Gainesville were observed in low densities on red crape myrtle. There was no indication of fungal infection in these insect populations. A large number of egg masses were parasitized in sampling areas (ca. 93% of collected egg masses). Sharpshooter populations in Quincy, Florida were observed in much higher densities on citrus, crape myrtle, and holly, and among other hosts plants. Sharpshooters collected in late June experienced a rapid die-off but displayed no signs of fungal infection. The die-off seemed instead to be associated with a bacterial infection, the nature of which has yet to be determined. Cultures of bacteria and fungus associated with the cadavers from this collection are awaiting further identification.

Impacts:

Research on Helicosporidia is providing fundamental data on a novel clade of insect pathogens. Current research, including EST library construction, will provide a library of sequences to examine the many novel cellular processes affiliated with this organism. The research on N. rileyi and on H. thompsonii is part of a long term project focusing on insect pathogens that it are an important biological control of insect and mite pests. The chitinase gene is being targeted as part of our research effort to identify genes that may be used in plant transgenic programs. The work on the exudates is expected to provide leads for novel peptides or organic compounds that can be manipulated as novel acaricides. The research on the leafhopper pathogens was initiated this past summer and is expected to provide key insight into microbes infecting this important plant disease vector.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-ENY-03934

Title: Biological Control of Arthropod Pests and Weeds

Critical Needs: 17, 25

National Objectives: 1.2, 4.2

Key Themes: Biological Control

Summary:

Exotic pests continue to pose threats to American agriculture, making continued efforts in importation biological control relevant and necessary. It is anticipated that natural enemies will be discovered and introduced for control of melaleuca, Brazilian peppertree, old world climbing fern, kudzu, tropical soda apple, water hyacinth (including pathogens), Chinese tallow, Chinese privet, tarnished plant bug, brown citrus aphid, cotton fleahopper, bromeliad weevil, red imported fire ant, muscoid flies, mole crickets, and weevils.

Progress:

We now know that red imported fire ants (*Solenopsis invicta*) will climb into citrus trees to *selectively* remove parasitized brown citrus aphids, leaving the unparasitized ones alone. This suggests that suppressing fire ants should be tested to determine whether control tactics are both effective and cost-effective. It also seems that red imported fire ants selectively remove citrus psyllids parasitized by *Tamarixia*. However, Asian cockroaches, which likewise are abundant in citrus groves, do not do this.

Impacts:

It now becomes useful to test whether control of red imported fire ants in citrus groves will lead to increased parasitism of brown citrus aphid and of citrus psyllid by their respective parasitoids

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-FME-03299

Title: The Invasion of North America by *Aedes Albopictus*: Ecological Impact and Gonotrophic Patterns

Critical Needs: 20

National Objectives: 3.2

Key Themes: Human Health

Summary:

The exotic mosquito, *Aedes albopictus*, has become well-established in the southeastern United States during the past 15 years. It is now the most common, container-inhabiting mosquito in the region. This project examines the impact of *Aedes albopictus*, the so-called Asian tiger mosquito, on other mosquito species and investigates the host blood feeding patterns of *Aedes albopictus* and its potential for vectoring various pathogens.

Progress:

The results of long-term monitoring of artificial containers at numerous sites in peninsular Florida have documented several outcomes for the yellowfever mosquito,

Aedes aegypti, following the arrival of the Asian tiger mosquito, *Aedes albopictus*. Local extinction of *A. aegypti* populations have been associated with arrival and expansion of *A. albopictus* populations in some regions and habitats, but not in others. Generally, the decline and disappearance of the yellow fever mosquito have been most extensive in the northern third of the state where *A. albopictus* is now the most common *Aedes* mosquito in artificial containers in urban, suburban and rural locations. Even in south Florida, *A. aegypti* disappeared from most rural locations shortly after the *A. albopictus* invasion. Yet, in many urban areas of central and south Florida, *A. aegypti* remains a common mosquito. At some sites *A. aegypti* has coexisted with *A. albopictus* for more than 10 years; whereas at other sites *A. albopictus* failed to persist, leaving *A. aegypti* as the sole surviving species. The Florida Keys is the only part of the state where the Asian tiger mosquito has failed to become well-established in either natural or artificial containers. Although the responses of *A. aegypti* populations to the *A. albopictus* invasion have varied among geographic regions and habitats, the findings of recent studies indicate that stable outcomes have occurred at many locations. Additional studies have been examining the *A. albopictus* invasion of natural containers, especially aquatic habitats provided by native and exotic bromeliads. *A. aegypti* and *A. albopictus* larvae have been collected from exotic bromeliads at several south Florida locations; but generally they are found much less frequently than bromeliad-specialists, such as, *Wyeomyia mitchellii* and *W. vanduzeei*. A newly described species, *Culex biscoynensis* is the most common species in exotic bromeliads in parts of Dade County, Florida. Even here, *W. mitchellii* is by far the most common mosquito in native bromeliads. An expansion in the range of *C. biscoynensis* was observed during the past year. *Aedes albopictus* larvae were collected from water-holding rock holes along 3 streams in Georgia and 1 in South Carolina. the distribution of *A. albopictus* was limited to rock holes in less flood prone locations, whereas *A. atropalpus* was a common mosquito even in rock holes that were among the most susceptible to flooding. At numerous sites in Florida, *A. albopictus* larvae were collected from water-holding tree holes, often in association with *Aedes triseriatus* larvae. Both species frequently were collected from tree holes in urban and suburban areas, but generally *A. triseriatus* was the only species found in sylvan habitats. The impact of *A. albopictus* on the distribution and abundance of other container-dwelling mosquitoes is influenced by biotic and abiotic factors operating on various stages of the mosquito's life cycle.

Impacts:

In recent years, several species of exotic mosquitoes have become established in the United States. All of these exotic mosquitoes are container-dwelling species. Our studies on the *A. albopictus* invasion have provided new insights on the factors influencing the spread of exotic mosquitoes.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FME-03477

Title: Develop Methods for Predicting Human Epidemics of Mosquito-Borne Encephalitis Virus in Florida

Critical Needs: 20

National Objectives: 2.2, 3.2

Key Themes: Human Health

Summary:

The seasonal transmission of mosquito-borne viruses (St. Louis encephalitis; eastern and Venezuelan equine encephalitis) to humans and domestic animals is currently unpredictable. This project will identify biotic (mosquito vectors, arbovirus biology, and avian amplification host biology) and abiotic (rainfall and temperature) factors that can be tracked to help predict human infections.

Progress:

Field and laboratory studies designed to help predict human epidemics of mosquito-borne encephalitis virus in Florida continued at the Florida Medical Entomology Laboratory (FMEL) during the federal fiscal year 10-1-00 through 9-30-01. West Nile (WN) virus appeared in north Florida during the spring and early summer of 2001. It has continued to spread south and has now become established throughout Florida. Eleven human cases and more than 270 horse cases were reported in Florida during 2001. The introduction of WN virus into Florida has proven to be extremely expensive (\$4.2 million was spent on vector control efforts in north Florida) and disruptive. At the FMEL, we dedicated much of the 00/01 fiscal year to evaluating the true risk of a widespread WN epidemic in Florida during the summer of 2001. We conducted field experiments in north Florida to establish actual WN transmission rates, something that was not done by any other Florida or Federal agency. We constructed, updated, and posted arboviral transmission risk maps as part of our Encephalitis Information System. The WN virus is related to St. Louis encephalitis (SLE) virus which we have studied at the FMEL since 1983. The arboviral surveillance techniques we developed for SLE were used to detect and track WN virus as it moved through Florida during 2001. Our surveillance program centers on the collection of data that accurately indicate real-time viral transmission. The components of this surveillance program include measures of viral abundance; vector abundance, age, and infection status; and wild vertebrate amplification host abundance, age, and infection status. Our program includes an active long-term surveillance of vector populations, the use of sentinel chickens (SC) to measure viral abundance and temporal transmission, and a wild bird surveillance program to monitor the abundance and immunological status of avian species that are responsible for the rapid amplification of these viruses. Our state-wide arboviral surveillance program begins each year on the first of January. The movement of hurricane Allison across the Florida Panhandle in June of 2001 touched off a WN transmission event that continued throughout the state until the end of the year. It is unclear at this time how pervasive WN transmission will be in Florida during the coming years. However, it is clear that an active surveillance program is necessary to monitor continued arboviral transmission and the risk of infection for Florida residents and visitors. To that end, we will continue our ongoing arboviral surveillance program at the FMEL.

Impacts:

Infection of humans and domestic animals by mosquito transmitted viruses poses an important public health threat in Florida. Our development of long-term surveillance protocols allows real-time prediction of epidemic transmission allowing sufficient time for appropriate public health responses including vector control, media contact, and issuance of Medical Advisories and Medical Alerts prior to the onset of epidemic transmission.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FOS-03456

Title: Improvement of Thermal Processes for Foods

Critical Needs: 19

National Objectives: 1.1

Key Themes: Food Handling, Food Recovery/Gleaning, Food Resource Management, Food Quality, Food Safety

Summary:

Apply engineering principals of heat and mass transfer in developing models to simulate the ohmic heating and thawing of frozen foods in Florida Seafood Processing Industry. Combine transport phenomena with rheological data and reaction kinetics data to model high pressure and supercritical processes for application to extraction, microbial, and enzyme treatment purposes in processed foods, and automated food quality detection systems.

Progress:

Development of mathematical models of thermal processing of different geometrical shapes: Finite difference mathematical models were developed for conical, cylindrical, and elliptical shapes. This enabled prediction of temperature at any location, at any time for these shapes during processing under agitation or not, and therefore optimization of nutrient retention was made possible. In addition, an optimization method was developed to determine the best retort temperatures during processing. Applications to shrimp cooking were developed. Quality and yield of shrimp could be predicted, as well as its safety. Software developed for the above allowed rapid and easy application of these methods to real problems.

Measurement of kinetics during thermal processing: Thermal death rate constants for *Bacillus stearothermophilus* in peas, bromelain in pineapple juice, and flavor in cupuacu were experimentally determined.

Development of ohmic thawing: Conventional thawing of food blocks (e.g. shrimp) is done by water immersion. This generates large quantities of waste water, is very energy inefficient (water needs to be heated), and has safety and quality concerns. An alternative is to pass electricity through the food to heat it. A batch mode ohmic thawing device was designed, built and tested for thawing frozen shrimp blocks. the process was automated. Quality of ohmically and conventionally thawed shrimp were compared. This method was demonstrated to be energy efficient, safer, and environmentally more friendly than water immersion thawing. Many graduate and undergraduate students were involved with these projects. The results were published in several book chapters, and many refereed journal articles.

Impacts:

Optimization of shrimp processing alone will have a significant economic impact on processors. Typically, when shrimp is cooked, it loses up to 22% of its weight. Cooked shrimp is sold by weight, with an average price of \$5/lb. We demonstrated that we could reduce the yield loss to below 10%, and still have a safe and good quality shrimp. This means a savings of \$0.6/lb that translates to millions of dollars nationwide. Shrimp cooking charts were developed based on our findings to minimize yield loss, and maximize quality. the mathematical models developed were coded into computer

programs, and made available to the processors. This allowed access to methods and optimization of thermal processing for food processors. the ohmic thawing method is currently being pursued to apply it to commercial food processing. This requires a continuous operation. We are pursuing funding to develop a continuous ohmic thawing device.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FOS-03513

Title: Controlled Dietary Folate Effect on Folate Status in Elderly women

Critical Needs: 20

National Objectives: 3.1

Key Themes: Human Health, Human Nutrition

Summary:

Folate requirements for elderly women have not been studied adequately. Poor folate status can increase the risk for chronic diseases such as heart disease - the leading cause of death in postmenopausal women. The purpose of this project is to learn more about the folate requirements of elderly women.

Progress:

This project was the first to report the response to controlled folate intake using a depletion-repletion protocol in women between the ages of 60-85 years. It is also the first to report the impact of the 677 C-T MTHFR polymorphism on folate status and to describe the effect of folate depletion on DNA methylation in response to controlled folate intake. This research provides age-specific evidence in support of the decision to increase the recommended level of folate intake in elderly women. Previous decisions were based on data from younger populations. It also suggests that in response to low folate intake/status, women homozygous for the 677C-T MTHFR polymorphism are at an even greater risk for elevation in plasma homocysteine concentration, a risk factor for vascular disease. DNA methylation may also be impaired in response to low folate intake. Hypomethylation of DNA has been associated with increased cancer risk. Finally, we have shown that folate catabolite excretion (total pABG) reflects total body folate pool size and is a long-term indicator that parallels functional measures of folate status. A total of 4 peer-reviewed papers and 4 abstracts have resulted from this work.

Impacts:

It is anticipated that the data from this research project will be used to support decisions about the amount of folate to recommend for elderly women in future revisions of the the Dietary Reference Intakes. It also is anticipated that our findings will be used in considering the impact of genetic polymorphisms on folate requirements and potential risk for disease.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FOS-03515

Title: Folate Requirements of Pregnant Human Subjects

Critical Needs: 20

National Objectives: 3.1

Key Themes: Human Health, Human nutrition, Infant Mortality

Summary:

Folate requirements of pregnant women are unknown. Adequate folate intake is essential for normal fetal development and maternal health. The purpose of this study is to estimate folate requirements of pregnant women. This project examines gestational effects on folate utilization.

Progress:

This project has terminated and all publications have been reported previously.

Impacts:

The data from this investigation provided data that were instrumental in revising the Recommended Dietary Allowance for folate intakes for pregnant women.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FOS-03548

Title: Solid-Phase Extraction Techniques for Pesticides in Water Samples

Critical Needs: 27

National Objectives: 4.3

Key Themes: Water Quality

Summary:

Conventional analytical techniques for pesticides in water are expensive and cumbersome requiring frequent repetitions for sample analysis. This project develops analytical techniques for the extraction of pesticides from all water types which are rapid, inexpensive, sensitive and reliable.

Progress:

Faculty member has retired and there are no further results to report

Impacts:

This year's work has demonstrated that a much-improved technique for extracting and shipping pesticide residues in water is now available for use by those laboratories engaged in determining the impact pesticide runoff or leaching might have on surface water quality.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-FOS-03741

Title: Food Technology Research Support to Florida Agriculture Industries in Value Adding Enterprises

Critical Needs: 2

National Objectives: 1.1

Key Themes: Adding Value to New and Old Agricultural Products

Summary:

The purpose of this project is to improve the quality of fruits and vegetables produced in Florida, and identify new products or opportunities to add value to fruits and vegetables produced in Florida. New and/or improved products and quality could increase the profitability of producing these crops in Florida.

Progress:

In view of the considerable research going on with anthocyanins in common foods, several Florida crops were subjected to common fermentations in order to establish the potential for adding value and the practicality of optimizing phytochemical extraction and stabilization by fermentation processes. A number of wine fermentations were conducted with Noble muscadine grapes with the idea of maximum extraction of phytochemicals, primarily anthocyanins and tannins, from the fruit. This involved on-hull fermentation to dryness (conversion of all fermentable sugars to ethanol) or subjecting the crushed grapes to a hot press regime at 60C for 1 hour, utilizing macerating enzymes prior to pressing and fermentation. In both cases yields were about 82 percent (about 186 gallons per ton of fruit) and wines were deeply colored but harshly astringent. Since the wines were unpalatable, fining and aging techniques capable of improving taste without reducing phytochemical value are needed. Honey ale was prepared from unrefined, unfiltered, mixed-source honey, boiled with hops, diluted to original gravity 1.048, and fermented with ale yeast. The resulting bottle primed ale was good quality and represents a potential use for sound but off-grade honey. Red cabbage was subjected to a standard sauerkraut fermentation utilizing 2.25% salt and anaerobic conditions. The kraut was acceptable and possessed an attractive red color with texture and flavor characteristics similar to standard kraut. With both fermented products the comparative changes in phytochemical value are under evaluation.

Impacts:

Numerous Florida growers and processors are expressing interest in the nutraceutical value of their crops and processed products. Consequently, we're receiving many inquiries regarding the qualitative and quantitative phytochemical composition of ingredients and the influence of processing, storage, and distribution on these foods. The cited activities, and other efforts in the areas of teaching and extension synergistically complement the value adding research program and contributes to the total IFAS effort.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-FOS-03764

Title: Strawberry Cultivar Development

Critical Needs: 6

National Objectives: 1.1

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness

Summary:

Strawberry cultivars will be developed with improved quality characteristics.

Progress:

The evaluation of strawberry quality is continuing. Several promising new cultivars and lines are being evaluated for quality characteristics. Studies are also underway to identify the important flavor compounds present in Florida strawberries.

Impacts:

The improvement in the quality of strawberries being produced in Florida.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-FOS-03846

Title: Post-Harvest Quality and Safety in Fresh-Cut Vegetables and Fruits

Critical Needs: 2, 15, 19

National Objectives: 1.1, 2.1

Key Themes: Adding Value to New and Old Agricultural Products, Risk Management, Food Handling, Food Quality, Food safety, Food Security

Summary:

Consumer demand for fresh-cut vegetables and fruits has led to a proliferation of these products in US markets. Losses of important plant-based compounds are associated with fresh-cut operations, which reduce quality characteristics and daily intake of antioxidants. This project will explore methods to promote or reduce losses of plant-based antioxidant compounds, which has important implications for improved quality and human health. Novel approaches to solving these problems will be investigated, by examining mechanisms of oxidative loss in fresh-cut vegetables and fruits.

Progress:

Through a phenomenon known as intramolecular copigmentation, anthocyanins were shown to associate with various metal ions and polyphenolic cofactors such as flavonoid glycosides, hydroxycinnamates, and other anthocyanins to inhibit lipoxygenase (LOX) in fresh-cut carrots. Various combinations of anthocyanins and cofactors resulted in enhanced pigment color, antioxidant capacity, and LOX inhibition (in vitro and in vivo). It was found that 15-50 ppm of four anthocyanin sources were needed to achieve 50% inhibition of lipoxygenase using a purified enzyme extract. However, considerably higher concentrations were needed to equivalently inhibit LOX in crude enzyme isolates from carrots.

Many spices are known to possess antimicrobial properties attributed to their polyphenolic content. Polyphenolics, particularly flavonoids, with antimicrobial properties are an interest to the food industry and have the added benefit as natural antioxidants and act as cofactors to anthocyanins. The antimicrobial properties of polyphenolics (flavonoids and anthocyanins) extracted from natural sources were evaluated and could be used as a surface coating or wash-water dip treatment for fresh-cut fruits and vegetables. Anthocyanins from two natural sources (black carrot and red grape) and polyphenolics from two spice sources (rosemary and sage) were extracted and purified on reversed phase C18 columns. Antimicrobial properties against *Escherichia coli* (ATCC 25922) and *Salmonella thyphimurium* (ATCC 14028) were performed at various concentrations of each extract using hole-plate diffusion, and results classified according to the diameter of the inhibition zone. Polyphenolic extracts had strong antimicrobial activity compared to anthocyanin extracts alone, but activity was greatly modulated following anthocyanin copigmentation. Results also indicated that the

polyphenolics investigated have a high degree of specificity against the bacterial strains. the study demonstrated favorable antimicrobial interactions between polyphenolics isolated from various sources and indicated their potential role as multifunctional food additives.

Contributions were made to the "phytonutrients in fresh-cut fruits and vegetables" section of a fresh cut review article. The review covered carotenoids, ascorbic acid, polyphenolics, secondary metabolites as influenced by physicochemical treatments, edible coatings, and modified atmosphere packaging.

Impacts:

Treatments were evaluated to assess inhibition of oxidase enzymes and antimicrobial properties of anthocyanins containing intermolecular cofactor associations. In most cases, the inhibition rates following copigmentation were increased following copigmentation. These results indicate that copigmented anthocyanins may serve as multi-functional food ingredients applicable to the fresh-cut industry.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-FRE-03405

Title: Agriculture, Trade, and the Environment in the Caribbean Basin: Sustainable Development Imperatives

Critical Needs: 14,

National Objectives: 1.4, 4.3

Key Themes: Agricultural Competitiveness, Sustainable Agriculture

Summary:

Caribbean Basin countries have strong trade and other economic ties with Florida and the USA. The agriculture sector productivity and competitiveness are vital attributes for expanded Florida/Caribbean economic relationships. This project examines agriculture sector productivity performance of Caribbean Basin countries. The purpose of the project is to evaluate the economic linkages between and among agriculture sector productivity, economic growth, and trade competitiveness.

Progress:

The final phase of this project was carried out within the context of three related sub-projects. The first sub-project was an assessment of the relationship between globalization as a phenomenon and the global incidence of poverty; and the relationship between the poverty/globalization nexus and the theory and practice of contemporary global food security measures. Findings indicate that there is disjunction between the existing cutting-edge theory and practice of dealing with global food insecurity issues, versus those dealing with poverty. The former tends to deal with the issues as a continuum of three related intervention hubs - i.e. relief, rehabilitation and mitigation, and development measures rather than separate entities, while the latter does not. The second sub-project assess the role of financial markets in mitigating some of the agricultural adjustment challenges confronting Caribbean Basin economies under a liberal trading regime. Specifically, the assessment draws heavily from the experience with microfinance lending technologies by Asian and Latin American countries as they seek to improve the functioning of their financial markets as a prerequisite for improved growth and competitiveness. The third sub-project sought to lay out the theoretical

foundations of economic asymmetries as a valid/invalid argument for special and differential treatment within a liberalized trading and integration regime. Special focus is given to CARICOM small economies as members of WTO and FTAA regimes. With the undertaking of this final phase of the project, the overall objective and specific objectives of the project have been met. Earlier estimates of Caribbean countries' agricultural sector multifactor productivity (MFP) indices have been integrated into ongoing analyses of regional agricultural trade competitiveness and growth performance. These competitiveness/growth performance parameters have, in turn, been evaluated within the context of globalization and liberalization changes within the region. Also, policy implications have been drawn from the various empirical findings within the general context of the adjustment challenges facing Caribbean countries as small and highly open economies.

Impacts:

This project has provided solid economic information relating to the structure, conduct and performance of Caribbean Basin countries' agricultural sectors. In providing this type of information, the State of Florida and the United States are better able to assess the implications of short-term and long-term policy regimes as they relate to the trade and other economic and cultural interactions within the region.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FRE-03411

Title: Integrated Methods for Assessing Economic Properties of Ecological Systems

Critical Needs: 29

National Objectives: 4.1, 4.3

Key Themes: Wetland Restoration and Protection

Summary:

Economic activities cause changes in the properties of ecological systems, and these changes can decrease the resilience of ecosystems under external shocks. The purpose of this project is to develop improved methods of representing ecological properties for use in appraisal of economic undertakings.

Progress:

Two fundamental questions underlying this project that we asked ourselves were: what approaches can facilitate the holistic learning necessary for ecosystem restoration and maintenance; and how can learning contribute to the development of science-based ecosystem policy? A premise is that the public values ecosystems in diverse ways, and that for these values to be expressed in public forums, means of representing the many attributes of ecosystems are necessary. During the life of the project studies of the Everglades and the Apalachicola-Chattahoochee-Flint (ACF) River Basin, along with studies of international ecosystems, were undertaken. These efforts taken together lay out means of incorporating economic aspects in adaptive ecological management.

Impacts:

Although it is often difficult to identify impacts of specific research on ecological restoration activities, increasingly the work on the Everglades and the ACF River Basin are being seen as requiring adaptive approaches. Within these approaches means of

communicating knowledge among scientists and to the public are essential. The results of this research facilitates the development of these adaptive approaches.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FRE-03418

Title: Florida Agricultural Labor Markets

Critical Needs: 6, 14, 15, 19, 32, 33

National Objectives: 1.4, 2.1, 5.1, 5.2

Key Themes: Agricultural Profitability, Food Accessibility and Affordability, Family Resource Management, Community Development

Summary:

Labor compensation and contracting systems in seasonal harvest activity are intensively scrutinized for concerns about efficiency and equity. This project examines the economic efficiency of the Florida citrus harvest labor market, and the economic effects of changes in the US labor market on the agricultural labor market.

Progress:

Analyses of Florida citrus harvest employer and worker surveys for 1990-1995 have revealed a number of important characteristics about the harvest labor market. There is extensive contracting for labor activities within the industry, sometimes up to four different levels between the owner of the citrus and the employer of the workers. Growers and others seeking to have their fruit harvested undoubtedly contract for efficiency purposes, although a number of issues are raised regarding its effects on regulatory compliance. The Florida citrus harvest data have provided extensive demographic information specific to Florida, and have provided a means of examining the efficiency of the labor market via the piece rate payment system. Econometric models of the piece rate payment system have suggested efficiency in the payment system in the sense that piece rates equilibrate the difficulty of harvest (in the sense of the time requirement per box of oranges) with the prevailing hourly wage rate. Additional survey work in the rapidly expanding southwest Florida among both citrus and vegetable employers and workers has provided extensive demographic information about area workers, about availability of housing in the area, and employer labor requirements. A major contribution is documentation of the lack of farm worker housing. Both sets of surveys have confirmed that available national data are indeed reflective of the Florida situation. Analyses of the National Agricultural Worker Surveys (NAWS), specifically for the South, have revealed information about workers very similar to findings from the Florida citrus surveys and from the southwest Florida surveys. They have also revealed, however, that the existing NAWS data are in a number of ways not representative of the Florida labor market since they have failed to incorporate workers from the major component of the labor market, citrus workers, in the survey in most of the NAWS surveys. Analysis of the effect of the dramatically increasing income inequality in the U.S. on the farm labor market suggested that the farm labor market has not been significantly affected by the general societal rise in income inequality. The analysis did reveal, however, that changes in the real minimum wage while not affecting the level of agricultural employment, had a positive association with the real farm wage rate over the 1973-1996 period. The relation between trade and labor markets has been analyzed for two nearby countries that provide convenient and relevant cases of changing trade

liberalization. One addressed the allocation of economic rents to labor and other economic agents in the Windward Islands banana production under alternative international trade regimes. The extensive trade preferences in the Windward Islands were found to provide minimal benefit to the workers. A second analysis addressed the effects of trade liberalization on Jamaican labor markets. The major findings were that increasing trade in agricultural products would have little impact on the wages of workers in the sector.

Impacts:

The common piece rate payment method is demonstrated to be an efficient equilibrating mechanism for the relation between time and effort in the harvest labor market. The implication is that the market is operating to equilibrate earnings in accordance with the prevailing hourly wage rate that is considerably above the minimum wage level. While earnings may be low, the labor market is performing its resource allocation function, suggesting that extensive piece rate regulations in the labor market may indeed be detrimental to workers. The southwest Florida analysis suggests a shortage of available housing for farm workers in the recently expanding production area. Action by either employers or governmental agencies is required to fulfill this urgent need. The growing inequality in incomes within the U.S. over the past three decades has apparently not had a direct impact on the farm labor market. Both the Florida and the U.S. farm labor market have shown a relatively constant ratio of farm wage rates to non-farm wage rates over the past five decades, providing no support for concerns about farm labor shortages. Analyses of trade liberalization relative to farm labor markets in nearby countries have shown no effect on farm labor returns. The results suggest that although increases or decreases in trade liberalization in labor intensive commodities in the U.S. may directly impact capital owners, they do not appear to impact agricultural workers on the basis of evidence in other countries.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FRE-03488

Title: Changes in Fishing Regulations and Commercial Fishing Families

Critical Needs: 32, 33

National Objectives: 5.2

Key Themes: Agricultural Financial Management, Community Development, Family Resource Management

Summary:

Interviews will be conducted with commercial fishers and their spouses in selected coastal communities in Florida and North Carolina. Quantitative and qualitative data will be collected regarding sociodemographic characteristics, manifestations of stress and coping strategies, and perceptions of management processes and options.

Progress:

This study examined the family impacts of the Florida net ban that outlawed the use of commercial entanglement nets in state waters. Data was previously collected in personal interviews with 44 commercial gill net fishing families who had participated in research conducted several years before the net ban. This year we focused on changes in various aspects of the household economy, including fishing operations, nonfishing employment,

and household labor. Most men had continued to fish and had developed means of staying in the industry, such as shifting to other species. Regarding their fishing operations, men had significantly reduced their time operating the boat and supervising crew, and as a group they were spending about half as much time on the water. However, they had significantly increased their time in record keeping, sales, and marketing, suggesting that they were spending more time locating new markets for their products. As a group, these men significantly increased their time in nonfishing employment, adding other jobs to their economic portfolio. The largest concentration was in construction and repairs, but men worked in a variety of jobs. Women, on the other hand, had not significantly changed their involvement in fishing operations or in nonfishing employment. Already working full time, they did not significantly increase or decrease their hours after the net ban. Most women were employed in services, suggesting that there were few other employment opportunities that women were qualified for in their communities, or that they found jobs that would allow them to remain flexible so they could continue to support their husband's fishing as needed. Furthermore, both men and women claimed that women were primarily responsible for doing and administering most household tasks and perceived little change in men's involvement after the net ban. However, men were more likely than women to say that some activities were shared or that they were responsible. These findings show that commercial fishing families had altered their labor in very few ways by the time we interviewed them two years after the net ban. Where changes were made, men were primarily the ones to make them because their work was most directly impacted by the net ban. These findings support the rigidity perspective on the household division of labor. This theory proposes that even in times of economic stress, the division of labor is little altered because it is structured around men's production goals and needs.

Impacts:

The highly masculine nature of commercial seafood production and the carefully constructed division between sea and land based activities does not lend itself to women assuming responsibility for work at sea while men pursue nonfishing employment, as has been the case with farming families during the farm crisis. Rather, fishing wives serve as a reserve army of labor by obtaining nonfishing employment to support their husband's involvement in seafood production, and continue to observe a traditional division of labor at home.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FRE-03497

Title: Agricultural Change in the Gulf of Mexico: the Case of Citrus and Sugarcane in Florida and Vera Cruz

Critical Needs: 2, 14, 15

National Objectives: 1.4

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Profitability, Risk Management

Summary:

The methodology spans from the macro socio-economic level to the micro enterprise relationships for citrus and sugar products, including the political economy, international trade trends, and practices and marketing channels. Conceptual models in the form of

commodity chains and channel diagrams will be developed and validated as general analytical tools. Available secondary information on production and international trade will be collected and analyzed. Emphasis for Mexico is on gathering industry level information through interviews with growers, processors, packers, shippers and retailers. Policy assessments will rely on the study of institutional and technological factors that influence competitive position primarily between Florida and Veracruz. This information will be used to provide a basis for assessing structural adjustments to NAFTA and related trade or domestic policies.

Progress:

Research was conducted on both the citrus and sugar industries of Mexico with special reference to the competitive relationship between Mexico and Florida. The work on sugar dealt with the reforms undertaken by the Government of Mexico with respect to its sugar industry, notably privatization of sugar mills and decontrol of the price of sugar. Demand equations for domestic consumption of sugar in Mexico distinguish between direct consumption and indirect consumption by industrial users. An evaluation of the factors which have supported expanded production of Mexican sugar was also conducted. A discussion of the controversy regarding U.S. exports of HFCS was also presented. With respect to citrus, analysis of the Mexican orange industry was conducted in which an evaluation of its potential as an exporter of orange juice to the United States was considered. Since the implementation of NAFTA, Mexico has failed to take advantage of the reduced tariffs imposed by the United States on imports of both FCOJ and not-from-concentrate (NFC). An analysis of the constraints faced by the Mexican citrus industry was presented.

Impacts:

The results of this research provide decision-makers and other academics a better insight to the sugar and citrus sectors of Mexico. Mexico has proven to be a strong competitor in sugar, but not in citrus. As tariffs on orange juice continue to be reduced, U.S. processed orange producers have a better understanding of the competition offered from Mexico

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FRE-03571

Title: Dynamic Economic Analysis of the Florida Citrus Industry

Critical Needs: 19a

National Objectives: 2.1

Key Themes: Food Accessibility and Affordability

Summary:

This study supplements existing work with secondary data and primary data collection. It also develops simulation models of cash flow using standard techniques. The study develops spatial equilibrium models of world markets for citrus products; estimate supply and demand equations for citrus products using econometric techniques. The models developed will be used to analyze policy issues via deterministic and stochastic simulation techniques.

Progress:

Research encompassed four areas related to the Florida citrus industry: the likely impact of passage of FTAA and elimination of the U.S. orange juice tariff, possible economic

implications of citrus canker, potential of the Cuban citrus industry, and NAFTA and its impact of the citrus industries of Mexico and Florida. Elimination of the U.S. orange juice tariff would have a significant impact on Florida orange growers. Delivered-in prices are projected to decline by \$.20 per pound solid which translates to decreased grower prices of \$1.20 to \$1.40 per 90 pound box. Preliminary work suggest the citrus canker would both decrease per acre yields and increase grower costs, hence lowering grower returns. Cuba continues to struggle in competing in world markets for fresh grapefruit. It continues to send most of its fruit to the processing sector. Mexico has not yet been able to take advantage of increased access to the U.S. market under NAFTA. Its citrus industry remains highly fragmented.

Impacts:

Citrus continues to be the largest agricultural industry in Florida and is the second largest citrus producing region in the world. Understanding of the impact of proposed trade agreements and the competitive position of Florida's competitors will assist Florida growers in decisions regarding expansion or contraction of production.

Source of Federal Funds: Hatch

Scope:

FLA-FRE-03584

Title: Private Strategies, Public Policies, and Food System Performance

Critical Needs: 19a, 33

National Objectives: 5.1

Key Themes: Food Safety, Food Security

Summary:

Provide economic analysis of food safety issues. Measure consumer perceptions of foodborne illness and personal risk management strategies to avoid foodborne illness.

Progress:

Public concern about pesticide residues in food has placed pressure on agricultural producers and processors to reduce pesticide residues. This pressure impacts firms through the risks and costs of failing to meet government regulatory standards. It presents new opportunities for product differentiation on the basis of safer food. Firms may react to uncertainty about input quality by seeking to increase the mean level and reduce the variance of that quality. In the case of pesticide residues, this implies efforts to reduce the mean level and variance of pesticide residues in inputs. This article analyzes data on pesticide residues and the occurrence of vertical integration from a sample of Florida strawberry and tomato growers. The hypothesis tested is that products sampled from vertically integrated firms will have lower mean levels and variances of pesticide residues. Vertical integration was associated with significantly less varied fungicide and insecticide residues from Florida strawberry growers. This means that the strawberries coming from vertically integrated strawberry growers are a more uniform quality than those from non-vertically integrated growers. Furthermore, the strawberries from vertically integrated strawberry growers are of higher quality because fungicide residue levels are, on average, lower than those from non-vertically integrated growers. In contrast, vertical integration appears to be significantly associated with more varied fungicide residues in tomatoes; however, insecticide residue levels are less varied and more uniform in tomatoes. This study represents the first known attempt to quantify the relationship between food safety and vertical coordination in agricultural markets. The results confirm the positive relationship hypothesized in the growing number of

qualitative studies in this area, at least for the case of fungicide and insecticide residues in Florida strawberries and the insecticide residues in Florida tomatoes. Some of the limitations of this study suggest important topics for further research. In particular, a similar study using data collected randomly would allow implications to be drawn for a broader population. In addition, information about the weightings assigned by firms to their various product quality objectives would allow the effects of conflicting objectives to be identified. Finally, further evidence of a negative relationship between vertical coordination and pesticide residues in food may suggest important market-based targets for government policies aimed at improving food safety. These may include measures to improve information transfer at all levels of the market through unified grading and labelling standards, improved information technology and more accurate and less expensive testing mechanisms, and government standards in product tracking from producer to processor to retailer.

Impacts:

Further evidence of a negative relationship between vertical coordination and pesticide residues in food may suggest important market-based targets for government policies aimed at improving food safety. These may include measures to improve information transfer at all levels of the market through unified grading and labelling standards, improved information technology and more accurate and less expensive testing mechanisms, and government standards in product tracking from producer to processor to retailer.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FRE-03597

Title: Factors Affecting the Cost of Capital in Rural Communities: Changing Competition and Regulations

Critical Needs: 19a

National Objectives: 2.1

Key Themes: Food Accessibility and Affordability

Summary:

To accomplish these objectives, this study will use econometric techniques to estimate multiproduct cost functions for rural banks and the demand for credit by production agriculture.

Progress:

This study examined the possibility for imperfect competition in the agricultural capital market using an econometric approach to test for monopolistic pricing. In general, the study was hindered by data and concavity problems in the banking data. Much of the research focused on the estimation of system of equations with missing data.

Impacts:

This research project has spawned additional research into nonparametric methodologies that can be used in the estimation of market clearing conditions under missing data. Specifically, following the work of a graduate student, several ongoing efforts exist in imputation procedures for missing data, estimation using entropy approaches, and nonparametric and semiparametric approaches in cost functions.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FRE-03599

Title: The Effect of Farmland Boom/Bust Cycles on the Rural Economy

Critical Needs: 14, 15, 32

National Objectives: 1.4, 5.1

Key Themes: Managing Change in Agriculture, Risk Management, Community Development, Impact of Change on Rural Communities

Summary:

Farmland values in United States have experienced frequent boom/bust cycles. these cycles have significant implications for rural communities and institutions. This research develops an empirical model of farmland boom/bust cycles and links these cycles to economic cycles in rural communities.

Progress:

Most of the work this year centered around the interaction between land values, urban sprawl and productivity. This work was presented in an organized symposium at the AAEA meetings in July and at a meeting of the UNECE, OECD and FAO in Geneva in October. In addition, we received funding for a conference on farmland values that will be held in Washington, DC on May 6, 2002. We are currently in the process contacting the speakers and finalizing the program.

Impacts:

No impacts

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-FRE-03660

Title: Food Demand, Nutrition and Consumer Behavior

Critical Needs: 33

National Objectives: 5.1

Key Themes: Children, Youth and Families at Risk

Summary:

A level version of the Rotterdam demand system will be used to incorporate nutrients as price deflators using the 1987-88 National Food Consumption Survey (NFCS) data. The study will focus on low income household food consumption. A household production model will be used to analyze the implicit values of nutrients in U.S. household food consumption. The 1987-88 NFCS data will be used to estimate the implicit values and the impacts of household composition on the demand for nutrients.

Progress:

Our primary involvement in the demand estimation this year involved extending the Florida Model of demand from a cross-sectional model to a time-series model. Next, we intend to estimate this model using informational fitting.

Impacts:

No impacts

Source of Federal Funds: Hatch

Scope: multi-state

FLA-FRE-03752

Title: Impacts of Trade Agreements and Economic Policies on Southern Agriculture

Critical Needs: 14, 15, 32

National Objectives: 1.4, 5.1

Key Themes: Agricultural Competitiveness, Managing Change in Agriculture, Risk Management, Impact of Change on Rural Counties

Summary:

Econometric models will be used. Import and export demand equations will be developed and estimated to analyze import behavior of agricultural commodities and products in major importing countries. Also, economic growth and potential convergence between developed and developing countries will be evaluated in terms of growth in trade balances and income of selected developing countries.

Progress:

Research indicates that rice farmers in Bengal, India, respond according to rational expectations and make acreage and input decisions based on price, price risk and yield risk. Brazil is the dominant sugar producing and exporting country in the world. Although it is the world's largest exporter of sugar, it converts more of its sugar cane to anhydrous and hydrous alcohol for blending with gasoline than it does to sugar. Research continues on estimating cross-country demand for aggregate food and disaggregate food groups.

Impacts:

Whether or not farmers behave as if they have rational expectations and whether or not they respond in terms of output to price, price risk and yield risk has important implications for agricultural policy. Significant changes in the Brazilian government's policy of blending alcohol and gasoline would have large and significant impacts on the world sugar market.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-FRE-03825

Title: Technical and Economical Efficiencies of Producing, Marketing and Managing Environmental Plants

Critical Needs: 7, 14, 15

National Objectives: 1.2, 1.4

Key Themes: Agricultural Competitiveness, Agricultural Profitability, Managing Change in Agriculture, Risk Management

Summary:

The production and marketing of nursery plants is a growing part of agriculture. Few resources are directed at this industry. It is critical that mechanisms must be developed to assist producers and marketers to better ascertain future opportunities and threats. The purpose of this research is to identify where strategic advantages reside, particularly regarding economic expansion of firms and the efficient use of scarce resources.

Progress:

Our research and education program on horticulture economics and business management

in the environmental horticulture industry includes business analysis of ornamental plant nurseries in Florida, analysis of its economic structure and development, marketing of ornamental plants and turfgrass, and evaluation of technologies for ornamental plant production. Much of this work has involved survey research to collect information from businesses, since secondary statistical data on this industry is not widely available. The principal activities of this research and education program for the horticulture industry during the past year were: economic impact analysis of horticulture and other sectors of Florida agriculture using primary survey data and the Implan input-output modeling software; market survey research for turfgrass, ornamental plants, and related horticultural products; research, client service, and extension education on business analysis for horticultural production; training for growers and landscape service professionals on marketing and cost analysis; maintaining an internet website on horticultural business management (hortbusiness.ifas.ufl.edu), and economic impact analysis (economicimpact.ifas.ufl.edu). Projects that were completed during the past year or currently underway are as follows: market expansion strategies for turfgrass producers in the western U.S. (completed); economic impact of Floridas nursery industry (completed); economic impact of Floridas golf course industry (completed); operating cost study of the Florida horticulture industry (underway). An economic impact study of Floridas environmental horticulture industry in the year 2000 was completed in 2002 to update results from an earlier study. An economic impact study of the Florida golf industry was also completed in 2002. Marketing is a crucially important business function, but many managers in the horticultural industry lack basic marketing skills. A thrust of our extension programming efforts has been to train industry managers in strategic marketing, i.e. to capitalize on their comparative advantages to position their products and services in the most competitive and profitable manner possible. This is particularly important for a rather uniform and undifferentiated commodity such as turfgrass. A major 3-year project entitled Market Expansion Strategies for Turfgrass Producers in the United States, funded by the International Turf Producers Foundation, was completed in 2002. This work sought to develop recommendations for increasing overall demand for turfgrass. Funding of 24,300 dollars was recently approved by the Florida Nurserymen and Grower's Association for a project entitled Operating Cost Study of the Florida Horticulture Industry. Principal investigators are J. Haydu and A. Hodges. This project will update previous estimates of costs and returns for wholesale nursery firms in Florida. It will also develop an interactive internet website to display results for various industry sectors or geographic areas.

Impacts:

The impact of these research and education programs is realized by horticulture industry managers who have adopted better management practices or are better informed about current market and economic conditions. Landscape service professionals who participated in the training programs on cost analysis and bidding were enabled to produce more accurate estimates of landscape job cost, and to prepare more competitive bids for service contracts. Various industry groups continue to request more market analysis and use the results for decision making. Turfgrass producers were better informed about potential new markets for their product that may increase overall demand for turfgrass. The economic impact analysis work enabled horticulture industry managers and leaders to better represent their industry to the public, regulators and policy-makers, and to better understand the policy issues facing the industry. Economic evaluations of irrigation technologies serve a fundamental need of producer firms for more efficient water use. The management of internet websites for promulgation of research results has

made this information more accessible than ever before, and is now the preferred means for information dissemination.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-FTL-03386

Title: Dynamics and Management of Plant-Parasitic Nematodes of Turfgrass

Critical Needs: 17, 25

National Objectives: 1.2, 4.2

Key Themes: Biological Control

Summary:

Plant-parasitic nematodes cause significant root loss to warm-season turfgrasses leading to underperformance. Current methods of chemical control are highly dangerous to non-targets and have lost efficacy. Alternative management strategies are needed. This project examines newly discovered endoparasitic bacteria for biological control of plant-parasitic nematodes in turf and other management strategies.

Progress:

A new species of *Pasteuria* (S-1) (obligate, gram positive, and endoparasitic bacterium) was discovered in Florida that parasitizes the sting nematode, *Belonolaimus longicaudatus*. This bacterium was characterized morphometrically, ultrastructurally and with host attachment studies. Further work characterizing this strain and others isolated from bermudagrass turf using 16S rDNA sequence analysis has demonstrated that S-1 had 96% or less similarity to the 16S rDNA sequences from previously reported *Pasteuria* and formed a clade with other nematode-specific *Pasteuria*. A 24-month survey of locations in hybrid bermudagrass plots in southern Florida demonstrated density dependent regulation of sting nematodes in areas infested with *Pasteuria* (S-1). Survey areas that started with low levels of spore encumbrance showed a building trend in encumbrance levels and a corresponding decline in the numbers of sting nematodes. Locations with high spore encumbrance levels cycled and appeared to suppress sting nematode population resurgences, suggesting that *Pasteuria* (S-1) can suppress the sting nematode in a turfgrass ecosystem. A study comparing the effects of inoculating 900 mls of *Pasteuria* (S-1) spore-infested soil (ca. 5,000 endospores/ml) into the center of 1 m² turfgrass plots demonstrated that *Pasteuria*-infested soil can be introduced into a USGA site with high numbers of sting nematodes to bring about density dependent control within about 12 months. DiTera in two formulations (WDG and ABG 9022) at 100 lbs formulated per acre and Imidochloprid at 4 rates were evaluated to determine if they suppress sting nematodes relative to an untreated control and a commercial standard organophosphate nematicide (fenamiphos). Under the conditions of this experiment, none of the treatments significantly improved the turf quality throughout the experiment or significantly suppressed sting nematode populations.

Impacts:

Plant-parasitic nematodes cause serious damage to turfgrass. Postplant nematicides have been used for the management of phytoparasitic nematodes in turf for more than 20 years. These chemicals pose health and environmental risks requiring the development of alternative strategies such as biological control. *Pasteuria* bacteria and biorational compounds may have potential for postplant management of phytoparasitic nematodes in perennially managed turf ecosystems.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03423

Title: Foraging Behavior and Control of Subterranean Termites

Critical Needs: 17, 33

National Objectives: 1.1, 1.2, 5.2

Key Themes: Precision Agriculture, Home Safety

Summary:

Monitoring stations containing pre-weighted wooden blocks will be placed within foraging territories of subterranean termites to measure foraging activity. Effects of environmental factors such as temperature, rainfall, food availability, and soil type on foraging activity will be examined using correlation analysis. Foraging populations and territory sizes of subterranean termite colonies will be elucidated using the triple-mark-recapture procedure and the weighted mean model. Duration of structural protection afforded by a baiting program from subterranean termite populations will be measured using the monitoring stations and stake survey methods. Effects of baiting technology for protection of historic structures and landscapes from subterranean termites will be evaluated using above-ground and in-ground monitoring and baiting stations.

Progress:

Sensors comprised of wooden stakes painted with conductive circuits of silver particle emulsion were inserted in Sentricon stations in soil near structures. Sensors were wired to a datalogger that was programmed to test for circuit breakage every 2 h and store the data in its memory. A host computer was programmed to access the datalogger through telephone communication lines for data download every 4 days. The computerized monitoring system was tested in 3 remote sites, and site visits were conducted monthly for 6 months to examine system accuracy in detecting termite activity. The mean monthly accuracy for the system to correctly report the presence (true positive) or absence of termites (true negative) in the stations was 85%, but the accuracy at 6 months after system installation ranged from 41 to 79%. Mean sensor longevity, defined as the time for a sensor circuit to break in the absence of termites, was ca. 4.4 months. Literature on the studies of foraging behavior of subterranean termites was reviewed. To study the foraging galleries of subterranean termites in soil, early researchers painstakingly excavated underground tunneling system of these cryptic insects. These studies enabled the visualization of the underground gallery system of subterranean termites, but the destructive sampling methods also rendered the field colonies useless for further studies. Indirect sampling techniques such as monitoring and trapping systems developed in the early 1970s provided unprecedented access to underground populations of subterranean termites. Monitoring stations derived from these techniques were adopted for termite population studies, and were used as access port or entry portal for applying control agents such as microbes or bait toxicants. They were also used to study populations of subterranean termites in different environments, and were essential in the development of baits for population control of subterranean termites. Fractal geometry was used to analyze the morphology of the tunneling system of two subterranean termite species, *Reticulitermes flavipes* and *Coptotermes formosanus* (Isoptera: Rhinotermitidae), and to evaluate the effect of termite species, and the presence of wood on the degree of intricacy of the tunnels represented by the fractal dimension (D), and on the abundance of tunnels (log K). The differences in D and log K, before and after termites reaching a testing chamber, were also examined. Results indicated that termite tunneling systems have a

fractal structure because D lies between -1 and -2 . The tunnel fractal dimension (D) was not significantly different between *C. formosanus* and *R. flavipes*, before or after reaching a testing chamber, suggesting that *C. formosanus* and *R. flavipes* created tunnels with the same degree of intricacy at all time periods. The abundance of tunnels, $\log K$, was higher before reaching a testing chamber, while termites were searching for food, than after regardless of the presence of wood or the species of termite introduced in the arenas.

Impacts:

Over 150,000 homes are currently protected from subterranean termites using the Sentricon system which is a monitoring-baiting program that relies on a routine monitoring for early detection of termite activity. Manual monitoring, however, is labor consuming and costly because a technician has to be on site to open each station for visual inspection. For some termite species, a frequent inspection may disrupt termite feeding in the stations. Moreover, some homeowners often question if the monthly or quarterly on-site inspection is frequent enough to prevent termite damage before detection and subsequent baiting. The automated monitoring system described in the study can be used for a frequently monitoring of termite activity near a house, which will remedy these problems. Understanding of previous studies on the ecology and behavior of subterranean termites provide us with future direction of research for these cryptic insects which may ultimately lead us to a better control strategy. The fractal dimension model may provide new ways for understanding the functional implications of the branching patterns of termite tunnels in relation to optimum soil exploration by termites.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03539

Title: The Influence of Edaphic Factors on Growth of Torpedograss, Maidencane, and Hygrophila

Critical Needs: 17, 29

National Objectives: 1.2, 4.1

Key Themes: Invasive species, Endangered species, Natural Resources Management

Summary:

Torpedograss and hygrophila are two exotic plants causing major problems in aquatic systems in Florida. Maidencane, a native plant closely resembling Torpedograss, is being displaced by torpedograss and the emerged growth form of hygrophila. This project will examine edaphic factors related to growth and development of torpedograss, hygrophila, and maidencane.

Progress:

Torpedograss is a major weed problem in shoreline and wetland areas. Control of torpedograss is essential for establishment and growth of native emerged aquatic plants in mitigation and restoration projects. Torpedograss can take advantage of a variety of nutrient conditions in the sediments, and grow at the expense of native plants. Torpedograss is not considered an obligate wetland species, but will establish and grow under conditions similar to that for Maidencane, a native wetland grass. Hygrophila grows best at high sediment nutrient levels. Control of emerged plants along the shoreline is essential in helping to prevent establishment of submerged plants.

Impacts:

This project showed that control of Torpedograss and Hygrophila is essential to allow for growth of Florida's native aquatic plants. Both of these exotic plants will grow as monocultures crowding and eliminating growth of native species. Most native species require low sediment nutrients for optimum growth. Because Torpedograss will grow under high and low nutrients in the sediments, this grass removes nutrient resources required for growth of native species. Hygrophila on the other hand prefers to grow in soils with high amounts of nutrients. Surveys for nutrients in the sediments may help in determining locations where Hygrophila problems may occur.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03544

Title: Improved Nutrition and Irrigation of Ornamental Plants

Critical Needs: 24, 27

National Objectives: 4.1

Key Themes: Soil Quality, Water Quality

Summary:

Plant nutrition is a major limiting factor in the production and use of ornamental plants in Florida. The purpose of this project is to study tropical ornamental plant nutritional disorders as well as their causes, prevention, and treatment.

Progress:

A study with Nora Grant ixoras showed that a common reddish leaf blotch disorder on older leaves of this species was caused by a combination of K and P deficiencies. In another study evaluating two different irrigation systems, areca palms, philodendrons, and impatiens were found to grow better with overhead irrigation, whereas petunias and salvias grew better with subirrigation. Use of subirrigation also eliminated nitrate runoff from the pots. A study evaluating the effects of P fertilization on root and shoot growth of 10 species of herbaceous ornamental and vegetable plants showed that shoot dry weight increased for all species as P fertilization rate was increased from 0 to 8 mg P/pot/week. At higher rates, neither root nor shoot growth increased. Root to shoot ratio decreased sharply as P fertilization rate was increased from 0 to 8 mg/pot/week, but remained relatively constant in response to further increases in P fertilization rate. Another study showed that clinoptilolitic zeolite, when used as a soil amendment at 10 or 20% by volume, improved areca palm color and size in a Margate Fine Sand soil, but did not improve palm quality in a pine bark-based potting substrate where K is not normally limiting. Downy jasmine size and quality were improved in both the potting substrate and the sand soil due to improved ammonium retention by the zeolite. In two experiments, optimum fertilization rates were determined for several species of tropical ornamental plants grown under different light intensities. In palms and pleomele, optimum fertilization rates did not differ greatly among light intensities, but in artillery fern, the optimum fertilization rate was much higher for higher light intensities. In an experiment evaluating the effects of fertilizer NPK ratio (3:1:2 vs 1:1:1) and rates on plant color rating, root and shoot dry weights, and number of flowers or fruits in five species of bedding plants, we found that plant quality variables responded only to N levels in the fertilizer, not P or K levels. An experiment evaluating the relative effectiveness of various Fe sources in alleviating Fe chlorosis in dwarf ixora grown in a limestone rock soil or a poorly aerated sand/muck soil showed that FeEDDHA, followed by FeDTPA and FeEDTA were the most effective sources on both soils. Ferrous sulfate was no better

than untreated controls on either soil type. When applied as foliar sprays, only FeDTPA effectively eliminated Fe chlorosis. In another series of experiments we found that FeEDTA and FeDTPA are highly toxic to marigolds and geraniums, whereas FeEDDHA was only slightly toxic to these plants, while ferrous sulfate was relatively non-toxic. Soil pH had no effect on Fe fertilizer toxicity.

Impacts:

The reddish leaf blotch disorder of ixoras can be controlled with appropriate P and K fertilization. Nursery nitrate runoff can be reduced or eliminated without sacrificing plant quality by using ebb and flood subirrigation. Most plants can be grown just as well with much less phosphorus fertilization. Production can be tailored using fertilization rates and light intensity. The efficiency of water-soluble fertilizers can be improved in highly leached soils by incorporating clinoptilolitic zeolite. Fe chlorosis can be successfully treated in ixora using chelates such as FeEDDHA on alkaline soils or foliar sprays with FeDTPA. The Fe toxicity problem in marigolds and geraniums can be eliminated by using FeEDDHA instead of the highly toxic FeEDTA or FeDTPA.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03554

Title: Flower Initiation and Development of Floriculture Crops

Critical Needs: 4, 7

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Ornamental/Green Agriculture, Plant Production Efficiency

Summary:

Plant production practices can influence floriculture crop flower initiation and development. The purpose of this study is to learn more about how varying production practices and greenhouse conditions will influence floriculture crop flowering and development.

Progress:

The objective of this project is to investigate the influence of production practices and the environment on flower initiation and development of floriculture crops. Several studies were conducted to meet this objective. Growth of selected bedding plant species and herbaceous perennial plant species in substrates containing compost made from biosolids and yard trimmings, compost made from seaweed and yard trimmings, dairy manure, or swine manure were similar to control plants. In many cases, fertilization rates could be reduced when nutrient rich amendments were incorporated into the growing substrate. An additional study was conducted investigating the impact of compost maturity on the end use. Another study investigated the growth and flowering of bedding plants as well as nutrient leaching from three different commercial substrates fertilized with either a controlled-release fertilizer or a water-soluble fertilizer. New Guinea impatiens plant growth and flowering was investigated under full-sun, fifty-five percent shade, or seventy-three percent shade and at ten fertilization rates. Best quality full sun plants were grown at higher fertilization rates than best quality shade plants. A final study compared the growth and flowering of commercially important aquatic plant species under

traditional aquatic production regimes versus traditional greenhouse production regimes. Saleable quality aquatic plants were produced in both regimes.

Impacts:

Optimization of fertilization rates based on the growing environment and production practices to produce marketable flowering plants will reduce fertilizer waste and nutrient run-off from greenhouses

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03602

Title: Taxonomy and Biosystematics of Cultivated Plants

Critical Needs: 4, 5, 7

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness, Plant Germplasm, Diversified/Alternative Agriculture

Summary:

The Florida nursery industry relies on the biodiversity of compatible floras worldwide. Understanding the biological relationships of important cultivated plant groups is thus extremely important and has immediate applications to future crop improvement through selection and breeding. The purpose of this project is to elucidate the taxonomic and other biological relationships of useful ornamental plants. Particular focus is on the monocot families Amaryllidaceae and Alstroemeriaceae, both important sources of cutflower and garden herbaceous perennials.

Progress:

Analysis of three plastid DNA sequences for a broad sampling of Amaryllidaceae resolved the American genera of the Amaryllidaceae as a clade that is sister to the Eurasian genera of the family, but base substitution rates for these genes are too low to resolve much of the intergeneric relationships within the American clade. We obtained ITS rDNA sequences for 76 species of American Amaryllidaceae and analyzed the aligned matrix cladistically, both with and without gaps included, using two species of *Pancreas* as outgroup taxa. ITS resolves two moderately to strongly supported groups, an andean tetraploid clade, and a primarily extra-andean 'hippeastroid' clade. Within the hippeastroid clade, the tribe Griffineae is resolved as sister to the rest of Hippeastreae. The genera *Rhodophiala* and *Zephyranthes* are resolved as polyphyletic, but the possibility of reticulation within this clade argues against any re-arrangement of these genera without further investigation. Within the andean subclade, Eustephieae resolves as sister to all other tribes; a distinct petiolate-leafed group is resolved, combining the tribe Eucharideae and the petiolate Stenomesseae; and a distinct Hymenocallideae is supported. These andean clades are all at least partially supported by plastid sequence data as well. We infer from our data that a great deal of the diversity of the family in the Americas is recent, and that the American Amaryllidaceae may have been reduced to peripheral isolates some time after its initial entry and spread through the Americas. While the sister relationship of the American and Eurasian clades might argue for a Boreotropical origin for the family in America, the cladistic relationships within the American clade based on ITS do not provide any further support for this or any other hypothesis of the family's entry into America. The new tribe Clinantheae is described (four genera: *Clinanthus*,

Pamianthe, Paramongaia and Pucara), and the lorate-leaved species of Stenomesson are transferred to Clinanthus.

Impacts:

Greater understanding of the phylogenetic relationships of the flowers represented by the lily plant families.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03607

Title: Bionomics and Management of Hemipterous Pests of Woody Ornamental Plants and Turfgrasses in Florida

Critical Needs: 7, 17, 33

National Objectives: 1.2, 5.2

Key Themes: Invasive species

Summary:

Insect species in the order Hemiptera that are important pests of woody ornamental plants and turfgrass in southern Florida will be studied in the field to obtain biological data of importance in developing pest management strategies for them.

Progress:

Research was initiated to elucidate the biology of and develop pest management methods for the lobate lac scale, *Paratachardina lobata* (Insecta: Hemiptera: Sternorrhyncha: Kerriidae). Since this introduced southern Asian species was found in Florida in 1999, it has undergone an explosive spread through urban and natural areas in three southeastern Florida counties, and has become an extremely serious threat to ornamental trees, fruit trees and to native vegetation. They are causing dieback and often death of these plants. More than 120 species in 44 families of woody plants were determined to be hosts of *P. lobata* in Florida. These include 40 plant species native to southern Florida, most of which are also native to the Caribbean Region. A root drench treatment of *Ficus microcarpa* trees with imidacloprid resulted in nearly complete kill of the scale insects. Preliminary results indicated that a foliar treatment with horticultural oil controlled this scale insect. Further research to develop chemical control is continuing and biological control research for this scale insect has been initiated. Research on chemical control of an introduced armored scale insect pest, *Aulacaspis yasumatsui* (Hemiptera: Sternorrhyncha: Diaspididae), a pest of cycads (Cycadaceae), was continued. *Aulacaspis yasumatsui* infests roots in addition to above-ground parts of cycads. Immersing the root ball of containerized cycads in an emulsion of paraffin-based horticultural oil and water resulted in almost 100 percent control of *A. yasumatsui* on the roots. Natural enemies of palm leaf skeletonizers, *Homaledra* spp. (Lepidoptera: Coleophoridae), are being identified from sites throughout Florida. Parasitic species that were reared from *Homaledra* spp. included *Phytomyza* sp. (Diptera: Tachinidae), and hymenopterans tentatively identified as *Goniozus nigrifemur*, *G. scitulus*. (Bethyridae), *Conura* sp. (Chalcidae), *Horismenus* sp. near *ignotus* (Eulophidae), and *Arachnophaga costalis* (Eupelmidae). A predaceous beetle, *Plochionus amandus* (Carabidae) that was reported in 1937 to be a natural enemy of *Homaledra sabalella* was occasionally found on palm fronds infested with this insect. Field tests were continued to evaluate varieties of coconut palm, *Cocos nucifera* (Palmae) and species of *Phoenix* for resistance to lethal yellowing

(LY), a disease of palms transmitted by *Myndus crudus* (Hemiptera: Auchenorrhyncha: Cixiidae). An experiment was continued to test imidacloprid drench treatments for preventing LY to *Pritchardia affinis* palms, which are highly susceptible to LY.

Impacts:

the chemical treatments developed and under development in this project to control two serious scale insect pests of plants, *Aulacaspis yasumatsui* and *Paratachardina lobata*, will provide effective control of these pests in nurseries and landscape situations, and have broad application for control of other scale insect pests. The host plant range of *Paratachardina lobata* compiled in this project is an important part of the knowledge needed to develop management methods for this pest. Identification of natural enemies of palm leaf skeletonizers, *Homaledra* spp., is a step towards developing biological control methods for these insects, which are pests in Florida, the Caribbean and in California.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03609

Title: Introduction and Evaluation of Ornamental Plants

Critical Needs: 4, 7, 14

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness, Ornamental/Green Agriculture, Tropical Agriculture

Summary:

The nursery industry is constantly looking for new plant materials to add to their product mix. The purpose of this project is to import, evaluate, and work out production methods for new ornamental horticultural crops.

Progress:

No work was done on this project in 2002.

Impacts:

Malayan Dwarf and Maypan coconuts have been widely planted throughout south Florida and the Caribbean region because of their supposed resistance to lethal yellowing, but this study shows that they are not resistant to this disease. The Fiji Dwarf, however, may be.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03620

Title: Weed Biology and Control for Turfgrass and the Landscape

Critical Needs: 7, 17

National Objectives: 1.2

Key Themes: Diversified/Alternative Agriculture

Summary:

Controlling weeds in Florida turf costs \$90 million each year. Weeds damage public

easements, lawns, and recreation areas, and cost urban people in health, safety, and removal. Weeds cause human allergy, traffic accidents, and loss of use and reduction of property values. This study seeks environmentally sound ways to manage urban weeds, especially weeds of golf courses, sod, and home lawns.

Progress:

Carfentrazone+phenoxy herbicide mixtures caused > 60% injury to dollarweed, *Hydrocotyle umbellata*, 4 days after application (DAT) at label rate, versus > 60% injury from atrazine 8 DAT, and > 60% from metsulfuron 21 DAT. Carfentrazone + phenoxy mixtures caused > 60% injury to matchweed, *Phyla nodiflora*, 4 DAT, versus > 60% from metsulfuron 15 DAT, but atrazine did not exceed 15% injury. The speed and effectiveness of broadleaf weed control with carfentrazone-ethyl mixtures is encouraging, but there was unacceptable phytotoxicity to St. Augustinegrass turf from applications above the label rate, due to 2,4-dichlorophenoxyacetic 2-ethylhexyl ester as the principal active ingredient. Other 2,4-D formulations were less injurious. For example, 2.2 kg/ha acid equivalent 2,4-D as dimethylamine formulation caused 19% injury to St. Augustinegrass, whereas 0.7 kg/ha 2,4-D as 2-ethylhexyl ester caused 60% injury. A volatility bioassay on possible nontarget dicotyledonous ornamentals and groundcovers used clear polyethylene plastic enclosures. Plant injury (epinasty of stems and petioles, marginal leaf curling, stem swelling, root proliferation, discoloration of leaf or stem, and flower drop) showed significant species, herbicide, and species X herbicide interaction effects. All 2,4-D ester formulations severely injured ornamentals, and 2,4-D amine did not. An herbicide replacement was found for MSMA for postemergence grassy weed control in bermudagrass, *Cynodon* sp. Foramsulfuron at 1.3 to 1.9 kg/ha was as effective or more effective in goosegrass, *Eleusine indica*, control, compared with MSMA at 2.2 kg/ha. Each application of MSMA adds to the environment 1.0 kg/ha elemental arsenic, a Class A human carcinogen. Tank mixture of foramsulfuron with metribuzin at 140 g/ha is as effective in controlling goosegrass as tank mixture of MSMA with metribuzin at 280 g/ha. Dollarweed is the most serious weed of St. Augustinegrass lawns in Florida; St. Augustinegrass, *Stenotaphrum secundatum*, is the most widely used lawn species in Florida. Because of concern about encouraging dollarweed through excess irrigation, irrigation management was used to attempt to reduce dollarweed populations in the field. High (daily to replace evapotranspiration) irrigation supported high dollarweed infestation, but moderate (weekly to saturate the root zone when wilted) and low (only rarely under extreme wilt) irrigation caused the loss of dollarweed populations to less than 5%. Field experiments were summarized on postemergence control of tropical signalgrass, *Urochloa subquadripata*, with asulam, diclofop, ethofumesate, metribuzin, MSMA, quinclorac, and trifloxysulfuron, and preemergence control with atrazine, dithiopyr, metolachlor, oryzalin, oxadiazon, pendimethalin, and prodiamine. Only MSMA at 2.5 kg/ha in two to four applications was effective in control, and could only be used in bermudagrass turf. Among preemergence herbicides, tropical signalgrass seedlings were controlled best by oxadiazon at 2.3 kg/ha and pendimethalin at 3.4 kg/ha, but the most effective herbicide, oxadiazon, resulted in 27 seedlings/sq m, compared with 100 seedlings/sq m for untreated.

Impacts:

Discovery that foramsulfuron is an herbicide replacement for MSMA is of great value in urban areas, including sports turf and golf courses. MSMA is widely used for goosegrass control. Each legal application of MSMA adds approximately one pound per acre of elemental arsenic to the urban environment. Arsenic is a Class A human carcinogen, and a heavy element. It is not capable of chemical breakdown, but has been discovered in

Florida groundwater at levels many times higher than the 10 ppm tolerance for drinking water.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03711

Title: Turfgrass Fertility Management and Environmental Impact

Critical Needs: 7, 27

National Objectives: 1.1, 1.2, 4.1, 4.2, 4.3

Key Themes: Plant Health, Water Quality

Summary:

N and P are essential for healthy turfgrasses. However, the fertilization must minimize N and P losses in runoff waters. The project is designed to identify techniques that minimize nutrient loss in runoff waters from golf and home lawns, and to identify practices that promote playable sports turf. This project examines the effectiveness of fertilizer application techniques, sources, rates, and irrigation to reduce N and P in runoff waters.

Progress:

There is great concern over environmental impacts from turf management. Two projects were conducted to determine N leaching from turfgrass systems. In one project the effect of 3 N rates (15, 30 and 60 g N/m²), 4 N sources (urea granular, urea liquid, SCU, and a urea/SCU 50/50 combination) and two irrigation rates (adjusted vs. fixed) on N leaching from St. Augustinegrass was determined. The adjusted irrigation was based on 125% ET adjusted monthly for changes in ET, while the fixed irrigation treatment was based on the highest ET. Irrigation was applied three times per week. In the adjusted treatment, irrigation was voided when rain exceeded 0.8 cm while the fixed irrigation was not voided after rain. The grass was obtained from sod grown on either 4 or 10% organic matter. N leaching increased with N rate and by increased irrigation. N source did not effect N leaching. There was more N leaching in turf with 10% organic matter. In the second study, two contrasting landscapes (St. Augustinegrass vs. a mixed-species ornamentals landscape) were monitored for nutrient leaching. There were significant treatment effects for nutrient leaching.

Impacts:

These experiments are being conducted to quantify environmental impacts from turfgrass management, in particular nitrogen. The information will provide the basis for BMPS to minimize potential environmental impacts from turfgrass management.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-FTL-03754

Title: Coconut Lethal Yellowing and Related Diseases

Critical Needs: 4, 5, 16, 17

National Objectives: 1.2

Key Themes: Tropical Agriculture, Plant Geonomics, Plant Germplasm, Biotechnology

Summary:

Lethal yellowing is a fast-spreading, fatal disease of coconut and other palms and limits palm production because it is incurable at present. The purpose of this study is to learn more about lethal yellowing epidemiology and to devise practical disease management strategies.

Progress:

Nineteen HindIII restriction fragments of lethal yellowing (LY) phytoplasma DNA cloned in pUC19 and Escherichia coli DH5-alpha cells were chosen for sequencing based on their hybridization to probe DNA derived from LY-diseased coconut palm and lack of hybridization to DNA from healthy coconut palm. Partial or full-length sequences from clones ranging from 0.6 to 5.5 kb in size were subjected to database searches for homologous nucleotide and protein sequences on the National Center for Biotechnology Information (NCBI) network server using the BLAST program. Prediction of open reading frames (ORFs) in sequence data was obtained using ORF Finder. Collectively, cloned fragments shared little or no homology with eukaryote DNA sequences. Among sequences, partial or complete ORFs sharing significant homology with the following prokaryote genes were identified: gyrA and gyrB; dnaK; dTMP kinase; DNA-directed RNA polymerase beta-subunit; secA; peptide release factor 2 (RF2); cation-transporting ATPase; DNA-dependent RNA helicase; tRNA synthetases class I; 50S ribosomal protein genes; and 30S ribosomal protein genes. As predicted, these putative genes share greatest similarity with those of gram-positive bacterial species such as Bacillus subtilis, B. halodurans and Clostridium perfringens, or with cultivable mollicutes.

Impacts:

Genome sequence information will help to define strain diversity and current geographic range of the noncultivable lethal yellowing (LY) phytoplasma that is associated with a fast-spreading, fatal disease of coconut and other palms in the Americas. It is expected that this information will benefit those responsible for coconut improvement, coconut rehabilitation programs or international transfer of coconut genetic resources.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FTL-03807

Title: Integrated Management of Ornamental Plant Pests

Critical Needs: 7, 17, 25, 29

National Objectives: 1.2, 4.2

Key Themes: Invasive species, Integrated Pest Management

Summary:

The amount of insecticide used and associated health and environmental concerns regarding applications within urban areas presents unique considerations. This work will investigate use of cultural, and biorational tactics for ornamental plant pest management as well as determine methods to improve the efficacy of insecticide use.

Progress:

In Florida, the sugarcane weevil *Metamasius hemipterus* is an important pest of sugarcane, palms and other tropical plants. After pairing males and females, it took an average of 27.0 days for females to begin oviposition. The oviposition period lasted 56.8 days. Females lived 142.3 days and laid an average of 51.6 eggs. Mean egg production during the oviposition period was 1.1 eggs/day. Fertility averaged 81.3% eclosion during the oviposition period. Response of *M. h. sericeus* to traps baited with sugarcane and aggregation pheromone was investigated over a two-year period and within 24-hour periods. Capture of weevils varied through time but peaked in the spring following the beginning of the rainy season. Diel observations indicated a strong crepuscular activity pattern. We documented the decline of a 2-hectare Canary Island date palm (*Phoenix canariensis*) nursery caused by the palmetto weevil (*Rhynchophorus cruentatus*) in Dade County, FL. External palm symptoms were defined, divided into nine categories, and representative palms were destructively harvested to assess internal weevil associations. Apparently healthy palms declined and died in a mean of 49 days. At the beginning of the study, 42% of 950 palms appeared healthy but within seven months only 3% were alive. Economic losses were estimated at \$285,000 - \$380,000 for the nursery studied. The mean palm weevil counts ranged from 0.3 to 223.3 weevils per palm, for healthy to collapsing palms, respectively. Twenty-four weevil grubs were sufficient to kill one mature palm. External symptoms did not allow preventative diagnosis and treatment of internal *R. cruentatus* infestations. Thus, phytosanitation for management should be implemented as soon as host leaves droop and weevil frass is observed. Growers and buyers of *P. canariensis* in regions where *R. cruentatus* exists should be aware of the potential lethal risk that it poses for this non-native palm. The aggregation pheromones were studied from two geographical isolates (Hawaii and Queensland, Australia) of the New Guinea sugarcane weevil, *Rhabdoscelus obscurus*. Coupled gas chromatographic-electroantennographic detection (GC-EAD) and GC-mass spectrometric (MS) analyses of Porapak Q volatile extract from male and from female Hawaiian *R. obscurus* revealed a single EAD-active, male-specific candidate pheromone which was identified as 2-methyl-4-octanol (1). Corresponding volatile analyses from male and from female Australian *R. obscurus* revealed EAD-active, male-specific candidate pheromone components; (E2)-6-methyl-2-hepten-4-ol (rhynchophorol) and 2-methyl-4-heptanol. Field experiments confirmed that 1 is the pheromone of the Hawaiian *R. obscurus* population and that 1 and 2 in combination, but not singly, are pheromone components of the Australian *R. obscurus* population.

Impacts:

Better understanding of the risks associated with production of Canary Island date palms for ornamentals. Identification of male-produced pheromones of New Guinea sugarcane weevil will aid in trap development for monitoring in countries with this weevil and for preventing entry of the weevil at ports of entry in countries without the weevil. Studies about the introduced Silky cane weevil, *Metamasius hemipterus sericeus* will help in development of monitoring and management strategies in southern Florida.

Source of Federal Funds: Hatch

Scope: State Specific

Title: Plant Growth Regulators to Enhance Profitability of Fresh and Processed Florida Citrus

Critical Needs: 2, 6

National Objectives: 1.1, 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Profitability, Plant Production Efficiency, Innovative Farm Techniques

Summary:

Plant growth regulators (PGRs) are effective in improving fresh fruit quality and production in citrus but have given unpredictable and variable responses. Developing reliable recommendations for use of PGRs and adoption by the Florida industry should contribute to citrus profitability. This project determines the effectiveness of PGRs in controlling cropping of citrus, evaluates the effect of PGRs on citrus fruit quality, and identifies procedures for effective use of PGRs in Florida citrus.

Progress:

NAA thinning was compared on 'Murcott' trees of three different ages, with applications made in the spring of 2001 at 250 and 350 ppm. At harvest in 2002, NAA increased fruit size in all experiments with little difference between the two rates. Small plot data showed that NAA increased mean fruit weight by 25-34%, decreased fruit per tree by 24-38%, and decreased fruit yield per tree by 4-24%. Packinghouse data were consistent with small plot results: NAA increased production of 64-100 count fruit by 59-100%, even though no fruit were eliminated because of small size in non-thinned controls. In two of the packinghouse assessments, NAA treatments increased packout by 10% of total harvested crop through improved fruit appearance. Crop value was significantly enhanced in only one of three trials that permitted statistical analysis. However, improved return cropping was apparent in all NAA-treated rows the following spring. Previously, we observed that gibberellic acid (GA) applied at fruit color break increases juice weight of processing oranges, but the mechanism for the increase was unknown. Two hypotheses suggested that GA either increased peel firmness and juice extraction efficiency or that GA reduced peel volume and increased juice content. A series of fruit rheological tests were run and found that GA increased peel shear and tensile strength, but these increases were poorly correlated with juice yield. Alternatively, we found that GA reduced fruit peel volume by decreasing peel thickness and thus increased juice content. GA3 also caused an increase in peel hexoses that may be associated with peel color. MBTA, a PGR reported to increase fruit Brix, was applied at several bloom stages and concentrations to 'Hamlin' and Valencia oranges with applications in 2001 and 2002. Modest and variable increases in juice Brix have been observed from some treatments. In the 2001-02 season, MBTA again significantly increased corrected Brix on average by 0.28% for 'Hamlin' oranges at the 2 locations, but had no effect on corrected Brix of 'Valencia' oranges. There were no cumulative effects of MBTA on fruit quality, yields, tree vigor, or flowering.

Impacts:

Based on this research, thousands of acres of Florida oranges are sprayed with GA for increased juice weight, increasing profitability for growers and processors. NAA fruit thinning / size enhancement has greatly increased in Florida citrus and many growers are testing benefits of fall / winter GA to enhance cropping. MBTA has great potential for the processing orange industry in Florida, if parameters can be identified which consistently enhance fruit Brix.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-FYC-03488

Title: Changes in Fishing Regulations and Commercial Fishing Families

Critical Needs: 33

National Objectives: 5.2

Key Themes: Children, Youth and Families at Risk, Jobs/Employment

Summary:

A Florida constitutional amendment passed by voters in 1994 eliminated the use of commercial entanglement nets in state waters, thereby affecting thousands of families employed in the commercial industry, as well as a "way of life" passed down from one generation to another. The purpose of this research is to provide qualitative and quantitative information about the family impacts of the net ban.

Progress:

This longitudinal study examined the family impacts of the Florida net ban on commercial fishing families. A sub-group of families (44 couples) who participated in a study of family stress and coping in the early 1990s was reinterviewed two years after the Florida net ban, in 1997-1998. There were significant changes in the organization of the household economy, including shifts in the division of labor in fishing operations, increased dependence on nonfishing income, and declines in the percentage of income derived from commercial fishing. Three-fourths of men continued to fish, while men also added nonfishing employment and women continued to work outside the home. This produced major changes in the organization of work and family responsibilities, and as a perception among mothers that their families had been negatively impacted. Fishers' job satisfaction and job attachment to fishing declined and these families saw no future in the industry, for themselves or for their children. Although families reported few major changes in financial management strategies, probably because they had made major adjustments prior to the net ban, financial concerns were prominent. Regarding mental health, contrary to popular beliefs families did not report episodes of physical violence to resolve anger or an increase in drinking after the net ban. Most families felt that they were managing individual and family stress at least moderately well and marital satisfaction had not declined. These findings suggest that the families that participated in the followup had internal and external resources that enabled them to cope with the stressors associated with the net ban. However, families did report an increase in emotional problems of a family member after the net ban. In addition, men's depression levels were as high as women's, an unusual finding, probably due to elevated stress levels. It is noteworthy that a large percentage of the original sample had divorced and therefore was ineligible to participate in the followup. Furthermore, a number of families had moved and could not be located. In short, the followup group may represent the most resilient and financially stable families. Questions were asked about the use of various state programs. Many participated in unemployment benefits. Nearly two-thirds used the Florida Extension Service, and most were satisfied, although there were clear ways that these programs could have been more effective. Three themes emerged from both the qualitative and quantitative results. First, the net ban was a traumatic event that caused a radical shift in how families conducted business and organized their household. Second there was a significant loss of a way of life and of commercial seafood production as a part of Florida's culture. Third, the net ban produced many unintended economic and environmental consequences not yet fully realized, such as a decline in the vitality of fishing communities and increased pressure on other commercial species. Policy makers

and practitioners are urged to consider economic, mental health, and community outcomes when considering similar regulatory decisions.

Impacts:

This information has been provided to policy makers who may be involved in similar decisions in Florida and other states. This information has been provided to other scholars of fishing families and communities through conference presentations and publications. At least four dissertations/theses have been impacted by this work.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-FYC-03782

Title: Early Childhood Interventions for Violence Prevention in Florida

Critical Needs: 34

National Objectives: 5.2

Key Themes: Children, Youth and Families at Risk, Conflict Management, Parenting

Summary:

Trends in delinquency, violent felonies, and school violence point to a need for interventions aimed at reducing and/or preventing violent acts. The purpose of this study is to prevent the development of violence in children and families by targeting the risk factors related to violence (i.e., early and persistent child behavior problems, family management problems, and poor home-school linkages).

Progress:

This series of projects is designed to examine the effectiveness of mental health, educational, and family support approaches to preventing violence and mental, emotional and behavioral problems in children. Data collection continues on the examination of the effectiveness of the UF Family Support Program, a school-linked model of violence prevention. We are tracking such variables as child emotional and behavioral status via parent, teacher and child reports, child self-concept, signs and symptoms of depression and anxiety, where appropriate, and school misconduct and truancy. Each of the variables selected has been identified in the literature as a risk factor for later juvenile violence and delinquency. Data has been collected on over 200 children referred to this program. This program utilizes mental health approaches to prevent the existence/expansion of violence and other severe conduct problems in children in grades K-12 in a rural school district in North Florida. Data collection is continuous. The last examination of outcome data reveals that treatment produces significant increases clinician estimates of psychological functioning (GAF) ($t = -11.12$; p). Significant decreases in parent-reported problems across child behavioral, emotional, social, & cognitive functioning domains (CBCL) ($t = 4.58$; p). Results demonstrate that students do demonstrate attitudinal and behavioral signs of stigmatizations for peers who have diagnosed mental disorders. Further, stigma behaviors and attitudes were exacerbated, albeit less robustly, for target children who were identified as receiving counseling for their conditions. Finally, respondents who lived in more rural regions of this county demonstrated more stigmatizing attitudes and behaviors than those from relatively less rural regions. Manuscripts are in preparation. The Principal Investigator (G. Evans) was awarded 3 years of federal funding over the past year to further research and service delivery on school-linked models of violence and

delinquency prevention as part of the Safe Schools/Healthy Students Project awarded to Columbia County (Federal funding agencies: DOE, OJJDP, CMHS/SAMHSA).

Impacts:

The results of these series of studies will help guide program development in violence prevention and rural mental health service delivery. Specifically, these projects are uncovering service delivery issues that complicate, and mediate, the effectiveness of said programs while pointing our successful strategies for preventing problems of conduct and social relations among children.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-HOM-03364

Title: Biology and Management of Arthropod Pests of Vegetables

Critical Needs: 25

National Objectives: 4.2

Key Themes: Biological Control

Summary:

Thrips palmi, an introduced pest, causes severe damage to several vegetable crops. Biological control agents are introduced from southeast Asia to reduce populations of Thrips palmi

Progress:

See FLA-HOM-03758

Impacts:

No impacts

Source of Federal Funds: Hatch

Scope: State Specific

FLA-HOM-03402

Title: Integrated Pest Management as an Alternative for Control of Soilborne Pests of Vegetable Crops

Critical Needs: 17

National Objectives: 1.2

Key Themes: Managing Change in Agriculture

Summary:

Many effective measures for controlling soilborne diseases and pests of vegetables, most notably fumigants that contain methyl bromide, will become unavailable in the near future. This project evaluates non-toxic and sustainable measures, such solarization and the use of cover crops, for ameliorating the effects of soilborne diseases and pests in Florida vegetable production.

Progress:

No differences were found between tomatoes grown in soils fumigated with methyl bromide-chloropicrin (MC-33) and those grown in compost-treated soils for marketable

or large fruit yields, plant height, root knot nematodes, and dry root weights. Experiments were conducted to determine temporal changes in: soil microbial biomass due to additions of various cover crop residues to gravelly calcareous soil during the tomato growing season, and percent of soil microbial biomass in soil organic carbon and nitrogen. The cover crops sunn hemp 'Tropic Sun', cow pea 'Iron and Clay', and Japanese millet were planted on raised beds in mid 10/99 and were flail mowed in mid 12/99. Soil microbial biomass C in sunnhemp and cowpea (two legumes, with low C/N ratio) treatments decreases progressively because of the decomposition of soil organic C and its uptake upon mineralization by tomato plants. SMBN decreased in all treatments until tomato flowering in January (except with sunn hemp) and then increased up to harvest. Soil organic carbon (SOC) increased in all treatments except in millet. Percent SMBC in SOC decreased during the season. Soil organic nitrogen and percent SMBN in SON in all treatments were greater at harvest than they had been at mowing. A solarization study determined the effects of solarization of recycled potting media and addition of organic amendments on petunia, impatiens, and periwinkle plant growth in comparison to non-solarized recycled media and new media. Used potting media were solarized in clear plastic bags for 0, 2 and 4 weeks after 9/1/00. Media solarized for 4 weeks, to which humic acid was added, produced plants with the greatest heights and widths. Heights and widths of plants grown in solarized media were greater than in new media sterile media. Both the A1 and A2 mating types of *Phytophthora capsici* were present in commercial squash fields, and both mating types were recovered from the same plant five times. Insensitivity to mefenoxam was common among isolates, with EC50s ranging from 5 mg mefenoxam ml⁻¹ to more than 60 mg ml⁻¹. of 15 weed species that were examined as possible alternative hosts of the pathogen, only common purslane, *Portulaca oleracea*, was infected by *P. capsici*. In laboratory studies, maximum production oospores production (major survival structure) occurred at 18oC, and production also occurred at 14, 20, 24 and 26oC, but not at 6, 12, 30 and 32oC. Three races of *Fusarium oxysporum* f. sp. *lycopersici*, causal agent of fusarium wilt of tomato, exist. Resistance to races 1 and 2 is widely present in commercial lines that are grown in the state, but resistance to race 3 is not. Last year, race 3 was observed in experimental fields at TREC. This was the first time that this race had been found outside Ruskin, the panhandle and Ft. Pierce production areas.

Impacts:

As MeBr is lost for use on high value vegetable crops (e.g. tomato, eggplant, etc.) alternatives for its replacement will be needed. In the absence of MeBr, these studies demonstrated the potential for cover crops, organic composts, solarization, and resistant cultivars in these cropping systems. In combination, these practices/measures could be used when MeBr is no longer available. Specific work on phytophthora blight of pepper and squash suggests that this disease will be particularly difficult to control in the future. Although results from this work enable a greater understanding of the challenge that we face, it also indicates that integrated management of the disease will require more effective components than are currently available (especially, better host resistance and more effective pesticides).

Source of Federal Funds: Hatch

Scope: State Specific

FLA-HOS-03402

Title: Integrated Pest Management as an Alternative for Control of Soilborne Pests of Vegetable Crops

Critical Needs: 1, 17, 25

National Objectives: 1.2, 4.2

Key Themes: Managing Change in Agriculture, Integrated Pest Management

Summary:

With the scheduled phase-out of methyl bromide as a fumigant for polyethylene mulched crops, an alternative for control of nutsedge and other weeds is critical for economical crop production. Alternative fumigants and herbicides will be applied to polyethylene mulched crops in an effort to control nutsedge and other weeds and to produce acceptable crop yields.

Progress:

Tomato was grown during the Spring of 1999 and 2000 to evaluate the effect of method of application of 1,3- dichloropropene(1,3-D) + 17% and 35% chloropicrin (pic) on fruit production and pest control. Application of 1,3-D + pic and metam-Na broadcast and then pressed into a bed provided pest control that was comparable to in-row 1,3-D or with MBr(methyl bromide)-pic. Nematode root gall ratings were somewhat poorer with metam-Na than with 1,3-D but were significantly better than with the untreated tomato. In past work, application of metam-Na at 295 L/ha in-row was not effective. However, in the present study with 295 L/ha metam-Na applied broadcast and pressed into a bed, pest control was more comparable to that with MBr-Pic. With the treatment of 1.8 m area and bedded into 0.9 m beds, the fumigant was concentrated and activity was enhanced. These studies indicate that broadcast application of 1,3-D + pic was as effective as in-row applications. Broadcast applications of metam-Na broadcast were apparently more effective than in-row applications in past studies, probably due to a concentration of the fumigant in the bed under the mulch. Application of pebulate in-row as in spring 2000 was more effective than broadcast application as in spring 1999 in control of nutsedge.

Impacts:

This work indicates that 1,3-D can be applied broadcast effectively to control pests. Broadcast application with bedding 7-10 days later minimizes the worker protection issues since hand labor is not involved in contrast to in-row applications. This work also shows that broadcast application of pebulate before bed preparation is less than in-row applications in nutsedge control.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-HOS-03408

Title: Genetic Engineering of Osmoprotectant Levels to Enhance Stress Tolerance in Citrus and Other Crops

Critical Needs: 6, 5

National Objectives: 1.2

Key Themes: Plant Genomics

Summary:

Citrus species are relatively sensitive to freezing stress and salinity stress. Osmoprotectant accumulation is one mechanism by which stress-resistant species minimize adverse effects of stress. This project seeks the basic knowledge needed to

metabolically engineer the accumulation of novel osmoprotectants (e.g., dimethylsulfoniopropionate) in citrus.

Progress:

This project aimed to develop knowledge needed for metabolic engineering of higher plants, with improvement of stress resistance in citrus being a key long-term objective, and the biosynthesis of betaines a particular focus. Betaines belong to a class of compounds (termed osmoprotectants) that protect cells from damage due to drought, salinity, and freezing. We explored the range of natural osmoprotectants in Citrus and related genera. This confirmed that proline and proline betaine are major osmoprotectants, and that no other betaines are present at significant levels. This indicated that metabolic engineering of the biosynthesis of other betaines would be a rational approach to improve stress resistance. Because the sulfur betaine 3-dimethylsulfoniopropionate (DMSP) is an especially potent cryoprotectant, we set out to elucidate its biosynthetic pathway, to identify the enzymes involved, and to clone the corresponding genes. Because all betaines have a fully methylated nitrogen or sulfur atom, their biosynthesis imposes a high demand for methyl groups. We therefore also investigated the metabolism of methyl groups and one-carbon metabolism in general. For DMSP biosynthesis, we elucidated the pathways operating in marine algae, and in two higher plants: *Spartina alterniflora* (Gramineae) and *Wollastonia biflora* (Compositae). DMSP biosynthesis is common in marine algae but very rare in higher plants. We showed that the algal pathway is as follows: methionine → methylthiooxybutyrate → methylthiohydroxybutyrate → dimethylsulfoniohydroxybutyrate → DMSP. This is completely different to the pathways in higher plants. In both *S. alterniflora* and *W. biflora*, the first step is methionine → S-methylmethionine (SMM), and the last step is dimethylsulfoniopropionaldehyde (DMSP-ald) → DMSP. *S. alterniflora* converts SMM to DMSP-ald via the intermediate dimethylsulfoniopropylamine (DMSP-amine) whereas *W. biflora* apparently carries out the SMM → DMSP-ald conversion in a single step. We identified all four enzymes in the *S. alterniflora* pathway, namely methionine methyltransferase, SMM decarboxylase, DMSP-amine oxidase, and DMSP-ald dehydrogenase. The first and last of these enzymes were cloned. SMM is found in all higher plants, so is not unique to the DMSP pathway. It participates in a futile cycle, in which it is first synthesized from methionine and S-adenosylmethionine, then reconverted to methionine by donating one of its methyl groups to homocysteine; this cycle is termed the SMM cycle. For one-carbon metabolism, we investigated the enzyme that reconverts SMM to methionine, homocysteine S-methyltransferase (HMT), and a key enzyme in the synthesis of methyl groups, methylenetetrahydrofolate reductase (MTHFR). We showed that *Arabidopsis* has three HMT genes, and cloned all three. We found that the enzymes they encode differ greatly in kinetic properties, particularly in sensitivity to feedback inhibition by methionine. We cloned tree plant MTHFR genes, and showed that plant MTHFRs differ from other eukaryote MTHFRs in that they use NADH instead of NADPH, and are not feedback inhibited by S-adenosylmethionine.

Impacts:

This work characterized the extent of the natural variation in osmoprotectants in the citrus gene pool, elucidated the pathways of DMSP synthesis in higher plants and algae, and led to cloning and characterization of two enzymes of DMSP synthesis and two key enzymes of plant methyl group metabolism.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-HOS-03457

Title: Phenology, Population Dynamics and Interference: a Basis For Understanding Weed Biology and Ecology

Critical Needs: 2, 17, 23

National Objectives: 1.2, 4.2

Key Themes: Adding Value to New and Old Agricultural Products, Plant Production Efficiency, Sustainable Agriculture

Summary:

Weed interference contributes to large losses of yield and quality in vegetable crops. The purpose of this study is to determine the population of weeds that will reduce yield and quality as well as the time in the crops life cycle that the weed is the most competitive.

Progress:

Additive studies were carried out at two locations to evaluate the competitive effects of smooth amaranth and livid amaranth on cucumber growth and yield. Smooth amaranth is an upright growing plant, while livid amaranth is recumbant. Both weeds are a problem in cucumber production in Florida. It was found that there was no difference in competitive effects on cucumber yield between the two weed species. A 10% cucumber yield loss was seen at 2 weeds/square m of row. A biological threshold of 40% yield loss was seen at 8 plants/square meter. Publication of this work will be in a students thesis and will be submitted to a journal.

Impacts:

Growers will be made aware of cucumber yield loss due to number of amaranth plants per meter of row. Control decisions can be made with control measure costs verses loss percentages as to number of weeds per row.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-HOS-03559

Title: Senescence Physiology and Deterioration in Harvested Tomato and Other Fruits

Critical Needs: 19

National Objectives: 2.1

Key Themes: Food Quality

Summary:

The shelf-life of fresh fruits and fresh-cut fruit products is limited by senescence and other factors contributing to deterioration. The purpose of this study is to learn more about the cellular physiology contributing to the deterioration and senescence of fruits and fruit products.

Progress:

Ethylene-induced placental-tissue water soaking in harvested watermelon fruit is accompanied by cell separation and collapse, depolymerization of water- and chelator-soluble pectic fractions, a loss in total uronic acids, and increased polygalacturonase activity. In this study, we investigated whether hemicellulosic polysaccharides were altered in response to ethylene treatment. Watermelon fruit harvested at the full-ripe stage

were treated with 50 microL per L ethylene or air for 5 days at 20 C. Visual inspection confirmed the development of water soaking in ethylene-treated fruit. Alkali-soluble (4 N) hemicelluloses were prepared, and mol mass distributions examined using Sepharose 6B-200 chromatography. Polymers from 0 day and 5 day air-treated fruit were similar in mol mass distribution, with the majority of polymers eluting within the void volume of Sepharose 6B (MWCO for polysaccharides = 1×10^6). In contrast, polymers from ethylene-treated fruit showed significant mol mass downshifts involving xyloglucan (XG) polymers. Total hemicelluloses were enriched in XG, with xylose and glucose comprising nearly 70 % of total 4 N alkali-soluble neutral sugars. Treatment of watermelon fruit with ethylene was not accompanied by changes in hemicellulose composition, indicating that depolymerization did not result in increased solubility and loss of XG. Cell-free protein extracts from watermelon placental tissue degraded tamarind seed xyloglucan, resulting in significant mol mass downshifts. Similarly, watermelon hemicelluloses were degraded by the protein extract, resulting in mol mass distributions similar to those noted for ethylene-treated fruit. Xyloglucanase activity assessed using tamarind xyloglucan was similar between ethylene- and air-treated fruit, indicating that enzyme levels per se are not the primary factor increasing xyloglucan depolymerization in ethylene-treated watermelon fruit. Water soaking in watermelon was accompanied by increases in the activities of phospholipase C (13.8%), phospholipase D (21.5%), and lipoxygenase (10.0%), and a significant increase (26.3%) in phosphatidic acid (PA). Declines in phosphatidylcholine (17.8%) and phosphatidylinositol (22.5%) were noted. Water-soaking symptoms were not observed in fruit that had received treatment with 5 microliters per liter 1-methylcyclopropene (1-MCP) for 18 h prior to ethylene exposure; however, ethylene-induced increases in PLC, PLD and LOX were blocked 50-75 % in 1-MCP-treated fruit. The high perishability of breadfruit has been well documented and is in large part responsible for the limited distribution of this fruit. Although the breadfruit does not possess the ripening dynamics of typical climacteric fruits such as avocado and papaya, its high respiration rate and ethylene production make it a likely candidate for positive responses to wax and 1-MCP treatments. For reasons not yet understood, mild bruising of mature-green and turning stage tomato fruit has an adverse influence on tomato aroma and flavor volatiles.

Impacts:

The information determined in these studies will aid in our understanding of why watermelon fruits react adversely to external sources of ethylene. The typical response is rapid and severe watersoaking, brought about by physiological changes affecting several tissue components. The problem is likely of significant importance to the watermelon industry, but estimates of these losses are not available because of the commercial unawareness of ethylene's role in the disorder. The use of food-grade waxes has great potential for extending the shelf-life and export potential of highly perishable tropical fruit including breadfruit.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-HOS-03601

Title: Identification of Genetic and Physiological Mechanisms of Thermotolerance in Lettuce Seed

Critical Needs: 1, 2, 5, 4

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Profitability, Plant Genomics, Plant Production Efficiency

Summary:

Genetic, physiological and environmental mechanisms associated with seed affect germination, vigor, and yield in field crops. This project evaluates various conditions affecting germination, vigor, and yield in field crops, including seed preparation and temperature. Genetic aspects will also be investigated to determine thermotolerance.

Progress:

Silver thiosulfate (STS), an ethylene inhibitor, was reported to reduce germination of seeds of the thermotolerant genotype 'Everglades' from 100% to 49% at 35C. It was suggested that ethylene was necessary for lettuce germination at supraoptimal temperature and that the effect of STS was due to its inhibition of ethylene action. The STS-induced reduction in germination was found to be both temperature and concentration dependant. With the increase in temperature at imbibition from 20C to 24C, 28C to 32C and 36C, the percentage of germinated seeds remained almost constant in water (100% at 20C compared to 92% at 36C). In STS, germination decreased from 100% at 20C to 99%, 79%, 39%, and 22% at the respective higher temperatures. With increasing molarity of the STS solution from 1 to 5, 20 to 50 uM the percentage of germinated seeds at 35C was reduced from 97% to 91%, 46% to 0%. This decrease was not observed at 20C, except at the highest molarity at which germination was 67%. The effect of STS can be negated by simultaneous application of 1-aminocyclopropane-1-carboxylic acid (ACC). After transfer from STS to water the seeds germinated 100%. Seedlings which developed from seeds transfer from STS to water had a phenotype typical for plants treated with an ethylene inhibitor, ie. long radicals, no root hair, and altered gravitropic response. Sensitivity of 'Everglades' seeds to ethylene and STS was examined using a triple response assay. With the increase in ACC from 0 to 3 uM, the length of seedlings exposed only to ACC decreased from 8.7 cm to 4 cm compared to a decrease in ACC and STS exposed seedlings from 8.8 to 6.7. Through these studies, we have provided evidence for ethylene involvement in lettuce germination at supraoptimal temperature.

Impacts:

The outcome of this research will directly benefit industry in Florida. Currently, because of the high soil temperatures at the time of sowing, all lettuce seeds are primed prior to planting. The availability of lettuce seeds with increased capacity for germination at high temperatures will alleviate the need for priming and, in such a way, reduce the cost of lettuce seeds. Priming also decreases the storage life of seeds, which will be avoided when priming is not needed. Understanding the mechanisms which improve vigor will lead to more uniform germination and better stand establishment of lettuce. The information gained about the fundamental processes regulating seed germination and release from dormancy can be applied to many other plant species with potential for germination improvement.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-HOS-03675**Title:** Regulation of Photosynthetic Processes**Critical Needs:** 5**National Objectives:** 1.2**Key Themes:** Plant Genomics, Plant Germplasm**Summary:**

FL-AES will study sucrose synthase and invertase, as enzymes responsible for photosynthate processing. We have shown that isoforms differ in their reeregulation by cellular carbohydrate levels. Probes for an invertase gene family (with those available for two sucrose synthases) will be prepared to elucidate the relationship between sugar-responsive gene expression and the widespread role of soluble invertases in initial growth by newly expanding sink tissues. The effects of sugar modulation, developmental signals and mutations on expression of sucrose metabolism genes will be studied in maize root tips, and the changes in enzyme activity, protein localization, and import will be measured.

Progress:

Sucrose metabolism is critical to growth of harvestable plant parts and its use is initiated by only two known enzyme reactions, either SuSy (sucrose synthase, a reversible reaction) or invertase (in cell walls or vacuoles). Products of the invertase and SuSy paths differ and so does their potential to generate sugar signals (Koch et al, 2000; Koch and Zeng, 2002). Such signals can repress genes for photosynthesis, and also affect invertase and SuSy genes themselves (Koch et al. 2000; Koch and Zeng, 2002). In addition, sugar signals sensed through hexokinase can potentially be amplified by repeated cycles of sucrose cleavage and re-synthesis. Invertase action and resulting signals are typically associated with growth, expansion and cell division, whereas SuSy is more often linked with biosynthesis of cell walls and storage materials (Koch et al. 2000; Koch and Zeng, 2002). Further evidence indicates a central role for soluble invertases during cell-division phases of maize kernel-set (Commuri et al. unpublished; andersen et al. 2002), during expansion of stem and leaf cells (unpublished data), and during rapid changes in cytokinin metabolism (unpublished data). In contrast, SuSy also has broadly pleiotropic, but different roles. These include flood tolerance in maize (Zeng et al., 1998: 1999), fruit set under and vegetable yield under specific conditions in tomato and potato (Koch and Zeng, 2002), and critical, drought-sensitive and heat-sensitive steps in grain set (andersen et al. 2002; Commuri, unpublished). Invertase and SuSy reactions thus play important and surprisingly far-reaching roles in carbohydrate metabolism. Invertase and SuSy regulation extends from transcriptional to post-transcriptional mechanisms. Transcription of both responds strongly to sugars (Koch 2000, Koch and Zeng, 2002), oxygen status (Zeng et al., 1999; Koch et al., 2000), and other abiotic factors (andersen et al., 2002; Commuri et al., unpublished). Invertase and SuSy also differ with respect to stability of their mRNAs (Koch et al., unpublished). Further, SuSy proteins can be phosphorylated, which provides an especially interesting means of regulating both activity and sub-cellular localization (work in progress). SuSy forms from both maize and soybean nodules are phosphorylated at multiple sites, and in most instances CDPKs and/or SnRKs have been implicated (Koch et al. 2000).

Impacts:

Maize studies of invertase expression in young kernels indicate that soluble invertases are early targets of stress during the critical, abortion-sensitive period immediately before and after pollination. For plants, this provides a potentially advantageous means of

adjusting reproductive load under stress. It also indicates a possible avenue for manipulating the extent of seed and fruit set for agricultural or horticultural advantage.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-HOS-03700

Title: Plant Growth Regulators to Enhance Profitability of Fresh and Processed Florida Citrus

Critical Needs: 6

National Objectives: 1.2

Key Themes: Biobased Products

Summary:

1) Plant growth regulators gibberellic acid (GA), naphthalene acetic acid (NAA), and amino ethoxyvinyl glycine (AVG) will be applied to mature citrus trees in several groves throughout Florida. 2) Data will be collected on fruit size, yields and quality. 3) GA biosynthesis inhibitors will be sprayed on young citrus trees and their freeze hardiness evaluated in freeze chambers.

Progress:

NAA thinning was compared on Murcott trees of three different ages, with applications made in the spring of 2001 at 250 and 350 ppm. At harvest in 2002, NAA increased fruit size in all experiments with little difference between the two rates. Small plot data showed that NAA increased mean fruit weight by 25-34%, decreased fruit per tree by 24-38%, and decreased fruit yield per tree by 4-24%. Packinghouse data were consistent with small plot results: NAA increased production of 64-100 count fruit by 59-100%, even though no fruit were eliminated because of small size in non-thinned controls. In two of the packinghouse assessments, NAA treatments increased packout by 10% of total harvested crop through improved fruit appearance. Crop value was significantly enhanced in only one of three trials that permitted statistical analysis. However, improved return cropping was apparent in all NAA-treated rows the following spring. Previously, we observed that gibberellic acid (GA) applied at fruit color break increases juice weight of processing oranges, but the mechanism for the increase was unknown. Two hypotheses suggested that GA either increased peel firmness and juice extraction efficiency or that GA reduced peel volume and increased juice content. A series of fruit rheological tests were run and found that GA increased peel shear and tensile strength, but these increases were poorly correlated with juice yield. Alternatively, we found that GA reduced fruit peel volume by decreasing peel thickness and thus increased juice content. GA3 also caused an increase in the peel hexoses that may be associated with peel color. MBTA, a PGR reported to increase fruit Brix, was applied at several bloom stages and concentrations to Hamlin and Valencia oranges with applications in 2001 and 2002. Modest and variable increases in juice Brix have been observed from some treatments. In the 2001-02 season, MBTA again significantly increased corrected Brix on average by 0.28% for Hamlin oranges at the two locations, but had no effect on corrected Brix of Valencia oranges. There were no cumulative effects of MBTA on fruit quality or yield, tree vigor, or flowering.

Impacts:

Based on this research, thousands of acres of Florida oranges are sprayed with GA to

increase juice weight, thereby increasing profitability for growers and processors. NAA fruit thinning and size enhancement have greatly increased in Florida citrus and many growers are testing benefits of fall and winter GA to enhance cropping. MBTA has great potential for the processing orange industry in Florida, if parameters that consistently enhance fruit Brix can be identified..

Source of Federal Funds: Hatch

Scope: State Specific

FLA-HOS-03729

Title: Genetic and Molecular Characterization of Plant Genes Involved in Disease Resistance

Critical Needs: 1, 5, 17

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products, Plant genomics, Tropical Agriculture, Plant Health,

Summary:

Viral and bacterial diseases represent two of the major limiting factors for tropical and sub-tropical agriculture. This project focuses on the genetics of resistance to bacterial spot in tomatoes and common bacterial blight in beans, and on the molecular genetics of the interactions between the bean common mosaic virus complex and the common bean.

Progress:

Previous genetic analyses of resistance to race 3 derived from the wild species *Lycopersion pennellii* have been inconsistent and overall confusing. New race-3 mutants were generated to improve our understanding of the interactions between tomato and race-3. The two known avirulence genes (avrXv3 and avrXv4) in a common race-3 accession were deleted, then each of the avr genes was independently reintroduced into the double knockout mutant. these three mutant strains and the wild type were used to screen a BC1 progeny [*L. esculentum* x (*L. esculentum* x *L. pennellii*)]. Results obtained in this survey were surprising. Four different phenotypes were detected: susceptible to all four strains; hypersensitive reaction to double knockout + avrXv4; HR to double knockout + avrXv3; and HR to double knockout. The last two phenotypes were unexpected because neither the parents, nor the F1 displayed a hypersensitive reaction to the double knockout or to avrXv3. The factors controlling HR-mediated reaction to avrXv4 and the cryptic resistances to avrXv3 and to an unidentified avirulence gene appear to segregate independently. Advanced generations have been produced to further characterize these traits.

Impacts:

The cryptic characterization of these resistances may lead to the development of tomato cultivars with increased resistance to bacterial spot

Source of Federal Funds: Hatch

Scope: State Specific

FLA-HOS-03760

Title: Seed Biology, Technology and Ecology

Critical Needs: 4

National Objectives: 1.2

Key Themes: Plant Production Efficiency

Summary:

Researchers at the University of Florida will determine the metabolic block determination of seed imbibed at high temperatures in order to obtain physiological markers for derivation of thermotolerant breeding lines. The purpose of this project is to investigate the biological mechanisms underlying seed development, germination, dormancy, and deterioration, and to develop environmentally sound methods to produce, assess, enhance, and preserve seed quality and improve seed performance.

Progress:

Different plant organs such as the shoot apex, cotyledon, root, hypocotyl, petiole, and leaf have been used as explants for melon in-vitro culture. All the systems had diverse regeneration rates depending on culture conditions, cultivar, and explant source. The goal of this work was to measure the source of the explant on regeneration and transformation efficiency in *Galia melon*. It was reported that *Galia melon* was recalcitrant to transformation by *Agrobacterium tumefaciens*. Cotyledon, hypocotyl, and true leaves of both female and male parental lines of *Galia* were used for transformation. The ABI strain of *A. tumefaciens* carrying a plasmid vector containing a construct harboring the GUS gene under the constitutive promoter 35S and a glyphosate tolerance gene as selectable marker were used. The greatest number of shoots were regenerated from cotyledons compared with hypocotyl and true-leaf explants. Plants regenerated from cotyledons also developed the highest number of GUS positive shoots and roots. Also, protocols for regeneration of strawberry cv. 'Sweet Charlie' were developed for transformation in order to impart genes that might promote fruit firmness.

Impacts:

NO IMPACTS

Source of Federal Funds: Hatch

Scope: multi-state

FLA-HOS-03822

Title: Development of Snap Bean Varieties and Genetic Investigations in Common Bean

Critical Needs: 1, 4, 5

National Objectives: 1.2

Key Themes: Plant Genomics

Summary:

Introgress genes for disease resistance into elite snap bean germplasm by crossing and selection. Backcross marker genes for seed coat color and pattern into the recurrent parent 5-593 to BC3. Cross the genetic tester stocks to a range of market classes to develop a system of interpreting F1 plant phenotypes. Use the standard six genetic populations derived from crossing two pure lines to investigate inheritance. Develop RAPD markers by bulk segregant analysis; and use RI lines to map the marked genes, using cloned RAPD markers.

Progress:

The strong (or pale, depending on environment) greenish-yellow seed coat color of Mayocoba class dry beans is controlled by a recessive gene with the symbol *gy*. The *gy* gene is either a new allele at the C-locus or closely linked to the C seed coat color gene. The *gy* gene does not control seed coat color in the hilum ring; hence, *gy* changes shamois color seeds to the greenish yellow of Canario class beans. The reverse margo seed coat pattern was found to have the genotype T/t z/z j/jers. The L gene of *F. Schreiber* for control of partly colored seed coat patterns was found to be a synonym for the J seed coat color gene. Eight genes for seed coat color and pattern were mapped to specific linkage groups (with approximate locations within each group) using the BAT 93/Jalo mapping system, viz., T, Bip, C, Z, J(L), G, V, and Gy. RAPD markers were developed for the classical marker gene traits blue flower, dark green savoy leaf, silver pod, and yellow wax pod. An RAPD marker tightly linked to the P seed coat color gene was found to contain a Ty3/gypsy class retrotransposon Tpv3g.

Impacts:

The results of the research described for this year provide bean breeders with a more precise scientific understanding of the genetic basis for certain seed coat colors and patterns. The results expand our knowledge of the physical distribution of seed coat color and pattern genes on the eleven chromosomes of common bean. All of this knowledge is a necessary foundation to begin to understand the exact nature of the regulatory expression of seed coat genes on various biosynthetic pathways.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-HOS-03846

Title: Post-harvest Quality and Safety in Fresh-Cut Vegetables and Fruits

Critical Needs: 1, 15, 19

National Objectives: 1.1, 1.2, 2.1

Key Themes: Adding Value to New and Old Agricultural Products, Risk Management, Food Quality, Food Safety, Food Accessibility and Affordability, Food Handling

Summary:

Traditional post-harvest approaches for vegetables and fruits (produce) are not sufficient to meet consumer demands for fresh-cut produce because of the increased perishability of these products. This project is concerned with development of novel approaches for assuring the quality and safety of fresh-cut produce through better understanding of fresh-cut vegetable and fruit physiology.

Progress:

Since it is desirable to maintain optimal atmosphere conditions throughout the post-harvest handling chain, we have described our procedure for designing a combination CA/MAP system that involves first designing the MAP for a particular commodity that will produce an optimal atmosphere for retail display conditions, then selecting a CA that will interact with the MAP to produce the optimal atmosphere within the packages during transportation at a lower temperature. An example of the design procedure was given from our work with fresh-cut kale (*Brassica oleracea* var. *acephala* DC.). Reduced O₂

plus elevated CO₂ (2% O₂ + 10% CO₂) was very beneficial in maintaining the visual quality of fresh-cut sweetcorn kernels and reduced sugar and flavor losses during 10 days storage at 5 degrees C compared to storage in air. The main benefit of using controlled atmosphere (CA) storage is preventing after-cooking browning. Preliminary results indicate that after-cooking browning is not associated with a Maillard reaction since 5-hydroxymethylfurfural (HMF), the characteristic intermediate compound produced during the Maillard reaction, is not present in cooked sweetcorn kernels exhibiting browning. There were no significant changes in the total soluble phenolics content during storage in air or CA, but the soluble phenolic levels decreased with cooking, which suggests that the after-cooking brown color may be due to as yet unidentified insoluble phenolic-protein complexes in the cooked sweetcorn tissue. The total aerobic microbe count increased with storage, and the increase was significantly greater in air. This suggests that the browning could be a response of the sweetcorn tissue to the microorganisms, or it may be associated with some product of microbial enzyme activity. Sweetcorn can benefit from perforation-mediated modified atmosphere packaging (PM-MAP) in which the cobs are stored in impermeable containers with a diffusion window because the low b-ratio (ratio between CO₂ and O₂ mass transfer coefficients = 0.81) combined with the sweetcorn respiration allows beneficial low-O₂/high-CO₂ atmospheres to develop that are unachievable using polymeric film packages.

Impacts:

Fresh-cut produce can help increase the consumption of fresh produce due to its convenience and attractive appearance and flavor. Development of novel approaches for assuring the quality and safety of fresh-cut produce depends on a better understanding of fresh-cut vegetable and fruit physiology, including nutrients and other functional components as affected by storage and handling.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-IMM-03364

Title: Biology and Management of Arthropod Pests on Vegetables

Critical Needs: 1, 2, 17, 25

National Objectives: 1.2, 4.2

Key Themes: Adding Value to New and Old Agricultural Products, Risk Management, Biological Control, Integrated Pest Management, Pesticide Application

Summary:

Arthropod pests and associated disorders and diseases are destructive to vegetable crops. The objective of this project is to seek sustainable and economical methods of controlling pests on vegetables in Florida.

Progress:

A host-free period in summer was shown to be a necessary element of successful management of silverleaf whitefly and the plant viruses it vectors in tomato. Soaps, oils and insect growth regulators were shown to be effective against the whitefly given sufficient coverage, and were more compatible with natural enemies than a broad-spectrum standard (bifenthrin), although oils caused moderate toxicity to eggs of ladybeetle and crysopid predators as well as adult parasitoids. Soap was toxic to young instar coccinellids (*Nephaspis oculatus*), and pyriproxyfen was shown to be more toxic to *Encarsia formosa* than to *E. transvena* or *E. pergandiella*. Biological control of

whiteflies was shown to be a major factor in reducing whitefly populations during the host-free period. *Encarsia pergandiella* was shown to be the most common parasitoid attacking silverleaf whitefly in south and south central Florida, and to cause high levels of parasitism in organic vegetables where it appeared to control pest populations. Yield loss by whitefly-borne virus in tomato was shown to be indirectly proportional to plant age. Imidacloprid was shown to provide effective control of whitefly in transplants and field plantings, and to significantly reduce virus incidence and impact. Living and reflective mulches were shown to effectively protect young tomato crops from whitefly and associated gemini virus. Resistant tomato varieties were evaluated and shown to provide excellent protection against TYLCV in Florida. Selective and biorational insecticides were evaluated for management of pepper weevil, tomato pinworm, armyworms (*Spodoptera spp*), pickleworm and diamondback moth. The new selective materials are performing as well or better than the older, broad-spectrum insecticides, with fewer negative impacts on beneficial organisms. Successful management of tomato pinworm using pheromone-based mating disruption was documented. A parasitoid of pepper weevil (*Triaspis eugeni*) was reared for six generations in quarantine, and because it attacks the egg could potentially control the pest regardless of fruit size. The ability to maintain on nightshade berries and to survive over a month, even in the absence of solanaceous host plants, was established.

Impacts:

Management strategies were transferred to grower clientele through extension activities including field days, trade journals, extension publications and software. Reduced pest-related losses, reduction of pesticide use and increased use of selective pesticides were documented.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-IMM-03571

Title: Dynamic Economic Analysis of the Florida Citrus Industry

Critical Needs: 2, 6, 14,

National Objectives: 1.2, 1.4

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness, Agricultural Profitability, Managing Change in Agriculture, Risk Management

Summary:

Global competition is forcing Florida citrus growers to redesign production systems. This project evaluates production inputs and labor requirements, and analyzes management practices which help to reduce unit cost of producing oranges and grapefruit.

Progress:

During FY 2002, data on mechanical harvesting systems were collected from more than 80 production blocks representing more than 6,000 acres of oranges. The project was funded by a one-year grant from the Florida Department of Citrus and was in the third year of performance data collection. Performance estimates were developed for fruit removal and recovery, labor productivity, and system harvesting capacities. Significant improvements in labor productivity and harvest capacities were observed for both the trunk-shake and catch and the canopy-shake and catch systems. Labor productivity of the trunk-shake and catch system nearly doubled from the 2000-01 season to the 2001-02

season, improving from 53 to 98 boxes per labor hour. A second study was initiated to compare loads picked hand harvesters and mechanical harvesting systems as to the amount of trash delivered to processing plants. Preliminary results indicate that the amount of "woody" trash from mechanically harvested loads is less than what is delivered by hand-harvested loads. Culled fruit (mainly splits), however, increased with mechanical systems.

Impacts:

The goal of mechanical harvesting systems in Florida is to reduce overall "net" harvesting costs to the grower, thereby increasing grower "on-tree" revenue. Lower unit harvesting costs by mechanical systems must be great enough to compensate growers for expenses related to tree preparation, lost yield, and uncertainty with respect to tree health. More than 15,000 acres were mechanically harvested during 2001-02. Growers with properly prepared trees realized between \$.25 and \$.35 savings per box. Depending on yield, those savings translated to between \$100 and \$200 per acre in increased on-tree revenue.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-IMM-03622

Title: Water Management in Flatwoods Citrus Groves

Critical Needs: 27

National Objectives: 4.2

Key Themes: Water Quality

Summary:

Florida agricultural and urban interests are competing for limited water resources. This project will improve agricultural water-use efficiency for citrus and vegetable crops grown on Florida flatwoods soils.

Progress:

Emitter plugging is a serious problem that can lower the emission uniformity (EU) of micro-irrigation systems. The average southwest Florida citrus grove irrigation system uniformity is between 70 and 80% (classified as fair). Emitter plugging is a major cause of low uniformity. Irrigation water source analysis indicated that this water was likely to chemically plug emitters due to high hardness and iron concentration. Ferrous iron appears to be the most significant problem, as it can quickly oxidize to the ferric form, which is followed by precipitation inside water pipes and tubing. Analysis of the scale material lining tubing walls showed that it was composed of nearly 30% Fe by weight. Three possible line-cleaning chemicals were tested for their potential to remove Fe scale: sodium hydrosulfite, citric acid, and a proprietary commercial product called FFF201P. In laboratory soak tests, these three chemicals removed 97, 75, and 60% of the scale from irrigation tubing walls, respectively. In field injection tests, they removed 53, 54, and 16% of interior scale, respectively. Only the citric acid treatment increased water flow from partially-clogged emitters. Further testing is focusing on the use of citric acid and FFF201P, because sodium hydrosulfite is too hazardous to handle.

Impacts:

This project will result in micro-irrigation system maintenance guidelines that will help

citrus growers keep their irrigation systems clean and efficient. As system maintenance improves, less water and fertilizer will be wasted.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-JAY-03457

Title: Phenology, Population Dynamics, and Interference: A Basis for Understanding Weed Biology and Ecology

Critical Needs: 17

National Objectives: 1.2

Key Themes:

Summary:

A five-year study will be conducted to evaluate the impact of four levels of weed management and two tillage systems (conventional and no-tillage) on weed management in cotton. Weed population monitoring will include field weed counts and, by allowing weeds to germinate and emerge from soil samples collected in the field and placed in the greenhouse, estimates of soil seed bank levels. Similar data will be collected from plots managed as perennial forage for five years and then brought into row-crop production with a peanut-cotton rotation using two tillage systems and two levels of weed management. The impact of six management schemes on sicklepod in the soil seed bank will be studied. Sicklepod seed will be sieved from soil taken from each of the management systems. Seed number, viability and germination will be determined. In addition, experiments will be conducted to gain a better understanding of processes which control nutsedge tuber formation. The impact of photoperiod on nutsedge tuber production and the effect of tillage and cultural practices and herbicides on tuber production will be determined.

Progress:

Long-term studies were conducted over a five-year period to evaluate the impact of tillage and herbicide input on weed population dynamics in cotton was completed. By the end of the study, a heavy weed infestation had developed that required a high level of herbicide input to provide adequate weed control in both conventional and no-tillage production systems. A limited herbicide input plus cultivation in conventional tillage did not provide the desired level of weed control. Glyphosate applied over the top of the glyphosate-tolerant cotton was one of the few treatments that provided acceptable weed control in both the conventional and no-till systems. Late-season sicklepod (*Senna obtusifolia*) and common cocklebur (*Xanthium strumarium*) densities were higher in the no-till system compared with the conventional tillage throughout the course of the study. In another long-term study the impact of various levels of weed management on sicklepod seed dynamics was determined. Soil seed bank numbers remained low throughout the four years of the study in treatments where sicklepod seed rain was reduced or eliminated. Seed numbers dramatically increased in plots where deer damage destroyed the soybean crop and removed crop competition. A single season of seed production after two years of no seed rain elevated soil seed bank numbers to the level of the untreated check.

Impacts:

These long-term studies document the effects of various levels of weed management intensity on weed infestation severity over time. In order to maintain a level of weed infestation that is easily managed, a relatively high level of weed control input is required, regardless of the tillage system employed.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-JAY-03609

Title: Introduction and Evaluation of Ornamental Plants

Critical Needs: 7, 28

National Objectives: 1.2, 4.1

Key Themes: Ornamental/Green Agriculture, Weather and Climate

Summary:

Collection of Florida endemic or exotic taxa from geographical regions of similar climate, propagation by seed, or propagules, and production utilizing standard horticultural techniques common to the Florida horticulture industry. Comprehensive performance records will be maintained by assigning an accession number to each taxon under consideration. Following determination of propagation and nursery or greenhouse production protocols, field trials of new introductions will be conducted to determine the optimal landscape location (seaside planting, shade or sunny outdoor locations, and drought or heat tolerance) and method of landscape establishment and management (optimal irrigation and nutrition levels) will be conducted for suitable taxa. In all herbaceous perennial crops, standards of production will follow those outlined by the Perennial Plant Association in their national guidelines. Trial plantings of herbaceous material will be implemented in a manner which parallels those used in both Monticello and Bradenton research stations so that future comparison at these different locations will generate information of use to growers throughout the state of Florida.

Progress:

Research on woody landscape plants continued, to evaluate the landscape performance of Florida native herbaceous, woody and grass plants in low input landscapes. Data collection continues for field experiments evaluating woody plant tolerance to root knot nematode species, field production of new *Magnolia grandiflora* germplasm and *Conradina canescence* germplasm. A field experiment to evaluate potential seed production of Buddlei cultivars was initiated and terminated in Dec. 2002. Manuscripts were prepared, presented and published describing the outcome of ornamental vine experiments, screening methods for determining nematode susceptibility of woody ornamentals, and relationships of an imperata cylindrica germplasm collection based on a refined RAPD procedure.

Impacts:

Ongoing research focuses on the development of production and landscape establishment protocols for desirable landscape crops that are improved or distinct or crops that are not currently introduced into the horticulture trade. Results of greenhouse and field experiments continue to provide information on the landscape performance of both native and introduced species in response to environmental impacts such as low fertility, irrigation inputs and natural pests such as root knot nematodes. Local, regional, and statewide programming including web pages, presentations, and publications transfers the new information directly to state specialists, land managers, students and the

horticulture industry. This information will ultimately influence plant breeding, selection, production and use in the landscape industry, thereby ultimately reducing the inputs necessary for plant production, establishment and management.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-JAY-03620

Title: Weed Biology and Control for Turf grass and the Landscape

Critical Needs: 7, 17

National Objectives: 1.2

Key Themes: Adding Value to New and Old Agricultural Products

Summary:

The reproduction and competitiveness of selected turf grass weeds will be measured as a response to integrated weed management variables such as irrigation, fertilization, mowing and traffic. Herbicides will be evaluated in replicated trials for selective control of important weeds.

Progress:

Tropical signal grass (*Utricularia subquadriflora*), one of the most serious weed pests in Florida turf grass, germinates best at pH 5 to 6, temperatures of 25 to 30 degrees C and at water potentials >-0.04 Mpa. Tropical signal grass shoots emerged from as deep as 6 cm, with maximum emergence from seed placed on the soil surface. Tropical signal grass emerged during mid-March in the field in central Florida when soil and ambient temperatures were 20 degrees C. Postemergence herbicide treatments that are registered for use in St. Augustine grass were ineffective for control of tropical signal grass. Several preemergence treatments, however, provided excellent control. These included prodiamine, dithiopyr, oryzalin, benefin + oryzalin or benefin + trifluralin.

Trifloxysulfuron was evaluated for torpedo grass (*Panicum repens*) cocks-comb kyllinga (*kyllinga squamulata*) and purple nutsedge (*Cyperus rotundus*) management in hybrid bermuda grass turf. Two sequential applications (0.022 kg/ha) at 4 to 6 week intervals provided 80 to 90% control of purple nutsedge and cocks-comb kyllinga and 60 to 70% control of torpedo grass without causing injury to the turf grass. Tolerance of seashore paspalum, a turf grass species that tolerates high salt content in irrigation water, to standard turf grass herbicides. Seashore paspalum was not injured by preemergence applications of several dinitroaniline herbicides including prodiamine, pendimethalin and trifluralin. Postemergence treatments of quinclorac, metsulfuron, clopyralid, bentazon, halosulfuron, imazaquin, bromoxynil and metribuzin were also tolerated by seashore paspalum. Ethofumesate, asulam, sethoxydim, fluazifop, MSMA, imazapic and clethodim caused damage to the seashore paspalum.

Impacts:

Information developed on tropical signal grass germination and emergence can be used by sod producers to select proper timing of preemergence herbicide applications. Depth of emergence information suggests that deep turning of the soil will bury tropical signal grass deeper than the 6 cm maximum depth of emergence, thus providing a potential management tool for this weed. Torpedo grass and purple nutsedge are serious weed

problems in hybrid bermuda grass. Trifloxysulfuron offers effective control of these pests when used in a sequential application

Source of Federal Funds: Hatch

Scope: State Specific

FLA-JAY-03713

Title: Plant Genetic Resources Conservation and Utilization

Critical Needs: 4, 5,

National Objectives: 1.2

Key Themes: Plant Genomics, Plant Production Efficiency

Summary:

New plant source material will be observed in small plantings and desirable traits noted. Those which indicate usefulness for Florida and the Southeast will be further evaluated for yield, quality, persistence, disease, and pest resistance in field tests and laboratory analyses. Cultural practices will be determined if yield and quality studies determine a high commercial potential.

Progress:

Faculty member has retired. No further progress to report.

Impacts:

These trials provide data useful to farmers in making planning decisions, to breeders in making release decisions, to other researchers to widen their knowledge of cultivar performance, and to extension personnel in their decisions as to information to provide to their clients.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-JAY-03726

Title: Evaluation of Forage Germplasm and Forage Management Practices

Critical Needs: 5, 8

National Objectives: 1.2

Key Themes: Rangeland, Pastureland Management, Grazing

Summary:

these studies will be field research conducted with accepted scientific methods and statistical methods. No new approaches are expected.

Progress:

Faculty member has retired. No further progress to report.

Impacts:

These trials provide data useful to farmers in making planning decisions, to breeders in making release decisions, to other researchers to widen their knowledge of cultivar performance, and to extension personnel in their decisions as to information to provide to their clients.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-JAY-03748

Title: Herbicide Persistence in Southern Soils: Bioavailable Concentration and Effect on Sensitive Rotation

Critical Needs: 24,

National Objectives: 4.3

Key Themes: Land Use, Pesticide Application, Soil Quality, Sustainable Agriculture

Summary:

A field study will be conducted to characterize the effect of imazapic herbicide on rotational crops. Imazapic will be applied to peanut at the normal application rate and two and four times that rate. The spring following application the rotational crop cotton will be planted and diverse effects caused by herbicide carry-over will be measured.

Progress:

A field dissipation study was conducted from 1998 through 2001 to determine the potential for imazapic or flumetsulam to cause damage to crops planted the year following application. Flumetsulam was applied preemergence to peanut at 0.027, 0.054 or 0.080 and imazapic was applied postemergence at 0.07, 0.14 and 0.28 kg/ha (1,2 and 3 times the labeled rate, respectively) to peanut during emergence. Cotton planted the season following herbicide application to peanut was not injured by flumetsulam residues in the soil at any rate applied the previous season. The higher rates of imazapic caused early damage to cotton and some reduction in crop growth was still evident at by mid-season.

Impacts:

Peanut followed by cotton is a common rotation in the southeastern U.S. These results indicate that if imazapic is applied to peanut, cotton may be injured the season following application. Cotton can be planted the season following flumetsulam application to peanut with no apparent injury.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-LAL-03280

Title: Characterization, Etiology, Epidemiology and Control of Virus and Graft-Transmissible Diseases: Citrus

Critical Needs: 5, 6, 17

National Objectives: 1.2

Key Themes: Plant Genomics

Summary:

The etiological agents of graft transmissible diseases of citrus will be identified where appropriate. Viruses will be biologically characterized on indicator plants, antisera produced, serological relationships determined and the nucleotide sequence of the virus genome determined. This information will be used to minimize losses due to these agents

by the development of management strategies, which include mild strain cross protection, genetic engineering of virus resistance, suppression of spread in certification programs and use of best resistance.

Progress:

Molecular probes, developed for differentiation of different strains of citrus tristeza virus (CTV), were utilized to expedite the screening process of single-aphid transmitted sub-isolates of CTV for selection of mild isolates of CTV which are potentially useful for mild strain cross protection. A mild strain cross-protection evaluation of six isolates selected by this expedited procedure was conducted on Hamlin sweet orange on smooth flat Seville rootstock. Three of the isolates evaluated provided a significant degree of protection, based on length of flush, leaf area, lack of stem pitting, and increased tissue weight. The natural spread of severe, stem-pitting isolates of CTV in dooryard communities has been monitored by the use of the molecular probes for CTV strain differentiation. CTV sub-isolates from single aphid transmissions using *Toxoptera citricida* from a source typical decline CTV isolates caused stem pitting on sweet orange receptor plants. An improved PCR assay was developed for detection of citrus greening.

Impacts:

The use of molecular probes and single-aphid transmissions from tristeza isolates to expedite the selection of tristeza strains useful for mild strain cross protection will be potentially useful to citrus industries in California and Texas, where many trees are still on sour orange and the efficient vector, *Toxoptera citricida*, has not arrived yet.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-LAL-03286

Title: Biochemistry and Physiology Affecting Quality of Citrus Fruits during Storage

Critical Needs: 19

National Objectives: 2.1

Key Themes: Food Quality

Summary:

To obtain the objectives outlined, cellular and biochemical approaches have been selected. Compartmentalization of model cells into subcellular compartments offer numerous advantages over using whole tissue. In addition, fractionation and purification of enzymes involved by conventional means will be utilized for enzyme interaction studies. Studies on grapefruit disorders will be conducted using conventional packinghouse material and equipment.

Progress:

Studies on the mechanisms of sucrose export from the vacuole of higher plants continued by investigating the involvement of cytosolic enzymes of sucrose catabolism. Kinetic and biochemical analysis of membrane transporters and corresponding enzymes indicate that sucrose synthase (SuSy) is associated with the ATP-dependent sucrose transporter forming a multi-enzyme complex, where sucrose is passed directly from the carrier to the catalytic enzyme. Some of the complex kinetics were determined, all which support the existence of such multi enzyme complex. In a related topic, the ontogenetic changes that occur in vacuoles as they go through the transition from sinks to source was investigated.

the results indicate a spacial and developmental separation between uptake and efflux systems although they seem to exist concurrently in the tissue. Studies on the determination of sink stress in citrus fruits were terminated. These studies involved the use of mild water stress to enhance sink strength and increase fruit yield

Impacts:

The studies were finalized, with the results clearly indicating the changes that occur in citrus fruits under drought conditions that translate into increased yield. We found a coordinated and compartmentalized system of enzymes and proton pumps to be responsible for sugar uptake in the fruit. A thorough study on the vacuolar proton pump PPase was performed. The study included a detailed examination of the properties of such pump in acidic and acidless varieties. The pump was found present in all citrus fruits and in all cases was able to hydrolyze the substrate PPI. However, in the case of acidic fruit, the enzyme was not capable of coupling proton transport. Antibody work confirmed protein differences between pumps of different origins; the acidic one not containing the proton pore motif. Microscopic studies on the anatomical changes in cells during mobilization was continued using antibodies to tonoplast markers.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-LAL-03490

Title: Biological Control of Selected Arthropod Pests and Weeds

Critical Needs: 6, 17, 25

National Objectives: 1.2, 4.2

Key Themes: Biological Control

Summary:

Research to develop and implement biological control strategies for arthropod pests of citrus will focus on ecological studies to identify existing natural enemies of target pests. Elucidation of the niches that these exotic natural enemies fill for importation. Field evaluation methods used to identify and characterize natural enemies will be used to evaluate the impact of natural enemy manipulation in overall citrus IPM.

Progress:

CCC traveled to the Mediterranean area in May 1999 in search of stigmatid species on citrus. *Agistemus sp.* near *cyprinae* Gonzalez was collected in Valencia, Spain, on small citrus trees lining a side street. Sufficient numbers were collected and returned to the United States through quarantine facilities. We are currently maintaining this culture along with laboratory cultures of *A. industani* Gonzalez from Egypt and *A. floridanus* Gonzalez collected from Florida citrus. All of the species are being evaluated for use as predators of citrus rust mites and spider mites.

Impacts:

NO IMPACTS

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-LAL-03492

Title: Micro-irrigation of Horticultural Crops in Humid Regions

Critical Needs: 7, 27, 28,

National Objectives: 1.2, 4.2

Key Themes: Precision Agriculture, Drought Prevention and Mitigation, Water Quality,

Summary:

Field experiments will be located on Ridge groves. Effects of micro-sprinkler irrigation application rate and timing will be studied. Depth of water movement after irrigation will be monitored in an attempt to reduce water movement below the root zone. Effects of irrigation volume on tree growth and fruit quality will be measured.

Progress:

A serious drought throughout much of the Florida citrus belt has reduced yield and fruit size in spite of irrigation. Guidelines have been developed on how to deal with the drought and how to use soil water measuring devices to schedule irrigation. Guidelines on ways to improve efficiency of nitrogen fertilizer use have also been presented. Symptoms of drought, salt, sunscald, flooding, lightning, wind, and other environmental stresses have been presented. Irrigation practices and citrus tree responses in Florida were compared with responses in arid climates. Physiological processes affected by water stress were described. Citrus trees respond well to high application rates of reclaimed water on well-drained soil. Even though solids were diluted by high irrigation rates, overall solids production was increased at high application rates. Micro-sprinkler characteristics including application uniformity, clogging, insect problems, wear, wetting patterns, freeze protection, and emitter maintenance were discussed.

Impacts:

Description and symptoms shown will help growers identify stress symptoms from drought, salt, flooding, etc. This research has shown reclaimed water to be safe and effective for irrigation use. Reclaimed water can do much to reduce drought impact. In part, because of this research, reclaimed water use in Florida has increased by 233 million gallons/day in seven years. This information will also help improve irrigation scheduling guidelines by showing growers how deep water will go. It will help decrease deep percolation loss below the root zone. By using the information developed here, Florida citrus growers can save 5 million gallons of water statewide per year. This improved knowledge of field capacity and water content changes at different depths will help improve grower irrigation management.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-LAL-03493

Title: Development and Integration of Entomopathogens into Pest Management Systems

Critical Needs: 5, 6, 25

National Objectives: 1.2, 4.2

Key Themes: Integrated Pest Management, Biological Controls

Summary:

Select a genomic library for representative strains of *Hirsutella thompsonii* and clone the

gene(s) for the toxin hirsutellin. Characterize different strains of pathogenicity via bioassay. Study the epizootiology of *Hirsutella thompsonii*/citrus rust mite relationship in citrus groves. Study the epizootiology of *Beauveria bassiana*/citrus root weevil relationship in citrus soils. Determine the effect of sublethal doses of pesticides in combination with entomopathogens and nematodes in an IPM strategy for citrus root weevils. Integrate nematodes and entomopathogens as biological controls of citrus root weevil larvae in citrus IPM.

Progress:

Adult emergence of *Diaprepes abbreviatus* in a central Florida citrus grove infested with numerous alternate host plants produced conflicting results when cone traps and Tedders traps were compared in monitoring seasonal adult emergence. In June, a distinct increase was detected using both traps; however, another distinct emergence peak was detected in August and September with the Tedders traps only. Data suggest adult migration from alternate hosts to citrus from surrounding areas since cone traps record direct soil emergence only. Field trial with three rates (20,000, 50,000 & 100,000 nemas) of *Steinernema riobravis* and *Heterorhabditis indica* applied with a 50 L field sprayer equipped with hand-held spray boom to the soil beneath the tree canopy gave negative results after four weeks posttreatment. Larval populations recovered via sieving of soil extracted from the tree rhizosphere averaged 15.3 per tree.

Impacts:

NO IMPACTS

Source of Federal Funds: Hatch

Scope: State Specific

FLA-LAL-03496

Title: Polyphasic Analysis of Xanthomonads Associated with Horticultural Crop Plants in Florida

Critical Needs: 7, 6, 17, 28

National Objectives: 1.2, 4.2

Key Themes: Emerging Infectious Disease, Weather and Climate

Summary:

Study population dynamics of Xanthomonads on leaf surfaces in the absence of disease. Develop reproducible methods for splash dispersal of Xanthomonads onto leaf surfaces, and sampling of populations using selective media and other methods for quantification. Utilizing a programmable leaf wetness controller, determine population dynamics of Xanthomonads under leaf drying and wetting cycles as affected by micro-climatic conditions.

Progress:

Asiatic citrus canker (ACC), a leaf, fruit and stem spotting disease caused by *Xanthomonas campestris* pv. *citri* (*X.c.* pv. *citri*), is of importance in the humid subtropics where inoculum builds up on abundant new growth. In these areas, wind-driven rains spread the bacterium up to several miles and initiate new disease foci. In the past, outbreaks of ACC in Florida have been effectively suppressed. However, *X.c.* pv. *citri* has spread rapidly since its discovery in metropolitan Miami in 1995. The epidemic expanded from a 14 square-mile area to its present extent of over 1000 square miles in

Dade, Broward and Palm Beach Counties, in spite of aggressive survey and removal of infected and exposed trees by federal and state eradication agencies. There is also an additional 300 square miles of infestation in urban and commercial citrus across the state. New infections are established from existing lesions by spread of bacteria that exude onto the plant surface during rains with wind speed in excess of 8 m/sec. Also, grove workers and their equipment inadvertently move *X.c. pv. citri* from infected groves to non-infested groves by transmission of bacteria from infested plant or non-plant surfaces. Survival of *X.c. pv. citri* outside of lesions on citrus leaves, fruit, and stems has been determined to be for short periods after drying of plant surfaces. Survival of xanthomonads on citrus tissues and other surfaces in the absence of disease under a range of environmental conditions has not been fully investigated. Recovery of *X.c. pv. citri* during drying was evaluated on the surface of citrus leaves and bark, St. Augustine grass leaves, and various materials including wood (crates, ladders), cotton cloth (clothing, cotton gloves), plastic (fruit bins), metal (vehicles, equipment), leather (gloves, shoes), feathers (bird), fur (animal). Bacterial inoculum was prepared from macerated lesions and applied to the various surfaces to be tested. These surfaces were exposed to ambient meteorological conditions, in sun or shade outdoors at the quarantine facility at Opa-locka Airport in Miami. Survival of *X.c. pv. citri* was significant up to 48 hours under sun and 72 hours under shade depending on the weather conditions during the test (temperature, humidity). This confirms that *X.c. pv. citri* dies rapidly as surfaces dry. However, there is a considerable risk of transmission during and shortly after drying of plant and non-plant surfaces.

Impacts:

Survival of *X.c. pv. citri* outside of lesions is apparently limited to hours after drying of surfaces under subtropical conditions in Florida. The limited host range of *X.c. pv. citri* on citrus and near citrus relatives, and the inability of the bacterium to survive for long periods on host and non-host plants in the absence of disease are cornerstones for application of the eradication principle for ACC.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-LAL-03571

Title: Dynamic Economic Analysis of the Florida Citrus Industry

Critical Needs: 6, 16, 19

National Objectives: 1.4, 2.1

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness, Managing Change in Agriculture, Plant Production Efficiency, Food Accessibility and Affordability

Summary:

Will survey citrus industry for data and develop computer decision aids for citrus growers.

Progress:

Compiled and published annual citrus comparative budgets for the three major citrus producing regions in Florida (Central Florida, Southwest Florida and Indian River-East Coast). Annual citrus caretaker custom rates were compiled and published for the Central

Florida and the Indian River/South Florida production regions. Published updated comparative costs between Florida's and Sao Paulo's (Brazil) citrus industries. Developed and Excel computer decision aid for citrus growers to evaluate resetting/tree replacement strategies; computer program made available on Lake Alfred CREC Extension web page.

Impacts:

Florida is the second largest citrus producing region in the world and the largest supplier of orange juice products to the U.S. market. Federal trade policy has focused on a 'Free Trade of the Americas Agreement' which has included discussions on reducing or eliminating the FCOJ import tariff, the loss of which would enable foreign citrus production (e.g., Sao Paulo, Brazil) to become more cost-competitive and potentially reducing Florida citrus growers returns by \$1.20 to \$1.40 per box. Resetting/tree replacement costs average 13% of the total grove care costs for a citrus operation. The reset analysis computer program will enhance citrus growers tree replacement strategy decisions, and improve production efficiency and returns.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-LAL-03759

Title: Freeze Damage and Protection of Horticultural Species

Critical Needs: 6, 15, 27, 28

National Objectives: 1.2, 4.2

Key Themes: Agricultural Profitability, GIS/GPS, Precision Agriculture, Weather and Climate,

Summary:

Ways to improve micro-sprinkler effectiveness for freeze protection will be studied. Micro-sprinklers of different output rates and spray patterns will be elevated to different heights inside citrus tree canopies. Effectiveness of different systems will be evaluated after freeze events. Other freeze protection methods that show promise will be evaluated.

Progress:

Studies were set up to determine the effects of micro-sprinkler emitter height on amount of warming in the canopy of citrus trees. Micro-sprinklers with outputs of 38 and 76 L/hr were mounted at heights of 60 and 90 cm inside the tree canopy. Several freezes occurred in 2001-2002, but temperatures never got below -2 degrees C and there was essentially no tree damage. No major air temperature differences among the treatments were found at heights of 120 and 150 cm. Accomplishments earlier in this project showed that emitters elevated to heights of 60 or 90 cm protected more of the canopy in severe freezes. In the severe 1989 freeze, trees with elevated micro-sprinklers recovered more rapidly after a freeze and returned to better production sooner than trees with emitters near ground level. There is a risk of ice loading and limb breakage if emitters are elevated too high, but elevation to a moderate height can improve citrus freeze protection.

Impacts:

If freezes had occurred to test these ideas, this research would tell us how micro-sprinkler emitter volume output and position height influences the amount of warming that occurs in the tree canopy above the emitter. Proper emitter placement will facilitate faster tree recovery after a freeze.

Source of Federal Funds: Hatch

Scope: multi-state, Integrated Research and Extension

FLA-LAL-03788

Title: Development of Ecological Methods for Nematode Management

Critical Needs: 25

National Objectives: 4.2

Key Themes: Integrated Pest Management, Pesticide Application

Summary:

Field, laboratory, and greenhouse studies will be used to develop and integrate methods for managing and minimizing nematode impact on vegetable, fruit, and ornamental crops. Methods investigated will include cropping systems, cover crops, rotation crops, plant tolerance, solarization, and other novel methods.

Progress:

Extensive field research studies were conducted to explore new chemical and nonchemical nematode management tactics, chemical application technologies, and treatment regimes to serve as alternatives to soil fumigant uses of methyl bromide. During the past year, the combined results of the alternative chemical studies continued to show the combination of 1,3 -D (Telone II) and chloropicrin as the most promising currently registered alternative fumigant combination to that of methyl bromide for Florida fruit and vegetable production. In general, these studies indicate that tomato yields were greater following use of Telone C-35 compared to that of Telone C-17 and that in-row applications were generally superior to broadcast applications. The higher yields obtained with in-row applications are likely the simple result of more uniform fumigant dispersion, distribution, and reduced dissipation under the raised, plastic mulch covered beds compared to bare ground, broadcast applications made to undisturbed soil subjected to environmental flux. Even though tomato yields improved with in-row and or broadcast applications of Telone C-17 or Telone C-35, they were not always to the level of methyl bromide. The results of recent studies further suggests that when soil-borne disease pressure is low, broadcast application of Telone C-35 can be as effective as in-bed application; however, when disease pressure is greater, broadcast application of Telone C-35 benefits from the addition of chloropicrin to the finished bed.

Impacts:

The results of these studies have also demonstrated that the new strategies to replace methyl bromide, which include alternative fumigants and herbicides, are not perfect but are acceptable. In this regard, significant advances were also made in the integration of some of these tactics, and a pest management system has been devised which has the potential to be an economically viable replacement for methyl bromide. This system relies on the combination of 1,3 -D (Telone II) and chloropicrin in combination with a separately applied herbicide to that of methyl bromide for Florida fruit and vegetable production. However, the culmination of this research also has demonstrated that satisfactory yield responses probably cannot be achieved consistently in every field or in every season as equivalent to that of methyl bromide. As a result, growers must learn to expect some disease and loss, and to recognize that some inconsistency is unavoidable. The biggest continuing challenge facing both the scientific community and growers of Florida is developing and improving alternatives which further minimize the 5-10% impacts on yield for each of the methyl bromide dependent crops. The discovery of the

additional in-row treatment of chloropicrin at bedding may represent a significant advancement in this regard.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-LAL-03832

Title: Micro-irrigation Technologies for Protection of Natural Resources and Optimum Production

Critical Needs: 27, 29

National Objectives: 4.2

Key Themes: Natural Resources Management, Water Quality

Summary:

Improper irrigation management with micro-sprinklers can lead to over-irrigation and/or loss of water and nutrients. This project will help improve irrigation management and help reduce potential groundwater contamination with nutrients caused by over-irrigation.

Progress:

Citrus trees respond well to high application rates of reclaimed water on well-drained soil. Even though solids were diluted by high irrigation rates, overall solids production increased at high application rates. Trees on Swingle citrumelo rootstock respond particularly well to high irrigation rates. Recent droughts in Florida have increased acceptance of reclaimed water. Soil temperature, nitrogen (N) concentration, and residence time affect N uptake efficiency (NUE). Increasing residence time from 2 to 8 hours doubled citrus NUE. Reduced NUE can be caused by N displacement below the root zone due to high irrigation rates rather than low N concentration in reclaimed water. Effective range of tensiometers and resistance sensors in sandy soils was between -5 and -20 kPa. Nonuniform water application can cause poor irrigation efficiency. A simulation model showed that solute leaching was 2.5 times greater under a ridge Candler soil than a flatwoods Immokalee soil. With drip irrigation on sandy soils, the water front moves vertically. Compared to sands, a drip system can cover twice and 1.5 times as much horizontal area in clay and loam soils, respectively. A 603-page book on water and Florida citrus was published. It covers many aspects of citrus irrigation management, water supply, soil plant water relationships, hydraulics, pumps, micro-irrigation, emitter clogging, cold protection, and economics.

Impacts:

This research showed reclaimed water to be safe and effective for irrigation use. Reclaimed water can do much to reduce drought impact. In part, because of this research, reclaimed water use in Florida has increased by 285 million gallons/day in 10 years. Models help demonstrate water movement and potential leaching below the root zone on sandy soils. Information presented in this book will help Florida citrus growers improve irrigation management and can save 5 million gallons of water statewide per year.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-LAL-03896

Title: Natural Products Chemistry as a Resource for Biorational Methods of Insect Control

Critical Needs: 27

National Objectives: 1.2

Key Themes: Invasive Species

Summary:

Fruit flies lead to quarantine of agricultural products. This project addresses improved systems to detect and eradicate fruit flies. The purpose of this project is to discover semiochemicals which can be used in improved lures and attractants for fruit flies.

Progress:

We have completed our work on a *Diaprepes* larval abundance estimation method. The range of larval numbers falling to the soil ranged from 10-67 per square meter with an average of 401 larvae per square meter for the season. These findings, coupled with our previous work with *Diaprepes* larvae, emphasize the importance of the proper larval challenge in plant resistance experiments. The correspondence between adult presence and larval numbers obtained in our experiment teaches that control of the adult or the larval life stage should begin when either stage is found in a citrus grove. We have completed the development of a technique for determining the consumption of an individual fruit fly. This has enabled us to determine that Caribbean fruit flies prefer to eat sucrose, to feed upside down, that there is most likely resistance to malathion in the population, and that this fly prefers certain baits.

Impacts:

We have now provided, in a bit more than three years, a tolerant rootstock for *Diaprepes abbreviatus* and a scientifically based approach to determine the tolerance of other rootstock--an approach based on natural larval pressure. Rootstock resistance is a sustainable long-term solution for *Diaprepes*. We have developed, for the first time, an insect consumption technique that can be used to compare various baits and lures, and to examine resistance to ingested pesticides.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-LAL-03924

Title: Development, Evaluation, and Safety of Entomopathogens for Control of Arthropod Pests

Critical Needs: 6, 17

National Objectives: 1.2

Key Themes: Diversified/Alternative Agriculture

Summary:

Studies will focus on common mass-producible or commercially available pathogens formulated as *Beauveria bassiana*. Additionally, research aimed at increasing our ability to utilize the great natural epizootic capacity of many fungal pathogens will also be pursued including studies of the difficult-to-mass-produce fungal pathogens. Research in Lake Alfred will focus on developing methods for the selective isolation, identification, and analysis of both introduced and naturally occurring fungal pathogens of homopteran insects. Insects in the cryptic and soil habitats cause significant economic and ecological

impact in the southern region of, and throughout, the US. Due to their cryptic or subterranean nature they are more difficult to manage than the foliage feeding insects. Also the proposed ban on carbamate and organophosphate insecticides due to the implement of Food Quality Protection Act will leave few viable alternatives to manage soil-borne insects pests. Therefore a major focus of the project will be a multi-state effort to develop microbial control strategies using nematodes and fungi for various root weevil pests. A major effort will be to analyze the diversity of entomopathogenic nematodes and the performance of various nematode strains against weevil larvae under various environmental conditions.

Progress:

The seasonal abundance of the life stages of *Diaprepes abbreviatus* was monitored for two years in adjacent irrigated and non-irrigated citrus plantings. Adult emergence, estimated by catches in ground traps, occurred throughout the year with a peak in mid-June in both citrus and Brazilian pepper. Onset of adult emergence appeared to be triggered by soil moisture and temperature. Traps counts were highest when soil moisture declined to 5 centibars at a depth of 30 cm and soil temperature ranged from 22-24 degrees C. In the non-irrigated citrus, the adult emergence peak was of shorter duration, but of greater magnitude, compared to the irrigated planting. Adult abundance was also monitored weekly using modified Tedders traps. Number of adults captured approximated the number caught in ground traps. Adult number caught changed seasonally, particularly in the fall, when adult populations were the highest. The number of egg masses collected in the tree canopy and the number of neonates caught beneath the tree canopy were both correlated with the number of adults captured in modified Tedders traps. These data suggest that adults caught in modified Tedders traps provide a reliable indicator for estimating the seasonal abundance of all life stages. Larvae of different instars, pupae, and teneral adults were recovered from the soil rhizosphere after periodic tree removal. No diseased or parasitized life stages were recovered from the soil. Most life stages were present in the soil, but the proportion of larvae in various instars changed seasonally.

Impacts:

A better understanding of the seasonal abundance of the life stages of *Diaprepes* will result in improved timing of biological and chemical control tactics.

Source of Federal Funds: Hatch

Scope: Multi-state

FLA-MAR-03854

Title: Selection and Adaptation of Grass and Legume Species for Forage Production in the Southern Coastal Plain and Peninsular Florida

Critical Needs: 8

National Objectives: 1.2

Key Themes: Agricultural Profitability, Grazing, Rangeland/Pasture Management

Summary:

The forage production in the southern coastal plain and peninsular Florida is severely limited in the fall of the year. Efforts through plant breeding to develop varieties to fill this void would be advantageous to livestock production in this region. The purpose of this project is to integrate research with a number of plant breeding programs in the southeastern U.S. to cooperatively address fall season forage production constraints.

Concentration on breeding for physiological traits, specifically photoperiod, will be the major focus of this project.

Progress:

Photoperiod response in Pensacola-derived bahia grass: variety trials are underway at Mayaguez, PR and Kingshill, St. Croix, Ona and Immokalee, Florida. Varieties of bahia grass, bermuda grass, guinea grass, clitoria and perennial peanut are growing in replicated trials under specific light and irrigation regimes. Preliminary data from this study supports earlier evidence of photoperiod sensitivity behavior among the species studied. Recurrent selection program for improvement of fall season growth in Pensacola bahia grass: photoperiod insensitive, cold adapted (PICA) Cycle-4 forage and turf populations were planted at the Range Cattle Research and Education Center, Ona, and at North Florida Research and Education Center, Marianna, in Fall 2002. Approximately 230 cold-tolerant diploid bahia grass plants were selected for excellent winter growth at NFREC-Marianna after five cold events (<25 degrees F). Ramets from these lines will be polycrossed in the greenhouse at Marianna. New polyploid bahia grass germplasm was developed from chemically-induced chromosome doubling of selected Tifton 9 and Pensacola bahia grass. Several lines appeared to be sexual. Selected lines will be used in crossing program to develop sexual, tetraploid bahia grass. AFLP analysis of bahia grass cultivars successfully separated cycles and cultivars (AFLP done at Coastal Plain Exp. Stn. (CPES), Tifton, GA). Fungal (*Cerebella andropogonis*) infection was found on both diploid and tetraploid bahia grass. Cultivar reaction of greenhouse-grown (NFREC-Quincy) bahia grass to the tawny mole cricket indicated that Paraguay 22 was most tolerant. This study will be repeated in 2003 and a field trial has been established at CPES, Tifton, Georgia. Acquire and evaluate new *Paspalum* species, including native ecotypes: Approximately eighty accessions (from USDA-ARS, Griffin; GA, CSIRO, Australia; and Instituto de Botanica del Nordeste, Argentina) are being evaluated for winter survival, frost tolerance, forage yield, forage quality, and seed production at Ona, Brooksville, Live Oak, and Tifton, GA. Breed for fall season growth in *Setaria* species: Selection in *Setaria sphacelata* for cold tolerance and forage at the NFREC-Quincy is ongoing. Evaluate tall fescue with the novel endophyte for fall and spring growth and plant persistence under animal grazing: A fescue pasture is being maintained for sod systems studies in 2003. Assist other plant breeders to evaluate experimental forages, particularly small grains, clovers and rye grass: Experimental lines of rye, rye grass, wheat, oats, fescue and red clover, crimson clover, medics and buffalo clover were tested at the NFREC-Marianna. Results from a number of these yield trials were reported in extension report format and on the web at the Georgia Variety Testing site (<http://www.griffin.peachnet.edu/swvt/>). Evaluate the long juvenile soybean for use as niche forage for late summer hay and grazing: Forage soybean 'Hinson Long Juvenile' was grown at several dairies in south Georgia and north Florida and was evaluated as a summer silage crop. A seed increase of F94-2119 was made in 2002.

Impacts:

Cultivars and germplasm resulting from this collaborative work, released in 2002, include: Q4188 Bahiagrass, 2002 (germplasm). C.L. Quarin, M.H. Urbani, A.R. Blount, E.J.Martinez, C.M. Hack, G.W. Burton, and K.H.Quesenberry. Q4205 Bahiagrass, 2002 (germplasm). C.L. Quarin, M.H. Urbani, A.R. Blount, E.J.Martinez, C.M. Hack, G.W. Burton, and K.H.Quesenberry. FLMR7 Red Clover, 2002 (cultivar experimental name). K.H. Quesenberry, A.R. Blount Beefbuilder III (FL X1997 (New) 4X late) Ryegrass. 2002 (cultivar). G. M. Prine, A.R. Blount, P. Mislevy FL X2001 (New) 4X LR mid-late Ryegrass. 2002 (cultivar). G. M. Prine, A.R. Blount, P. Mislevy FL X2001 (New 1) 4X LR late Ryegrass. 2002 (cultivar). G. M. Prine, A.R. Blount, P. Mislevy Horizon 474 Oat,

2002 (cultivar). R.D. Barnett, A.R. Blount, P.L. Pfahler, J. Johnson, B.M. Cunfer, G.D. Buntin, and D. Bland. Pennington Seed Co. "Supreme Southeastern Mixture" wildlife forage for southeastern US. developed in conjunction with the Florida Fish and Wildlife Conservation Commission and released to Pennington Seed in 2002.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-MCS-03861

Title: Genetic Engineering of *Zymomonas Mobilis* for Fuel Ethanol Production

Critical Needs: 2,

National Objectives: 1.1

Key Themes: Adding Value to New and Old Agricultural Products, Biobased Products

Summary:

Genetic manipulations to improve ethanol production in *Z. mobilis* are complicated by enzymes that prevent introduction of foreign DNA into the bacteria. The purpose of this project is to determine the factors that limit the efficiency of transfer of foreign genes into *Z. mobilis* and to produce new strains which will be more amenable to genetic engineering which may be used to enhance their fuel ethanol production.

Progress:

Clones from three regions of the *Zymomonas mobilis* genome were previously identified that may effect the transfer of DNA between *Z. mobilis* and other organisms. The genes that code for a CcrM-like DNA-methyl transferase and a Mrr-like restriction endonuclease have been further examined. Expression of the *ccrM* gene in *E. coli* caused inhibition of growth and cell death. Expression of the *ccrM* in *E. coli* required that the gene be under stringent control during cloning and growth of the cells. The *ccrM*-like sequence was PCR amplified and cloned in the pPROTetE.133 expression vector to produce a C-terminal polyhistadine tagged protein under the control of the tetracycline inducible promoter. Induction of expression produced a moderately low amount of a 47.5 kDa 6XHis-tagged protein recombinant protein prior to cell death. The protein was partially purified by binding and elution from a nickel-cobalt column. The partially purified recombinant protein was examined to determine its in-vitro activity. The isolated protein demonstrated a DNA methyl transferase activity. The enzyme transferred the methyl group from [3H-methyl]-S-adenosyl methionine to DNA which protected the DNA from HinfI digestion. The nucleotide methylation pattern in the enzyme recognition site is currently being examined. To examine the activity of Mrr-like protein, the *mrr* gene was cloned in the pPROTetE 133 expression vector. After expression in *E. coli* and isolation of the his-tagged protein, the activity of the partially purified protein was examined in-vitro. No conditions were found in which the protein exhibited the expected DNA endonulcease activity based on the in-vitro properties of clones containing the gene. The C-terminal polyhistidine tag or the purification conditions appear to render the protein inactive. Other approaches for preparing an active protein are being pursued. To improve the transformation efficiency of *Z. mobilis* when cloned DNA sequences are transferred from *E. coli* into *Z. mobilis*, a smaller shuttle vector was developed to replace the larger shuttle vectors which were available. The beta-lactamase gene of pBR322 was replaced with a PCR amplified sequence containing *oriV*, the origin of replication from RSF1010. The 4.1 Kb shuttle vector replicates in *E.coli* from the pBR322 origin of replication and in *Z. mobilis* from *oriV* when cloned in trans with pLOI1884 or other

plasmid containing the RSV1010 replication genes. Due to the smaller size of shuttle vector, higher transformation efficiencies are achieved in *Z. mobilis*.

Impacts:

Two potential restriction endonuclease genes have been cloned from *Z. mobilis*. Inactivation of these genes may greatly enhance the ability to transfer of foreign genes into *Z. mobilis* to convert the organism into a more useful biocatalyst as a potential renewable energy source for fuel ethanol production. The experimental approach developed in this study for the enhancement of the genetic manipulation of *Z. mobilis* should provide a general approach to modify and improve the genetics of other organisms which may be useful in generation of energy sources or organic substrates from renewable resources.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-MON-03609

Title: Introduction and Evaluation of Ornamental Plants

Critical Needs: 4, 7

National Objectives: 1.2

Key Themes: Ornamental/Green Agriculture, Tropical Agriculture

Summary:

Use of herbaceous native plants is increasing; however, there is little information about the adaptability of these species to landscape or roadside situations. Appropriate seed sources are lacking. Florida ecotypes of herbaceous native plants will be evaluated (growth and physiology) under landscape and roadside conditions. Florida ecotypes of herbaceous native plant seeds will be increased.

Progress:

Coreopsis leavenworthii seed possesses dormancy that is other than physiological. Time of harvest appears to have some effect on seed quality of a Florida ecotype of *Gaillardia pulchella*. Preliminary results show that fertilizer level affects seed quality and yield of a Florida ecotype *Coreopsis lanceolata*. Seed of a Florida ecotype of *Lupinus diffusus* also possesses some dormancy other than physical. There is increasing evidence that best results with imazapic (Plateau herbicide) used for stand establishment of native wildflowers is obtained at up to 0.125 lb ai/A applied prior to emergence of native wildflower seed. After three years of evaluation under low input conditions in north Florida, *Muhlenbergia capillaris* and *Tridens flavus* were the only native grasses that performed well for the entire study. Four of five native wildflower seed production demonstration sites have been planted at north Florida tobacco farms.

A demonstration planting of *Lagerstroemia* taxa has been installed at NFREC-Quincy and contains about 70 taxa (one plant of each). A replicated planting of 30 *Lagerstroemia* cultivars will be installed in 2003 as part of a multi-state evaluation. Summaries of the ongoing studies are used to provide information for the Extension outreach. The collection of *Magnoliaceae* taxa planted in the Magnolia Garden at NFREC-Quincy continues to be expanded and now contains 113 taxa. Based on preliminary evaluations of magnolias, two taxa have been selected for distribution and regional evaluation in the USDA SERA-IEG 27, "Nursery and Landscape Crops." *Michelia skinneriana* is an

improved Banana shrub (*Michelia figo*). Magnolia x (Gresham Hybrid) 'Jon Jon', the second selection for SERA-IEG, is a large-flowered Gresham Hybrid magnolia which blooms profusely in late spring. *Michelia skinneriana* was distributed to SERA-IEG cooperators in 2001, and 'Jon Jon' magnolia was distributed in 2002. In 2002, 134 various tree and shrub taxa were planted for field observation at NFREC-Quincy. An additional 12 taxa are shade-preferring and were planted in the Magnolia Garden at NFREC-Quincy. A replicated planting of 20 taxa of Camellia species was installed November 20, 2002. This planting is part of a multistate evaluation of these Camellia taxa; cooperators are in Mississippi and Tennessee. A planting of 27 ornamental or native grasses was installed in the NFREC demonstration area. A publication on these ornamental grasses is available in the information kiosk near the entrance to the demonstration area. A study evaluating ornamental vines has been completed. Results were presented at the Southern Nursery Association's Annual Research Conference (Thetford, Mack, Knox and Bolques; Landscape performance of perennial vines for north Florida. 2002 SNA Research Conference. Aug. 2, 2002. Atlanta GA) and will be published next year.

Impacts:

Availability of Florida ecotype native wildflower seed is increasing, as is knowledge about the ecology of this seed. This will facilitate increased profitability for Florida's native wildflower seed producers (including tobacco farmers who could use wildflower seed to replace some of income lost by declines in the tobacco industry), and will allow end users to establish and manage native wildflower plantings more effectively.

Results of these evaluations of trees, shrubs and vines for growth, flowering, pest resistance and other ornamental characteristics are helping consumers and the nursery and landscape industries select the best species and cultivars for production and landscape use in Florida. Use of plants better adapted to Florida conditions can result in fewer pesticide and fertilizer applications as well as lower maintenance costs and greater customer satisfaction with landscape plants.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-ONA-03726

Title: Evaluation of Forage Germplasm and Forage Management Practices.

Critical Needs: 8

National Objectives: 1.2

Key Themes: Grazing, Agricultural Profitability

Summary:

Little or no forage production is obtained from tropical forages during cool season. This project examines the selection and management of warm season grasses that produce forage during both the warm and cool season

Progress:

A factorial combination of N (0, 75, 150, 225 kg/ha) and S (0, 85, 170, 255) was applied to bahia grass (*Paspalum notatum*) in 2001 and 2002. there was a N x S interaction for DM yield. When N=0, yield increased linearly over levels of S from 1140-2640 kg/ha; at N=85, yield increased linearly over S from 2260-2830; and when N=255 yield increased over levels of S from 2650-3370 kg/ha. When N=255 there was no response to S. In a study with cow-calf pairs grazing bahia grass or signal grass (*Brachiaria humidicola*), cows grazing bahia grass lost 32 kg from April to August 2002 (calf weaning) compared

to a 2 kg gain for cows grazing signal grass. From April to weaning in August, calves on bahia grass gained 42 kg compared to 63 kg for calves on signal grass. 'Florona' star grass *Cynodon nlemfuensis* was subjected to various levels of P (0-39 kg ha⁻¹) and K (0-93 kg ha⁻¹) combinations under a clipping study. Dry biomass yield was higher ($P < 0.05$) with a 20-93 P-K combination, whereas 93 kg ha⁻¹ K provided best cold tolerance and highest digestibility at P levels of 20 to 39 kg ha⁻¹. Forage crude protein concentration was inversely related to DM yield. Star grasses, rhodes grass *Chloris gayana*, bermuda grass *C. dactylon*, and creeping signal grass *Urochloa humidicola* were tested at four (2, 4, 5, and 7 week) grazing frequencies (GF) for dry biomass (DB) yield. Warm season DB increased for most grasses as GF decreased. During the cool short dry season 'Jiggs' (3180 kg ha⁻¹), 'Kalambora' rhodes grass (3080 kg ha⁻¹) and Florona (2970 kg ha⁻¹) were most productive.

Impacts:

There is a need to determine adequate fertility for high yields of recommended forage grasses without excess soil accumulation, which can lead to environmental pollution. Annual applications of 20 and 93 kg ha⁻¹ P and K, respectively, continually produce high yields with minimal soil residue, resulting in a clean environment.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-PLP-03305

Title: Comparison of Two Management Programs on the Growth and Incidence of Decline (Blight) of Citrus

Critical Needs: 28, 31

National Objectives: 4.1

Key Themes: Nutrient Management, Sustainable Agriculture

Summary:

In Florida, Brazil, and other locations, citrus trees are declining at an alarming rate. The presence of a pathogen has not been found despite intensive study for over 100 years. The purpose of this research is to test the hypothesis that citrus decline is a problem of stress (i.e., from too much or too little water, improper rates and N-P-K ratios, too much liming, etc.).

Progress:

The citrus trees in the nutrition experiment were 11.35 yrs. old in November 2001. The trees on the conservative program made considerable recovery from the erroneous application of high amount of fertilizer with an atypical N-P-K ratio. For the IFAS-recommended fertility program, 20 trees had zero yield (all due to decline), five trees had less than 1 box of fruit per tree, and 10 trees had >1 to <2 boxes per tree. For the conservative fertility program, 17 trees had zero yield, four trees had less than one box per tree, and seven trees had >1 to <2 boxes per tree. Overall, the yield from trees on the conservative fertility program had 33% more fruit than trees on the standard program. Thus, the evidence is accumulating that the IFAS-recommended fertility program is detrimental to tree health and yield.

Impacts:

With the determination that various stresses are the cause of citrus decline, growers can now modify their fertility practices and grove management strategies to reduce stress on

their trees. These changes will lead to trees' longer productive life with less fertilizer input.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-PLP-03336

Title: Phylogenetic Relationships of Pezizales (Cup-Fungi) and Tuberales (Truffles)

Critical Needs: 4

National Objectives: 1.2

Key Themes: Niche Market

Summary:

Continue field work to obtain cup-fungi and truffles necessary for ultrastructural and molecular studies; examine the ultrastructure of spores, septal pores and other apothecial organelles, and expand molecular studies of taxa discovered in these studies. Transmission and scanning electron microscopy will be applied to the study of septal pore organelles in asci, ascogenous hyphae, and excipular tissues of each species. When available, the ontogeny of spore wall development will be examined ultrastructurally.

Progress:

This represents the final report on this project, which was initiated several years ago and has been maintained, with modifications, until the present. This project has supported five MS, six PhD, and four postdoctoral students in studies of phylogenetic relationships in epigeous (cup-fungi) and hypogeous (truffles) Pezizales. Seven book chapters, one monograph, and 70 refereed publications have resulted. We have determined that the ultrastructural features of septa in apothecial tissues are very conservative characters that enable us to determine natural families and orders of Pezizales. These data correlate completely with the results of molecular studies. During the current year we completed and published data on spore wall development in three species of *Tuber*, showing that two species were taxonomically aligned with *Otidea* and one with the *Morchella*.

Impacts:

Truffles have been shown to be polyphyletic, have evolved from different groups of epigeous Pezizales (cup-fungi). Ultrastructural aspects of spore wall development is useful in determining the proper alignment of various taxa.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-PLP-03402

Title: Integrated Pest Management as an Alternative for Control of Soil-borne Pests of Vegetable Crops

Critical Needs: 1, 17

National Objectives: 1.2

Key Themes: Plant Production Efficiency

Summary:

Soil-borne fungi and nematodes cause diseases of vegetable crops, and some current methods of disease control will be lost or have damaging impacts on the environment. The purpose of this study is to evaluate new environmentally safe methods for integrated pest management of soil-borne fungal pathogens and pests of vegetable crops.

Progress:

Eleven species of *Pythium* were recovered from the root systems of fresh market bell pepper plants grown on polyethylene-mulched production systems in Florida. Pathogenicity tests using pasteurized field soil inoculated with infested wheat seed demonstrated that *P. aphanidermatum*, *P. myriotylum*, *P. helicoides* and *P. splendens* can cause significant root rot and reductions in root growth of pepper. *Pythium aphanidermatum* and *P. myriotylum* caused the most severe root rot, the greatest reductions in plant weight, and 42 and 62 percent plant mortality. In pathogenicity tests with tomato plants, these four species produced similar plant weight losses and disease ratings to those observed in pepper, but little or no plant mortality. Low incidences of root tip necrosis in pepper plants, but no losses in root weight, were observed with the following species: *P. arrhenomanes*, *P. catenulatum*, *P. graminicola* and *P. irregulare*. *Pythium periplocum*, *P. spinosum*, and *Pythium* species F (a group of isolates that produced filamentous sporangia but did not form sexual structures) colonized root tissue of pepper but caused no significant root rot and did not adversely affect growth. Similar trends were observed with tomato, except that *P. arrhenomanes* caused limited root tip necrosis without affecting plant growth and *P. catenulatum*, *P. graminicola*, *P. irregulare*, *P. spinosum*, and *Pythium* species F colonized at least some of the plants without causing root disease. A significant interaction between temperature and *P. aphanidermatum* or *P. myriotylum* was observed on pepper transplants. The greatest reductions in growth occurred at 28 degrees C, while plant mortality only occurred at 34 degrees C. When *Phytophthora nicotianae* was added to pasteurized soil at the rate of 500 chlamydospores/g of soil and exposed to 35 to 53C for 20 days, the time required to reduce soil populations to residual levels (0.2 propagule per gram of soil or less) decreased with increasing temperatures in the range of 38 to 53C. The addition of cabbage residue to the soil further reduced the time required to inactivate chlamydospores. Temperature regimes simulating daily temperature changes in the field, with the highest temperature at 47 degrees C for three hours daily, were found to be good estimators of the efficacy of soil solarization for the control of *P. nicotianae* in soil. Cabbage amendment reduced the time required to inactivate the chlamydospores of *P. nicotianae*, and its effect was more pronounced at lower temperature regimes.

Impacts:

Many species of *Pythium* are associated with pepper and tomato roots in production systems in Florida. *P. myriotylum* and *P. aphanidermatum* may be important pathogens of these crops under warm, wet conditions. The determination of critical temperature regimes in soil for control of *Phytophthora nicotianae* provides guidelines for temperatures that must be obtained in soil treated with solarization for successful management of soil-borne disease.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-PLP-03490

Title: Biological Control of Selected Arthropod Pests and Weeds

Critical Needs: 25

National Objectives: 4.2

Key Themes: Biological Control

Summary:

Plant pathogens associated with weeds in centers of weed diversity can be used as classical biological control agents. A rust fungus, *Uredo eichhorniae*, is being evaluated as a potential classical biocontrol agent for water hyacinth, *Eichhornia crassipes*. The life cycle of this fungus is being studied in Brazil.

Progress:

Distribution of *Uredo eichhorniae*, a potential classical biocontrol agent for water hyacinth (*Eichhornia crassipes*) and its occurrence at different spore stages were determined from surveys in southern Brazil. The presence of *Uredo eichhorniae*-infected plants was confirmed at several new locations. Samples of rust-infected plants were collected and transported to the United States under proper plant quarantine permits. The rust-infected plants were maintained in a quarantine greenhouse in Gainesville, Florida. Inoculation and spore germination studies were conducted with uredospores collected from these plants. Rust-infected plants were also transported to Jaboicabal, SP where cross-inoculation studies are currently underway. Plants that co-occurred with rust-infected water hyacinth plants were identified and cataloged to begin a search for possible alternate hosts. The potential negative impact of genetically predetermined resistance among purple nutsedge (*Cyperus rotundus*) and accessions on the effectiveness of *Dactylaria higginsii*, a bioherbicide candidate, was studied. Seventy biotypes of purple nutsedge collected from various regions of Brazil, the US, and a few other countries were screened in greenhouse studies for susceptibility to *D. higginsii*. Among the accessions, 90.5 percent were susceptible, 7.9 percent resistant, and 1.6 percent immune to *D. higginsii*. Molecular variability among these accessions was characterized by RAPD analysis, and the results indicated a high level of genetic variability even among accessions with close geographic affinity. Two *Cercospora* species have been studied as biocontrol agents of the aquatic weed water hyacinth: *C. piaropi* and *C. rodmanii*. These species were differentiated on the basis of their disease severity on water hyacinth and conidial size and morphology, but it is not easy to distinguish them in practice. To test if the cladistic species concept agrees with the morphological/ecological species concept, 14 isolates of *Cercospora spp.* obtained from symptomatic water hyacinth leaves collected in the USA (Florida and Texas), Mexico, Venezuela, Brazil, South Africa, and Zambia were compared on the basis of the DNA sequence of gene segments for beta-tubulin (TUB2), histone-3 (H3), and elongation factor-1-alpha (EF1alpha) corresponding to 380, 309, and 431 base pairs (bp), respectively. Eight of the isolates were also compared for the rDNA regions containing ITS1, ITS2, and the 5.8S gene. Extracted DNA was amplified by PCR using TUB2, H3, and ITS primer pairs selected from the literature. The EF1alpha primer pair was designed by us for this study. In the rDNA region spanning ITS1, 5.8S, and ITS2, 563 bp was invariant even when compared with *C. beticola* as the outgroup. Using parsimony, the combined phylogenetic analysis of TUB2, H3, and EF1alpha sequences done with Phylogenetic Analysis Using Parsimony did not support the species distinction between *C. piaropi* and *C. rodmanii*. Isolates of both

species were placed together in the same, well-supported clade compared to the outgroup. We have proposed to emend *C. piaropi* to include *C. rodmanii*.

Impacts:

Invasive weeds such as water hyacinth and purple nutsedge cause extensive economic losses in Florida. Biological control of these weeds with the help of host-specific plant pathogens, which is the aim of this project, is addressed through the studies reported herein.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-PLP-03496

Title: Polyphasic Analysis of Xanthomonads Associated with Horticultural Crop Plants in Florida

Critical Needs: 7, 17

National Objectives: 1.2

Key Themes:

Summary:

Collect xanthomonads from crop plants in Florida and from other National and international collections. These will be preserved for future characterizations. The characterization of the strains will be determined by fatty acid profile analyses and by genetically related techniques. The host ranges of the xanthomonads and cultivar specificity will be determined by several possible inoculation techniques.

Progress:

Strain 16 of *Xanthomonas campestris* pv. *vesicatoria* isolated as a nonpathogenic mutant after mutagenizing strain Xv75-3 with the transposon Tn5. Strain 16 was of interest because it grew in planta without causing disease. This is in contrast to hrp mutants that do not grow in planta. A DNA clone of strain 16 was isolated that contained the Tn5 transposon. Marker exchange of the clone into another strain resulted in nonpathogenicity of the exchanged strain. A DNA clone that complemented strain 16 back to pathogenicity was obtained. the clone was subcloned and eventually sequenced.

Impacts:

In comparison of the sequence with those in a DNA gene bank, it was found that the sequence was homologous to hrp M which was originally isolated from *Pseudomonas syringae* pv. *phaseolicola*.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-PLP-03498

Title: Evaluation and Development of Plant Pathogens for Biological Control of Weeds

Critical Needs: 25

National Objectives: 4.2

Key Themes: Biological Control

Summary:

This project aims to develop plant pathogens as biological control agents for weeds. Several plant pathogens have been identified as potential biological control agents for weeds, such as pigweeds, nutsedges, grasses, and aquatic weeds. Some of these pathogens are under development as bioherbicides.

Progress:

Tobacco mild green mosaic virus strain U2 (TMGMV U2) causes a unique, lethal, hypersensitive mortality in *Solanum viarum* (tropical soda apple; TSA). Hence, the use of TMGMV U2 as a biocontrol agent of TSA is being explored. Development of *Ralstonia solanacearum* (RS) as a biocontrol agent for TSA was continued. A novel method of application using the Burch Wet BladeT mower system (BWB) was tested. A pasture site with 18% TSA coverage was used in this study. Treatments included a BWB-applied control (culture medium without RS), RS applied at 23.3 L/ha with BWB, and RS applied at 23.3 L/ha with BWB plus 560 L/ha applied with a back-pack sprayer. After 67 days, TSA regrowth resulted in 11%, 1.1% and 0.2% ground cover in the respective treatments. Both RS treatments significantly reduced TSA regrowth and there was no significant difference between BWB-applied RS and the BWB/spray-applied RS. Hence, both are effective methods for delivering RS to control TSA in the field.// A multiple-pathogen approach (i.e., three or more host-specific fungal plant pathogens that are combined and applied inundatively for the control of several weeds) was evaluated. Three pathogens, *Drechslera gigantea*, *Exserohilum longirostratum* and *E. rostratum*, isolated from *Digitaria sanguinalis*, *Dactyloctenium aegyptium*, and *Sorghum halepense* in Florida, respectively, were evaluated. In greenhouse trials, each pathogen (105 spores/ml) as well as a mixture of pathogens (1:1:1 v/v; total 105 spores/ml) caused 82.5-100% disease severity on *D. sanguinalis*, *D. aegyptium*, *S. halepense*, *Cenchrus echinatus*, *Panicum maximum*, *P. texanum*, and *Setaria glauca*. In field trials, an emulsion-based inoculum of *D. gigantea*, *E. longirostratum*, and *E. rostratum* (105 spores/ml) and a mixture of pathogens (1:1:1 v/v; total 105 spores/ml) gave > 85% control of these seven weedy grasses and a natural population of *P. maximum*. Crop plants tested were either immune or resistant to each pathogen and the pathogen mixture. Effects of various chemical pesticides on in-vitro spore germination and colony growth of *Phomopsis amaranthicola*, a bioherbicide agent of *Amaranthus spp.*, were studied. Of the 22 pesticides evaluated, four fungicides (mancozeb, cupric hydroxide, maneb, and mefenoxam), three herbicides (diuron, sethoxydim, and imazethapyr), and two insecticides (dimethoate and dicofol) were highly toxic to *P. amaranthicola* spores at the labeled rate (1.0 LR) Fungicide benomyl, herbicides DCPA and oxyfluorfen inhibited germ-tube development. Herbicides atrazine, napropamide, ametryn, simazine, and metribuzin and insecticide cyromazine were compatible at 1.0 LR. Herbicides glyphosate and trifluralin at 0.25 LR, fungicide fosetyl aluminum at 0.5 LR, and herbicide imazapyr at 0.75 LR were also compatible. Of the 10 pesticides tested on colony growth, benomyl, imazapyr, sethoxydim, maneb, glyphosate, and diuron killed the mycelium. Mycelial growth on oxyfluorfen, trifluralin, and simazine was confined to the inoculum disc. Atrazine inhibited colony growth slightly compared to the control. Generally, the pesticides did not affect spore germination, but adversely affected mycelial growth at LR.

Impacts:

Weeds account for nearly \$6 billion in economic losses to American agriculture and the

public. We have discovered and demonstrated the feasibility of using host-specific plant pathogens as nonchemical weed-control agents. Several pathogens showing potential as bioherbicides are being developed for possible commercial use.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-PLP-03524

Title: Identification, Management, and Control of Viruses Infecting Ornamental and Related Crops

Critical Needs: 5, 7, 17

National Objectives: 1.2

Key Themes: Ornamentals/Green Agriculture, Plant Genomics

Summary:

To identify and characterize important viral pathogens, develop effective means for detecting them, and to implement commercially feasible strategies for their control.

Progress:

A caladium isolate of DsMV was cloned as cDNA from genomic RNA extracted from purified virions, and the sequence of the 3 prime-terminal 3158 nucleotides was determined. Phylogenetic alignment of the CP sequences indicated that DsMV is closely related to members of the bean common mosaic Potyvirus subgroup. The CP gene was amplified by polymerase chain reaction from plasmid DNA and subcloned into an expression vector. The recombinant CP thus obtained in *E. coli* was used as an immunogen for antiserum production. Direct tissue blot (DTB) and ELISA techniques were used to ascertain distribution of dasheen mosaic potyvirus (DsMV) in certain varieties of caladium (*Caladium hortulanum*) plants. DsMV, detected in tubers of all tested, was not found in all petioles or leaves. Similar studies with lily symptomless carlavirus revealed much higher titers in lily corm tissues than in above-ground plant parts. DTB techniques were applied for the detection of cucumber mosaic virus (CMV) in gladiolus corms. While positive antibody-virus reactions were observed in all CMV-infected tissue, none were observed in blots of healthy tissue. Corm tissue was more reliable than leaf tissue for detecting this virus. Cymbidium mosaic potexvirus and odontoglossum ringspot tobamovirus was detected in all 18 orchid collections surveyed in 1998-1999. Cymbidium ringspot tobusvirus, however, was not detected in any of the 420 plants tested. The presence of lily X potexvirus in the United States was confirmed.

Impacts:

Obtaining viable DsMV antiserum will facilitate efforts to detect this virus in various commercially grown aroids, especially foliage aroids, such as *dieffenbachia* and *caladium*. Direct tissue blot studies involving viruses of aroids, lilies, and gladiolus provide valuable information regarding which tissues to index when attempting to determine whether or not plants are infected with any of the aforementioned viruses. Repeated efforts to find any orchids, wild or cultivated, infected with cymbidium ringspot tobusvirus failed. Either this virus is extremely rare in orchids or, contrary to its name, it does not infect orchids.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-PLP-03586

Title: The Epidemiology and Control of Strawberry Diseases

Critical Needs: 6, 17, 19

National Objectives: 1.2, 2.1

Key Themes: Plant Production Efficiency, Food Handling, Food Quality

Summary:

Post-harvest decay make strawberries extremely perishable. Field practices affect how well strawberries resist decay pathogens. Applications of fungicides will be examined for their effect on decay incidence in storage. Field sanitation and other cultural practices will be examined for their effect on post-harvest decay.

Progress:

Fungicide sprays and cultivar selection enhanced the shelf-life of Florida-grown strawberries. Camarosa fruit had much less decay in storage than did Sweet Charlie. An 8-hour delay in forced-air cooling did not lead to increased decay when compared with the standard 2-hour delay, unless field temperatures exceeded about 28 degrees C. The rate of increase in Botrytis fruit rot in stored fruit ranged from 0 to 2.25% per day. Fruit from unsprayed plots became diseased earlier than those from fungicide treated plots, but the rate of increase during the epidemic was similar.

Impacts:

Should lead to better more efficient handling of strawberries.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-PLP-03588

Title: Sanitation in Post-Harvest Handling Practices for Fresh Fruits and Vegetables

Critical Needs: 2, 19

National Objectives: 1.2, 2.1

Key Themes: Food Handling, Food Quality, Food Safety

Summary:

Post-harvest pathogens accumulate at sites where fruits and vegetables are packaged. Water used to wash or handle freshly harvested fruits and vegetables may contaminate them with harmful microbes. The project explores ways to prevent the accumulation of pathogens at packinghouses. Various methods to sanitize wash or handling water will be explored.

Progress:

Dry chlorine dioxide produced within an enclosed chamber prevented the development of bacteria soft rot at inoculated wounds on tomato fruit. Most treated wounds were free of viable soft rot bacteria. When similar wounds were washed for two minutes in 100 ppm free chlorine at pH 7.0, nearly 80% became diseased. The chlorine dioxide also reduced sour rot development when wounds were inoculated with *Geotrichum candidum* and

Rhizopus rot when wounds were inoculated with *Rhizopus stolonifer*. Peroxyacetic acid at 80 ppm killed *G. candidum* spores (4 log reduction) within 30 sec when solutions were warmed to 40 degrees C, but were not completely effective within two minutes when solutions were at room temperature.

Impacts:

Completion of the project is expected to lead to two additional hurdles for controlling fruit contamination: washing with peroxyacetic acid or acidified sodium chlorite and then treating packaged fruit with dry chlorine dioxide gas.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-PLP-03603

Title: Enhancing the Sustainability of Commercial Peanut Production through Improved Disease Management

Critical Needs: 1, 17, 25

National Objectives: 1.2, 4.2

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Profitability, Sustainable Agriculture, Plant Germplasm

Summary:

Plant diseases of peanut are the major limiting factor in Florida for yield. The purpose is to create a system of tactics that will minimize damage from plant diseases at minimum cost to the grower.

Progress:

From Oct 1997 to Sept. 2002, I evaluated several tactics to control peanut leaf spots (*Cercosporidium personatum* and *Cercospora arachidicola*), rust (*Puccinia arachidis*), white mold (*Sclerotium rolfsii*), cylindrocladium black rot (CBR, *Cylindrocladium parasiticum*), and tomato spotted wilt virus. I evaluated cultivars, breeding lines, and fungicides to locate the most effective techniques for reducing disease. Collaboration with Dr. Dan Gorbet was done so that the ultimate result would include commercially acceptable cultivars. Collaboration with commercial companies was also done so that the fungicides that were evaluated would likely be legally labelled. Cultural controls such as crop rotation, planting date, and seeding rate were factored in when transferring the data to commercial situations. Resistance to CBR was found in several breeding lines developed by Dr. Gorbet. Dramatic differences among the cultivars and breeding lines were assessed in my field tests in Santa Rosa County. Also, several commercially available cultivars were found to have usable resistance to CBR for the first time in my program. In some years, tomato spotted wilt virus was present and comparisons among breeding lines and cultivars for this viral disease were also made. Control of leaf spots, rust, and white mold were done each year and during the period of this project, fungicides were evaluated on a susceptible cultivar (Florunner) and a partially resistant cultivar (Georgia Green). Also, all such data was evaluated using an economic analyses that related dollars expended to dollars gained. Interestingly, the partial resistance of Georgia Green to white mold minimized the returns to \$0.61 to \$3.01 per dollar spent. On the susceptible cultivar, the returns were as high as \$7.36 and \$8.31. For leaf spot and rust, the dollar returns were consistently high on both the resistant and susceptible cultivars. The average

returns for the susceptible cultivar ranged from \$7.88 to \$11.90 and for the partially resistant cultivar the range was from \$4.70 to \$7.80. This allowed for manipulations within spray programs to further increase profit when resistant cultivars are used.

Impacts:

Two cultivars with resistance to *Cylindrocladium* black rot, Hull and Carver, were released in 2002. In field tests they were evaluated for resistance to CBR as breeding lines. they will allow for reduced fungicide sprays. Dollar returns for dollars expended can be maximized for fungicidal control of leaf spot by the grower with designated spray programs employed.

Source of Federal Funds: Hatch

Scope: Integrated Research and Extension

FLA-PLP-03623

Title: Biology and Management of Diseases Affecting Vegetable Crops in North Florida

Critical Needs: 5, 17, 25

National Objectives: 1.2, 4.2

Key Themes: Integrated Pest Management, Plant Genomics

Summary:

Plant diseases cause losses in crop production. This project develops control measures for plant diseases.

Progress:

A total of twenty-eight single-lesion late-blight samples from tomato (22) and potato (6) were analyzed for *Phytophthora infestans* genotypes using Gpi isozyme procedures. For the sixth consecutive year all samples from north Florida were US-8, whereas samples from south of Interstate-4 were a mixture of genotypes. This year five US-11, and 17 US-17 samples were collected from south Florida, and all six samples from north Florida were US-8. Based on Gpi genotype, mating type, metalaxyl resistance analyses of 893 samples since 1993 and recent pathogenicity tests, distinct tomato and potato late-blight pathosystems are hypothesized for Florida. The tomato and potato pathosystems in south Florida appear to overlap. Accurate identification of *P. infestans* genotypes in tomato and potato crops is important in planning late-blight management strategies because aggressiveness of the different genotypes varies in the two crops.

Impacts:

Recognition of tomato and potato late-blight pathosystems, coupled with genotype identification, could have dramatic impacts on amounts and types of fungicides used to control the disease in these crops.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-PLP-03846

Title: Post-harvest Quality and Safety in Fresh-Cut Vegetables and Fruits

Critical Needs: 19

National Objectives: 2.1

Key Themes: Food Handling, Food Quality, Food Safety, Food-borne Pathogen Protection

Summary:

Fresh-cut fruits and vegetables are highly perishable. New methods for controlling microbes on the cut surfaces of produce are needed. This project will evaluate the efficacy of various treatments for inactivating or killing microbes that contaminate the surfaces of fresh-cut fruits and vegetables.

Progress:

Chlorine dioxide solutions were too unstable for effective use on fungal spore suspensions in a scale model flume. offgassing occurred within two minutes and not enough active ingredient remained in the water. *Rhizopus stolonifer* was less sensitive than *Geotrichum candidum*, although soft rot bacteria were readily inactivated.

Impacts:

Really stable solutions of antimicrobials are needed for effective sanitation in produce washers. When the active ingredient offgasses during the washing, control does not occur.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-PLP-03934

Title: Biological Control of Arthropod Pests and Weeds

Critical Needs: 17

National Objectives: 1.2

Key Themes: Invasive Species

Summary:

Exotic weeds threaten Florida's ecosystems and cause economic losses to the state's agriculture, recreation industries, and land and water resources. Certain plant pathogens can be used for a safe, effective, and natural form of weed control. This project aims to develop such a biological control method to manage some of the exotic weeds in Florida.

Progress:

The distribution of *Uredo eichhorniae*, a rust pathogen of water hyacinth (*Eichhornia crassipes*) was confirmed at several locations in southern Brazil and northeastern Argentina. In addition, these surveys have enabled us to map the distribution of *Uromyces pontederiae* on *Pontederia cordata* and *P. parviflora*, and *Eichhornia azurea* as well as *Uromyces heterantherae* on *Heteranthera reniformis*. Specimens of rust-infected plants of *Pontederia spp.*, *Eichhornia spp.* and *Heteranthera spp.* were collected and transported to the University of the State of San Paulo (UNESP), Jaboticabal, Brazil, for further study. Infectivity, spore-germination, and cross-infectivity studies were conducted with uredospores collected from these plants. The rust infections persisted in the uredial stage survived on infected *E. crassipes* plants for more than one year. Using inoculum collected from diseased plants maintained in Jaboticabal, cross-inoculations were done according to the methodology previously described by Charudattan et al. The results have confirmed that the water hyacinth rust, *U. eichhorniae*, is host-specific.

Examination of our collections have also confirmed for the first time that this rust belongs to the genus *Uromyces*.

Impacts:

Development of experimental data to support the importation and eventual use of *Uredo eichhorniae* as a classical biocontrol agent for water hyacinth is expected. Basic information on the taxonomic relationships of rust fungi that attack plants in the water hyacinth family will be generated.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-QUN-03364

Title: Biology and Management of Arthropod Pests of Vegetables

Critical Needs: 25

National Objectives: 4.2

Key Themes: Biological Control

Summary:

Biological and ecological information on the arthropod complexes of Florida vegetables will be generated including quantitative descriptions of growth, development, parasitism, predation, feeding, oviposition, etc., of the major pests. The causes of pest-related losses and the factors relating to pest situations such as the major components of the life systems of pests and how they interact with the other organisms will be determined. Methods for estimating and monitoring pestiferous and beneficial insect populations and for assessing pest damage will be developed. Appropriate management tactics that are practical, economical, environmentally sound, and acceptable to crop production standards will be developed. Action thresholds for insect and mite pests will be established and tactics that employ host plant resistance, predators and parasites, beneficial cultural practices, and selective pesticides to modify the life systems of arthropod pests will be developed.

Progress:

A two-year study was completed that showed that *Orius insidiosus* provides biological control of thrips in pepper from late spring to fall. Following local extinction of thrips populations in the spring, the predator persists in pepper in numbers that prevents recovery of thrips populations. Local movement of thrips and *O. insidiosus* also was quantified in the study. The adults of some thrips species moved more rapidly and continuously than others, and they reinvaded fields more rapidly, making it appear that short-residual insecticides such as spinosad are not always affective. A manuscript describing the results was accepted for publication. Studies to determine within-plant distribution of *O. insidiosus* and thrips and to evaluate the effects of insecticides on the patterns of aggregation were completed. Populations of thrips predators and prey in untreated and insecticide-treated pepper were highly aggregated in the flowers. A manuscript describing the results was submitted for publication. Experiments were begun to evaluate the economics and environmental benefits of reduced-risk tactics for thrips and tospovirus management in tomato and peppers.

Impacts:

Thrips and tospoviruses are serious worldwide pests of agronomic, vegetable, and

ornamental crops. Growers have responded by applying toxic, broad-spectrum insecticides on a calendar basis yet this is not effective. Our research includes biological control, reduced-risk insecticides, and cultural tactics. It is being implemented for many crops and is being further adapted for different crop situations.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-QUN-03706

Title: Reproductive Biology and Gametophytic Selection in Higher Plants

Critical Needs: 4, 5

National Objectives: 1.2

Key Themes: Plant Genomics

Summary:

An understanding of plant reproductive biology is essential so that the genetic influence on physiological processes can be assessed, appropriate strategies involving manipulation of genetic transmission can be developed and gametophytic systems can be adapted for pollutant assays. All aspects (pollen diameter, in-vitro and in-vivo pollen germination and tube growth, stigma and style biochemistry and physiology, temperature effects on these variables) of the reproductive biology in various model species (corn, sesame, tomato) will be examined.

Progress:

Genetic differences in male transmission in higher plants can result from the interaction of many complex factors, including not only the capacity of pollen grains to germinate and produce pollen tubes but also the physical and chemical characteristics of pollen grain and pistil. A highly significant pollen and pistil genotype interaction was found suggesting that genetic differences in germination capacity and tube growth were present and could produce genetic transmission differences. Future research will emphasize the exploitation of these differences so that the more efficient pollen genotype selection can be used in practical breeding programs.

Impacts:

Studies on the genetics of pollen transmission will be continued with publication of the most significant and meaningful results anticipated. Tests will be conducted with various crops to determine the practical value and potential application of pollen genotype selection. At this point, pollen genotype selection, which is much more effective than the standard sporophytic selection normally practiced in plant breeding programs, has great potential to improve the efficiency of breeding programs and reduce the time required to produce improved cultivars.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-SWS-03458

Title: Diversity and Interactions of Beneficial Bacteria and Fungi in the Rhizosphere

Critical Needs: 4

National Objectives: 1.2

Key Themes: Plant Health

Summary:

Mycorrhizal fungi will be retrieved from several field sites in Florida. Selected isolates will be screened for effectiveness on maize. Experiments will be conducted to determine traits of individual isolates that contribute to enhancement plant growth. Properties that will be characterized include rate of colonization and fungal biomass accumulation, and abundance and distribution of external hyphae. Additional experiments will be conducted to study co-infection and competition among mycorrhizal isolates. Serology or molecular methods will be used.

Progress:

Phytoremediation of organic contaminants depends on plants producing sufficient biomass to support active rhizosphere microbial populations. Because roots provide a rich pool of nutrients and growth factors that stimulate microbial growth, the density of microorganisms is usually much greater in the rhizosphere than in bulk soil. Low soil nutrient levels and high contaminant concentrations may limit both microbial activity and plant growth, and, since many contaminated soils have low nutrient levels, fertilization is an inexpensive means to enhance bioremediation. However, fertilization programs that enhance plant growth may not stimulate microbial populations equally. For example, applying high-phosphorus fertilizer can increase plant biomass and bacterial numbers, but may inhibit mycorrhizal colonization of roots. Mycorrhizal fungi are an important component of the rhizosphere microbial community, forming symbiotic associations with the fine, ephemeral roots of plants and having unique functions in nutrient uptake and carbon flow into the soil. Mycorrhizae increase the absorbing surface area of plant roots effectively extending the root's uptake zone, and they channel significant amounts of readily degradable carbon into the soil, thereby contributing important nutrient and energy sources for rhizosphere bacteria and fungi that metabolize contaminants. Our objectives were to evaluate mycorrhizal colonization of *Lolium multiflorum Lam* at a range of phosphorus levels in a petroleum-contaminated soil and at two phosphorus levels in two pyrene-contaminated soils. In the petroleum-contaminated soil, mycorrhizal inoculation on ryegrass decreased plant growth overall, but at low phosphorus levels, greater root colonization by mycorrhizae was seen. In the pyrene-contaminated soils, initial results showed that high phosphorus inhibited mycorrhizal colonization of roots.

Impacts:

Optimizing plant growth, bacterial numbers, and mycorrhizal colonization for phytoremediation may require different nutrient amendments.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-SWS-03459

Title: Environmental Transformation, Exposure, and Effects of Pesticide Residues

Critical Needs: 24, 27, 29

National Objectives: 4.3

Key Themes: Soil Quality, Water Quality

Summary:

Microbial degradation of pesticides and their toxic metabolites in soils and groundwater will be investigated using traditional techniques. Ecology of pesticide-degrading microorganisms in soils will be studied using traditional methods and molecular genetic techniques. Particularly, interactions with non-degrading organisms, roles of soil organic matter components, and genetic transfer will be studied in order to understand the degradative activities of pesticide-degrading microorganisms.

Progress:

We have conducted an extensive investigation on microbiology of carbofuran degradation in soil at an experimental site located about 70 km northeast of Gainesville, FL. This site has been with carbofuran annually for five successive years. We found that after second annual application, carbofuran biodegradation in the soil was enhanced. Enhanced biodegradation was progressively increased with an increase in number of annual application of carbofuran. A number of bacteria capable of degrading and utilizing carbofuran as a sole source of C for energy and growth were isolated from the soil, one after one application, one after two applications, and one after four applications. All the carbofuran-degrading bacteria belong to Sphingomonas species. In contrast to our successful isolation of carbofuran-utilizing bacteria, carbofuran-degrading microbial populations did not increase with an increase in number of carbofuran application. We concluded that these carbofuran-degrading isolates appeared not to contribute significantly to the degradation of carbofuran in soil. The degradation may be a cometabolic process and unculturable micro-organisms may be involved in carbofuran degradation in soil.

Impacts:

We observed that repeated annual applications would result in enhanced degradation of carbofuran in Florida soil. As a consequence of enhanced degradation, there may be a loss in the efficacy of the pesticide to control target pests, resulting in crop failure. Our findings indicated that unculturable micro-organisms may contribute enhanced degradation of carbofuran may enable for us to find ways to reduce the degradative activity of these organisms, thereby preventing reduction of carbofuran efficacy and ensuring proper pest control by carbofuran.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-SWS-03596

Title: Animal Manure and Waste Utilization, Treatment, and Nuisance Avoidance for a Sustainable Agriculture

Critical Needs: 24, 26

National Objectives: 4.3

Key Themes: Agricultural Waste Management, Sustainable Agriculture

Summary:

Flushed dairy manure is a potential source of odor nuisance concerns and new technology must be applied for treating this waste in an environmentally sustainable and acceptable manner. The purpose of this project is to demonstrate the feasibility of anaerobic

digestion, using a fixed-film reactor, for treating flushed dairy manure, controlling manure odors and generating an energy by-product in the process.

Progress:

The objective of this project is to demonstrate the use of fixed-film anaerobic digester technology to simultaneously treat flushed dairy manure (FDM) and produce energy in the form of methane gas. A full-scale digester facility, tailored to meet the needs of the typical Florida dairy farm, has been constructed at the IFAS Dairy Research Unit (DRU) in Hague, Florida. The complete digester system consists of a 100,000-gallon, fixed-roof digester tank; a biogas collection and flare system; an influent feed pump (powered by an air compressor); a recycle pump; a de-sludging pump; a liquid level control structure; and a mechanical building for housing pump controls and biogas utilization equipment. The full-scale fixed-film anaerobic digester has been operated continuously since May, 2000, to treat FDM. The continuously fed digester is operated in upflow mode at ambient temperature (25 degreesC to 31 degrees C) and a three-day hydraulic retention time, producing 6,000 cu.ft. of biogas/day at 80% methane/20% carbon dioxide. Soluble COD is reduced by 60-70%. Initially, the biogas produced from the digester was flared to reduce odors and methane emissions. A gas-fired water heater was installed in the mechanical building and operated on a slipstream of the biogas in order to evaluate the potential corrosiveness of the digester biogas. Following successful operation of the water heater, the biogas line was extended to the milking parlor and the water heater was relocated to provide hot water for direct use in the milking parlor. After over fifteen months of continuous operation, the digester was opened in order to retrieve media samples for biofilm studies, which are currently ongoing. Biofilm formation was fairly uniform on all media sections sampled, averaging 2 mm in depth. Potential impacts on water quality and public health have heightened concern about management of livestock wastes. With the advent of recycle flush systems for water conservation, the effect of wastewater recycling on animal health is also a concern. Anaerobic digestion provides a means to reduce pathogenic and indicator microorganisms in animal wastes. Therefore, we investigated microbial indicator and pathogen removal from FDM using the full-scale fixed-film anaerobic digester. At steady-state operation, an average 84% reduction of total coliforms, 86% reduction of fecal coliforms, 83% reduction of fecal Streptococci, 72% reduction of Enterococci, 89% reduction of *Staphylococcus aureus*, and 75% reduction of *Salmonella spp.* were achieved. An average 90% reduction of somatic bacteriophages and a 78% reduction of male-specific bacteriophages were also attained. these reductions may be due to the high density of biofilm organisms resulting in microbial competition for available substrates within the digester. Also, the digester operates at a sub-optimum temperature for the bacterial indicators and pathogens to proliferate and, as the concentration of soluble organic matter (represented by soluble COD) decreases, the population density of bacterial indicators and pathogens is reduced.

Impacts:

Anaerobic digestion under controlled conditions, as in a fixed-film reactor, has many practical advantages for animal feeding operations. This holistic manure treatment system not only stabilizes the waste water, but also produces energy, controls odors, reduces pathogens, minimizes environmental impact from waste emissions, and maximizes fertilizer and water recovery for reuse. The fixed-film anaerobic digester is a model for the Florida dairy industry.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-SWS-03688

Title: Mineralogical Controls on Colloid Dispersion and Solid-Phase Speciation of Soil Contaminants

Critical Needs: 24, 27

National Objectives: 4.1, 4.2

Key Themes: Soil Quality, Water Quality

Summary:

Solid forms of soil contaminants affect bioavailability and mobility and hence are relevant to effective management and risk assessment, but are not well understood. Also, potential for colloid-facilitated transport of contaminants is uncertain. Objectives are to evaluate a colloid dispersion model for predicting water-dispersible colloid content based on quantifiable mineralogical properties; and to determine the nature of contaminant-mineral associations in soils as influenced by mineralogy and pedogenic properties and processes, and in relation to water-dispersible colloids.

Progress:

This project was established to test a model developed in the previous project for predicting water-dispersible clay based on soil chemical and compositional characteristics; and to determine the components with which contaminants are associated in contaminated soils. X-ray diffraction analysis on size and density separates from contaminated soil samples has thus far confirmed no crystalline phases containing significant structural heavy metals (e.g., cerussite, litharge, cuprite, etc), though at least one possibility (minium) in the sand fraction warrants careful attention to EDX assessment. Ongoing research related to this project includes a mineralogical assessment of Pb forms present before and after application of phosphate rock and other phosphate amendments to immobilize Pb at a heavily contaminated battery disposal site; and a study of the weathering of lead bullets in shooting range soils. Lead carbonates have proven to be a prevalent form of Pb in both studies. Experiments have shown that Pb carbonates can form very quickly in soils, and that their formation requires the presence of moisture and organic matter.

Impacts:

A better understanding of the forms and stabilities of contaminants can hopefully improve risk assessment and remediation effectiveness. The form of a contaminant, rather than total abundance alone, often dictates solubility, leaching potential, and bioavailability. Efficacies of remediation approaches are also form dependent.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-SWS-03711

Title: Turfgrass Fertility Management and Environmental Impact

Critical Needs: 28, 29

National Objectives: 4.1, 5.2

Key Themes: Nutrient Management, Soil Quality

Summary:

Warm-season turf grasses are often grown under intensively managed conditions and as a

result special attention must be paid to the management of their nutrition. This project will attempt to develop management practices which will sustain the nutritional needs of the turf grasses while minimizing the environmental impact of these practices.

Progress:

Methodologies for determining the N release rates of various slow-release N materials were investigated. A methodology involving the use of soil columns, containing 1760g of USGA specification sand and 40 g of an Arredondo fine sand and 450 mg of N equivalent from the various N sources was developed. The columns were leached at 7, 14, 28, 42, 56, 84, 112, 140 and 180 days after initiation with a half-pore volume of 0.01% citric acid solution. Leachates were analyzed for nitrate, ammonium and urea N. Acid traps were placed on top of the closed columns to trap evolved ammonia N. These four forms of N were summed to generate the total quantity of N released over time. In excess of 97% of the N in soluble ammonium nitrate was accounted for in the system. Polyon and SCU released 82 and 78% of their N in 140 days, methylene urea products (Nutralene like products) released 69% of their N, (Nitroform like products) released 55% of their N, and natural organic materials, such as Milorganite, released 38% of their N in 140 days. This methodology will be used in conjunction with an extraction procedure to analyze and label controlled-release N materials.

Impacts:

Establishment of this methodology for assessing the N release characteristics of slow-release N sources in conjunction with extraction procedures will enable the analysis and labeling of slow-release N sources.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-SWS-03834

Title: Chemistry and Bioavailability of Waste Constituents in Soils

Critical Needs:

National Objectives: 1.2

Key Themes:

Summary:

Certain agricultural practices contribute to the problem of phosphorus in water. This project examines the relative availability of residuals- and fertilizer-borne nutrients.

Progress:

Laboratory and greenhouse studies characterized P forms, solubilities, and bioavailabilities of 12 biosolids, 3 manures, and a commercial fertilizer (TSP). Inorganic P forms dominated all P-sources, but P solubility, bioavailability, and leachability varied widely with source. Biosolids produced via biological P removal (BPR) processes were most like fertilizer-P, whereas most biosolids produced nationally have relative bioavailabilities about 50% of TSP. In general, leachability of P-sources varied as follows: TSP>manures>biosolids. Additional funding has been obtained to verify the results under field conditions and to conduct runoff studies.

Impacts:

Land application of biosolids and manures is usually based on the N content of the

materials. Such rates, however, typically apply total P far in excess of crop P needs so P accumulates in soils and represents potential sources of water contamination (eutrophication). Not all total P in waste sources is equally soluble or bioavailable, nor equally less bioavailable than fertilizer-P. This study evaluates biosolids- and manure-P solubilities and bioavailabilities and thus provides information needed to wisely recycle the waste without unnecessarily endangering the environment.

Source of Federal Funds: Hatch

Scope: multi-state

FLA-SWS-03897

Title: Soil Microbial Taxonomic and Functional Diversity As Affected by Land Use and Management

Critical Needs: 24, 29

National Objectives: 4.1

Key Themes: Soil Quality, Biodiversity, Land Use

Summary:

Biodiversity is crucial to ecosystem processes, including the maintenance of fertile soils and the control of nutrient cycles. It is unclear how management practices affect biodiversity and ecosystem structure. We determine how rhizosphere-enhanced bioremediation of organic contaminants affects biodiversity and soil community structure. We also determine how disturbed lands and urban landscapes affect bacterial and mycorrhizal community structure.

Progress:

Sheared-root inocula of *Glomus etunicatum* Becker and Gerdemann and *Glomus intraradices* Schenck and Smith were evaluated for their compatibility with processes used for the production of vegetable transplant seedlings. Storage trials revealed that *G. etunicatum* propagule density remained high when air-dried, while the density of *G. intraradices* was reduced by 98% during the drying process. Each of 24 commercially available soil-less mixes and four additional growth substrates had a detrimental effect on root colonization with representative cultivars of tomato, pepper, and onion, compared to a low-P soil. The soluble-P concentration in the media was linearly related to shoot-P concentration, and was a limiting factor for colonization. Susceptibility of 24 tomato cultivars to *G. etunicatum* was evaluated after incorporation of fresh sheared-root inoculum in a commercial mix with low extractable P. Colonization ranged from < 1 to 12%, four weeks after seeding. Known pathogen resistance and heat-set characteristics had no discernable relationship to the levels of colonization. In the same manner, 16 cultivars of pepper were colonized from < 1 to 6%. Various species of cucurbits were most susceptible, with root colonization ranging from 35 to 54%, four weeks after planting.

Impacts:

We conclude that sheared-root inocula are infective of a range of vegetable hosts; however, care must be taken to select a low-P substrate and optimum storage conditions need to be empirically determined.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-SWS-03919

Title: Mechanisms and Mitigation of Agrochemical Impacts on Human and Environmental Health

Critical Needs: 25, 29

National Objectives: 4.3

Key Themes:

Summary:

Certain agricultural practices may result in unacceptable adverse impacts on human and environmental health. Additionally, improper use of agrochemicals may be ineffective in controlling pests. The objective of this study is to mitigate adverse impacts of agrochemical use, while preserving the effectiveness of the treatments. Specifically, we want to use microorganisms to reduce agrochemical residues in soil and to clean up contaminated soil.

Progress:

We have initiated two new studies on dispersion and emissions of the fumigant Telone C35 (1,3-dichloropropene (1,3-D) and chloropicrin) and its pesticidal efficacy, and conversion of the fumigant metam sodium to the active compound methyl isothiocyanate (MITC) in Florida sandy soil. Telone C35 and metam sodium are considered to have potential to replace methyl bromide, which will be phased out in 2005. Dispersion and emissions of 1,3-D and chloropicrin were measured in Arredondo fine sand in microplots. We found that virtually impermeable film (VIF) provided more uniform dispersion of the two chemicals in subsurface, greater concentrations of 1,3-D and chloropicrin in soil pore air space, and low surface emissions in microplots than that in microplots with polyethylene (PE) cover and no cover. Dispersion and efficacy of Telone C35 were carried out in field beds. Soil in the field beds is also an Arredondo fine sand. Generally dispersion of 1,3-D and chloropicrin and their concentrations in soil pore air space were more uniform and larger in field beds covered with VIF, especially in the bed where Telone C35 was injected by Yetter coulters. Telone C35 in the beds covered with VIF also had better efficacy in killing root-knot nematodes. Conversion of metam sodium to MITC in the Arredondo fine sand at 25 C under laboratory conditions was very rapid, practically instantaneous. Conversion efficient was 50 to 80%.

Impacts:

This study will provide useful information on measures of proper dispersion, retention, and efficacy of the fumigants Telone C35 and metam sodium/MITC in root zone soil, resulting in good uniform pest control.

Source of Federal Funds: Hatch

Scope: State Specific

FLA-WEC-03618

Title: Savanna Ecology and Management: Role of Fire, Grazing, and Exotic Species

Critical Needs: 8, 29

National Objectives: 1.2, 4.1

Key Themes: Wildfire Science and Management, Land Use, Natural Resource Management

Summary:

The responses of Florida savanna plants to fire, grazing, and introduced species is poorly understood. This project examines long-term responses of tree and grass populations under experimental treatments of fire and grazing in order to improve management recommendations.

Progress:

Avian community responses to cattle stocking rates continues to be monitored on the MacArthur Agroecology Research Center (USDA-NRI project). No significant differences in species richness or abundance have been detected among zero, low, medium and high levels of stocking. Nesting success of eastern meadowlark was limited; only 17 nests were found, and of those 24% fledged young, 59% were predated, and 17% were abandoned. Adam Watts completed his MS thesis that compared floristic composition among woody plant-dominated dry prairie sites treated with fire along with sites treated with roller chopping and fire/chopping combinations. Mechanical treatment is required to reduce woody plant dominance and a combination of chopping and fire provides most rapid herbaceous composition recovery. Dr. Patricia Werner was successful in collaborating on a grant that was funded for savanna research in Australia. Successful grant application: "Landscape-scale population dynamics of savanna woodlands in the Australian monsoon tropics". DM Bowman, BW Brook, PA Werner, and RJ Williams. \$275,000 for three years, Australian Research Council to the Northern Territory University. Drs. George Tanner and Katie Greenberg (USDA-Foest Service) were successful in obtaining funding (\$50,266) for a three-year extension of a long term study comparing amphibian breeding ecology between wetlands situated within long-unburned savannas and frequently-burned savannas.

Impacts:

Commonly used grazing stocking rates on subtropical pastures in south Florida are not having negative impacts on the avian community. Species richness is quite diverse supporting the necessity to maintain pastures in livestock production rather than their conversion to more intensive agriculture or human real estate development. Restoration of dry prairie grasslands requires both time and energy inputs. Degradation occurred over a century of mismanagement, and recovery may take as long, if at all possible. Fire ecologists working in Australia's savannas are making strides in determining when and how to burn to improve the tree/grass mixture. Much of the knowledge gained should be very transferable to the semi-arid savannas of western North America.

Source of Federal Funds: Hatch

Scope: State Specific

V ~ EXTENSION IMPACT STATEMENTS

SMP-FL101

Title: Practices for Competitive Agronomic Crop Production in Florida

Calendar Year: 2002

Critical Needs: 1, 2

National Goals: 1

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness, Agricultural Profitability

Major Program Objective:

To provide up-to-date information on varieties, management, pest controls strategies and economic analysis of agronomic crops grown in Florida and to evaluate alternate crops to keep them competitive, and to improve the standard of living of all Floridians through environmental stewardship.

Summary of County Programs for Clientele:

Twenty-five counties reported that they conducted programs for their clientele. Most of these counties are in the northern half of Florida where field crops are traditionally grown. Agents used various teaching methods to provide information to their clientele.

Publications, such as newsletters, fact sheets, and other material were used to keep growers informed of recommendations for the production of crops. While fact sheets and other material prepared by specialists were provided to office visitors, mailed to growers, or handed out at meetings, most agents also prepared newsletters that contain information that applied to the specific county. In addition to specificity, newsletters are generally more readable by the farmer than other publications because the extension agent selects and condenses information for his specific area.

Extension agents also used farmer meetings to provide information on crop production. Such meetings were usually very well attended because it provided an opportunity for discussion of common problems and how they have been solved. Many meetings may deal with only one crop, or perhaps two or more related crops. Agents reported that in many instances a large majority of producers of a specific crop from their county attended such meetings. Farmer meetings were also a means of providing pesticide applicator training. In the field crops area, most pesticide applicators maintain their licenses by getting CEU's that are offered at crop production meetings. Thus multiple services were provided by these meetings.

Farm visits were also an important means of providing information to growers, while at the same time assisting the farmer with his specific problems on crop production. Setting

up and calibrating sprayers, fertilizer distributors, and other equipment were often needed. At the same time other recommendations can be given.

Problem identification was reported to be an important service to growers. Agents helped analyze problems, identify weeds and insects, and diagnose diseases, by their own knowledge gained from meetings and publications, and by use of the DDIS method where they sent pictures to clinics or specialists for assistance.

Some extension agents in tobacco-producing counties provided curing barn efficiency measurements for farmers. An instrument was made available to agents for them to test the barns that had been retrofitted with indirect-fire heat exchangers. As a result of these measurements, the grower could then adjust the burner for maximum efficiency.

Passage of the 2002 Farm Bill in May resulted in major changes in crop production, especially for peanuts. Extension agents arranged meetings, sent out newsletters, and otherwise provided information needed for peanut farmers to adjust to the changes.

Summary of Impacts for Clientele:

Since a primary objective of this state major program is to make Florida growers more competitive, an impact would be acceptance of the information and services provided by the county extension agents and their colleagues. While specific evaluations are not possible, it appears that Florida agronomic crop producers are using updated information as well as their counterparts in other states. Comparisons of recommendations between states indicate that Florida is not derelict in making crop recommendations, and there are no indications that growers fail to accept extension advice.

Agronomic crop production in Florida appears to be efficient. Corn yields were at a record level (96 bushels per acre) in 2002 for the state and are closer to national levels than in past years. The pest and soil fertility problems, plus the low water-holding capacity of soils limit corn yields in Florida. The yield and quality of Florida tobacco was higher in 2002 than in any other state. Peanut and cotton yields in 2002 were impacted by excessive rains at or near harvest, but prior to these problems, Florida farmers had grown crops that were predicted to be very good by the USDA.

Florida's agronomic crop producers are in the forefront in adopting new technology. For example, the acceptance of transgenic cotton varieties is higher in Florida than for the nation as a whole. Conservation tillage is accepted by a significant and growing number of Florida farmers. All, or almost all, Florida tobacco farmers sell their crop by a contract, and have retrofitted their barns with indirect-fire curing units.

Farmers now get a production problem or pest diagnosis made quickly and accurately, which allows them to take corrective action as quickly as possible. Because pesticide applicator licenses are renewed by attendance at grower meetings, it is believed that all applicators are in compliance.

Success Stories:

Agronomic crop production acreage has generally declined in Florida and other southern states because of low commodity prices, urbanization and competition for land, foreign competition, and other factors. It appears that Florida can remain competitive in some crops as indicated by the 2002 increase in peanut acreage, while there was a decline in most other states as a result of the 2002 Farm Bill. Tobacco yields and quality in 2002 were higher in Florida than in other states.

Outreach To Minorities: Agronomic extension programs were available all minority clientele and it appears that they have responded by being in attendance at meetings, participating on committees, and otherwise utilizing extension programs.

Source of Federal Funds: Smith-Lever

Scope: State specific, Multi-state Extension, integrated research and extension

SMP-FL102

Title: Florida Forage Production for livestock and Dairy

Calendar Year: 2002

Critical Needs: 8, 14, 30

National Goals: 1 and 4

Key Themes: Agricultural Competitiveness, Agricultural Profitability, Animal Production Efficiency, Grazing, Invasive Species, Plant Germplasm, Rangeland/Pasture Management, and Tropical Agriculture, Agricultural Waste Management, Biological Control, Integrated Pest Management, Natural Resources Management, Nutrient Management, Recycling, Water Quality, Wildlife Management.

Major Program Objective:

The broad objective of the forage program is to teach our Extension customers how to produce and/or utilize forages in sufficient quantity and of sufficient quality to meet the

nutritional needs of their livestock and to do so in such a way that it is economical, and environmentally friendly.

Summary of County Programs for Clientele:

Information about Florida forages and forage management practices has been presented to our clientele. Distribution of the Florida Forage Handbook continues. Publication of fact sheets and putting them on the www provides a readily accessible source of information. Publication of a monthly newsletter provides timely information to county faculty for use in their newsletters to local clientele. Establishment of a List Serv for F1102/103 has provided agents an easy way for information exchange and discussion of current farm/ranch problems. “Maintenance of forage Fertilization Recommendations”: this program provides producers with suggestions on how to best fertilize their pastures and hay fields for economic optimum production. The SL-129 Fact Sheet was revised again this year to include a few minor changes. Clientele have been informed of, the need for reductions in phosphorus and potassium fertilization of warm season perennial grasses, and the proper use of biosolids as a nutrient source “Introduction of New and Improved Forages”. This program helps clientele choose the best forage for their situation. “Guidance for Environmental Engineers”: Assistance and guidance is provided to Consulting “Environmental Engineers” concerning the development of manure and other nutrient management programs. This mainly relates to the uptake and removal of certain nutrients by forage plants. This work helps prevent the contamination of surface and ground water with phosphorus and nitrogen. “Forage Quality”: the Extension Forage Testing Program has been discontinued. County faculty have been directed to send samples to commercial laboratories. The extension fact sheet on Forage Testing has been revised. “Pasture Pest Control”: Workshops, field demonstrations, and publications on bio-control of mole crickets in bahiagrass pastures; pm the control of pasture weeds especially tropical soda apple as well as investigation and identification of two diseases on cool season annual grasses and one in perennial peanut have been provided. “Economic Information”: Establishment and production budgets have been provided for the various forage enterprises.

Summary of Impacts for Clientele:

The forage extension program provides ranchers, dairymen, horse owners and others with useful up-to-date information that slows them to make informed decisions. This extension program has helped the beef producer stay in business and make a profit in most years. Judicious use of fertilizers and biosolids helps reduce production costs, and reduces runoff and pollution of streams and ground water. Proper grazing management of specific grasses helps maintain a productive stand of grass and eliminates or reduces the occasional cost of reestablishment. Introduction of bio-control of mole crickets in bahiagrass pastures by the forage extension program is helping producers improve the production of their pastures. Selecting the top yielding hybrid bermudagrass for establishment allows a hay producer to increase his/her income. The Extension Forage Program enhances these and many other decisions that the Florida Forage Producer/User makes. The impacts of this program are difficult to quantify. Each year new

inexperienced producers learn a tremendous amount about forage production in Florida. More experienced producers are updated on the latest technology. All in all there is an estimated 3 to 5 percent increase in the producers knowledge.

Success Stories:

- I. Demonstration of new grass planting technology resulted in successful establishment of demonstration plantings. This new method will result in considerable savings in labor cost for producers. Labor needs have been reduced from 5 individuals to 1 individual in the planting process.
- II. We were able to demonstrate that, under high management systems on a north Florida dairy, forage soybean would produce 3-4 tons dry matter per acre for silage at an affordable cost to the producer.
- III. Bio-control of Pest Mole Crickets;
 1. Three rancher/cooperators have requested ranch visitations to inspect the improvement to their pastures after either the trap and release or field application of nematodes. These ranchers are spreading the word that the Cooperative Extension Service has worked with the Florida Cattlemen's Association in seeking a viable solution to this 30-year menace to the cattle industry.
 2. One rancher (due to mole cricket damage to pastures, had reduced his stocking rate from 300 head to 65 head. This rancher has begun a conservative replanting program and is now stocked at 100 cows as a result of improved pasture conditions following application of nematodes.

Outreach To Minorities:

Individual effort by county faculty to work with specific minority clientele on a one to one basis has resulted in greater participation and use of extension services by minority clientele. Contact is maintained with the Seminole tribe extension agent to provide up-to-date information that will be useful in their forage or pasture management programs.

Source of Federal Funds: Smith-Lever

Scope: State specific, integrated research and extension

SMP-FL103

Title: Improving the Production, Efficiency, and Marketability of Beef Cattle in Florida

Calendar Year: 2002

Critical Needs: 2, 8, 9, 10, 13, 14, 15, 19, 25, 26, 27, 28, 29, 30, 31

National Goals: 1, 2 and 4

Key Themes: Adding Value, Agricultural competitiveness, Animal Genomics, Animal Health, Animal Production Efficiency, Grazing, Invasive Species, Managing Change in Agriculture, New uses for Agriculture Products, Niche Markets, Rangeland/Pasture Management, Risk Management, Small Farm Viability, Food Accessibility and Affordability, Food Quality, Food Safety, Foodborne Pathogen Protection, HACCP, Agricultural Waste Management, Biological Control, Drought Prevention and Mitigation, Natural Resources Management, Nutrient Management, Pesticide Application, Riparian Management, Sustainable Agriculture, Water Quality, Weather and Climate, Wildlife Management

Major Program Objective:

The objectives of the Design Team is to coordinate the transfer of technology to the beef cattle producers of Florida in order for them to improve their production, efficiency, and the marketability of Florida Beef Cattle. Florida FIRST Imperative - Global Competitiveness of Current and Emerging Agricultural and Natural Resources - Improving competitiveness of Florida beef industry in a changing national and international environment.

Summary of County Programs for Clientele:

Water Quality Best Management Practices for Cow/Calf Producers State-wide Educational Programs: Seven Power Point programs were updated for educational programs. Three regional meetings for the purpose of familiarizing Florida Cattlemen with the Water Quality BMP Manual developed by a committee of the Florida Cattlemen's Association Environment Committee. These meetings are being conducted for cattlemen on a voluntary Best Management Practices to assist them in their efforts to enhance and/or maintain water quality discharge off of their properties and are conducted and sponsored by Florida Cattlemen's Association, the South Florida Beef-Forage Program Agents, and University of Florida Extension. Continuing Education Units were offered for Private Pesticide Applicators Licenses. Agent prepared and taught a Power Point slide show for the 3 regional meetings on the actual BMP's for Cow Calf Operators. Agent prepared and coordinated the publication of a Water Quality Best Management Practices for Cow/Calf Operations CD that included the BMP Water Quality Manual and the corresponding Power Point Presentations. Worked through the Assistant Dean of Extension for Agriculture to have the CD's distributed to all of the counties in the state

Beef Cattle Herd Health Management: : Dr. Kerry McGehee, DVM. Presented an informative presentation titled, "A Comprehensive Herd Health System for Florida Ranchers". He outlined a generic herd health protocol for mature cows, herd bulls and calves and explained how this program could be adapted to fit specific situations. Lockie Gary presented a 42 slide power point presentation entitled "Fly Control-Does It Pay?", and used a handout for audience participation. Dr. Findlay Pate and Dr. John Arthington team taught, "Getting the Cow Herd Through a Tough Winter" using a power point presentation. Mr. Wayne Godwin, a cattle producer, brought the audience up to date on the subject of "An Update on Emerging Health Issues for Florida's Cattle Industry". There was much discussion following the last presenter.

Florida Cattle Marketing Seminar: This marketing seminar was created to expose the producers to several new emerging marketing programs from regional to well known national organizations to ensure more profitability in future marketing's. In addition, the program was catered to all cow-calf producers regardless of size or scale. We invited the following guest speakers to make presentations on various marketing options; Building Better Beef Profits, Mr. Tony Yeomans, Owner of the Ocala Livestock; E Markets, New Opportunities for Marketing Feeder Cattle, Dr. Jim Gibb, eMerge; Nolan Ryan's Tender Aged Beef, Mr. Doug Husfeld, Beefmaster Breeders United; Value Based Marketing and the Gold Star Marketing Options, Mr. John Rule, International Brangus Breeders Association; Market Outlook, Dr. Mark Wade, UF; Marketing Cattle through Producers Video Auction, Mrs. Terry Mahoney, Okeechobee Livestock Market.

This annual conference held in Kissimmee presented its nineteenth Institute in January, 2002. Over 520 Florida Cattle ranchers attended this program. The 2002 theme "Changing Times; New Expectation" featured Marcine Moldenhauer, Excel Corporation, Kansas; Dr. Andy Cole, USDA, Texas; Todd Clemens, Okeechobee Livestock Market, Florida as well as University of Florida Extension Specialist. Participants of the 2002 Institute received instruction through nine seminars (15 minutes to one hour in length). This program facilitated over 2,500 person/hours of direct teaching.

Pasture and Rangeland Risk Management: This was one of 10 producer information and listening sessions across the United States to inform producers about USDA's Risk Management Agency sponsoring the development of a program to provide risk management protection (insurance) for producers utilizing pasture and rangelands for the production of cattle and forage. Provisions and changes to the Agricultural Risk Protection Act were covered and discussion carried on with producers for the best approach to take in providing risk management for the production practices under various circumstances.

Periodic updates on level of mole cricket infestation on pastures and progress reports on area-wide mole cricket biocontrol programs were provided to Florida cattlemen at quarterly and annual meetings and in their trade journal. Mole Cricket Task Force program was able to establish a commercial source of the mole cricket nematode biological control product, Nematac S by Becker Underwood, for Florida marketplace in February 2002. We also established commercial source for custom nematode application the same year. Delivered information to extension agents and clientele on mole cricket biocontrol utilizing various educational methods such as web sites, EDIS fact sheets, demonstrations, workshops, seminars, publications and field days.

This agent supervised and guided a student intern that conducted a project on marketing alternatives for calf producers. Work included setting up interviews with 20 beef producers in Central Florida, designing survey questions, assisting with interviewing, assisting with compiling of results and assisting with developing a report and accompanying presentation. The intern and agent co-presented the project findings to 25 producers in June. This agent conducted a follow up presentation to 68 clients with additional findings and coordinated a panel discussion on the topic in September and assisted the intern in a presentation to the Sumter Cattlemen's Association in November.

In corporation with Santa Rosa, Okaloosa County and Covington County Alabama the beef basics video series was offered to local producers by way of interactive satellite from Gainesville. Twelve producers participated in this 5 part program. The program covered genetics and reproduction, marketing, fencing and handling facilities, cattle health and feeds and nutrients. Each program had the first half of the time taken by the

satellite program with opportunity for questions at the end and then an opportunity for local discussion and further teaching with agents present at the site. All producers attending reported the program as good or very good. Ten of the twelve surveyed stated they would use information gained in their operation. The highest ranked segment was the segment on feeding and nutrition.

Summary of Impacts for Clientele:

As a result of the educational programs involving marketing and recordkeeping the following impacts were noted:* One producer participated in a special marketing event for calves with vaccinations, an average increase of \$5.00 per hundred weight was realized on the price of the calves.

Self Audit of Phosphorus Inputs and Outputs for Cattle Operations. It was presented to 45 cattlemen at the Florida Cow/Calf Seminar in LaBelle and to three officials of the Florida Department of Agricultural and Consumer Services and three officials of the South Florida Water Management District. In addition, these studies have been presented and discussed with 38 Cattle Owners in Southwest Florida in one on one consultation. As a result, 208 cattle producers and six officials of the Florida Department of Agricultural and Consumer Services and the South Florida Water Management District have learned that a cattle operation can accurately monitor and manage the phosphorous imports and exports on their operations.

As a direct result of these educational and programmatic efforts, producers have improved their overall economic condition by applying recommended practice. Data collected revealed that of the 108 responses, 98 percent were adopting practice change. This 98 percent indicated they planned to change one or more management practices to improve their operations efficiency, and 95 percent expected to save between \$5.00-\$25.00 per animal unit annually. Based on an average herd size of 30 animal units, total savings to the 582 participants of this programmatic effort are projected to be a minimum of \$82,950 annually.

Success Stories

During the FY02, the following results were compiled: a. 80% examined their herd for breeding soundness (bull selection, cow/heifer culling). b. 77% vaccinated their breeding herd and/or feeder calves using appropriate vaccines, recommended sites, and techniques. c. 41% calves sold were done so through the group marketing process. d. 30% practiced a controlled breeding season in their herd. e. 50% planted improved forages, analyzed their forage and/or have a practical least-cost winter nutrition program. f. 15% used implants. g. 90% practice the use of external and internal parasite control (fly, worm, and lice). Forages: a. One (1) producer planted 100 acres of improved bahiagrass (Tifton 9) in FY02. b. Five (5) producers utilized 104 acres of perennial peanut forage in FY02. c. 455 acres of cool and warm season annual forages (rye, millet, sorghum sudangrass, oats and ryegrass) were planted using a no-till drill during FY02. d. 190 acres of pasture was aerated during FY02. e. 8,000 plus acres of cool season annual forages (rye, ryegrass and oats) were planted in the traditional manner (seed drill and broadcast) in FY02. f. One (1) producer grew 120 acres of various brassica (rape, turnips and kale), for feeding his cow herd in the winter/early spring. These improved forages have a higher nutrient content versus stockpiled pasture or low quality hay, which, in turn, will help improve their weaning weight and the overall body condition of the brood cows. D. Marketing: Seven (7) producers off of four (4) farms sold 2,850 head of cattle through the group marketing process (an alternative marketing option) during FY02. These producers received an

average of 3 cents/pound above market price (an economic impact of 800 lbs/head @ \$.03 extra/lb = \$24/head X 2850 head = \$68,400).

August--Beef Cattle Reproduction Management School--26 area cattle producers participated in a four day school where they learned techniques to improve reproduction efficiency such as: pregnancy testing, synchronization, nutrition, body condition scoring, and breeding season management. The course provided lecture and discussion sessions as well as hands on training labs. 21 of the 26 Reproduction Management School participants returned exit surveys. They rated the information provided from the course as 67% Excellent or 33% Very Good on a five point scale ranging from Excellent to Waste of Time. 100% of the participants returning surveys indicated that they had learned new cattle herd management techniques. 95% of the producers who returned exit surveys indicated that they intended to make at least one practice change on their cattle operation as a result of attending the school.

The Hay Day/Row Crop Field Day was attended by 109 area producers. One hundred percent of the surveys returned rated the field day as excellent at providing beneficial information. Eighty percent learned something they could apply to their farming operation. Seventy-five percent will change a method or practice on their farm, based on what they learned. One hundred percent will tell a friend or neighbor about something they learned.

Beef Cattle Herd Health Management: Success Stories Twelve producers are known to have initiated vaccination and parasite control programs following this seminar. In each case, these are ranchers who had no program in place before the seminar. These producers represent a cattle herd population in excess of 9,000 brood cows. The economic benefit to these producers through improved reproductive performance, decreased morbidity and mortality and lower parasite loads is estimated to be in excess of \$315,000 dollars.

BEEF CATTLEMEN SAVE MONEY AND THE ENVIRONMENT This CED initiated a pasture fertilizer demonstration about seven years ago that proposed a massive reduction in the use of P2O5 in pasture fertilizer programs. When the demonstration was initiated, a survey of the cattle producers revealed they were applying about 24 pounds of P2O5 fertilizer per acre annually on their pastures. The first phase of the demonstration, which lasted three years, was to reduce the P2O5 fertilizer rate to 12 pounds per acre annually. The second phase emphasized a further reduction in P2O5 fertilizer from 12 pounds per acre annually to six pounds per acre annually. Each of the first two phases were very successful and virtually all cattle producers in Hendry County and many in Southwest Florida have adopted the rate of six pounds of P2O5 fertilizer per acre annually. Currently, Hendry County has about 58,814 acres of improved pasture that is fertilized each year. The impacts of the first two phases of the demonstration are as follows: 1. The cattlemen are saving about \$3.60 per acre in fertilizer (reduction of 18 pounds of P2O5 per acre at \$0.20 per pound of P2O5). Based on 58,814 acres of pasture this amounts to a total annual savings of \$211,730 for the Hendry County cattle producers. 2. The P2O5 application on Hendry County pastures has been reduced by 1,058,652 pounds annually and this will help the cattle industry deal with the very strict water quality standards the have recently been implemented by the South Florida Water Management District in the C-139 Basin of Hendry County. Last year this CED entered into the third phase of the demonstration by reducing the P2O5 fertilization rate from six pounds annually to one application of 12 pounds of P2O5 once every eight years. This amounts to an additional reduction of 4.5 pounds of P2O5 fertilizer per acre annually. At least 12 of these cattle producers have initiated the new phosphorus fertilizer program of

12 pounds of P2O5 every eight years. These producers have over 38,000 acres of improved pasture and this accomplished the following: 1. The landowners have saved an additional \$0.90 per acre annually. Based on an estimated total of 38,570 acres, the land owners realized an additional savings of \$34,713. With the third phase, these producers have realized a total annual savings of \$173,565 in reduced fertilizer cost since the demonstration was initiated seven years ago. 2. The landowners were able to further enhance the quality of the runoff water from their pastures with an additional reduction of P2O5 fertilizer by 4.5 pounds per acre annually for a total reduction of 173,565 pounds of P2O5 per year. The total application reduction for these producers has been 867,825 pounds of P2O5 annually when compared with the application rate of seven years ago

Outreach to Minorities:

Use all available mass media to inform potential recipients of the program and of the opportunity to participate. b. Hold activities to remove barriers to minority participation, including holding meetings, demonstrations, workshops, and field days at locations which are easily accessible to minorities.

Worked in conjunction with Charles Brasher and Florida A&M Extension to make farm visits to black producers and to put on goat and alternative livestock programs which are of interest to minority farmers. Agent utilized mass media to ensure that all county residents were aware of upcoming livestock educational programming.

Source of Federal Funds: Smith-Lever

Scope: state specific, multistate extension, integrated research and extension

SMP-FL105

Title: Management of Water and Nutrients in Florida's Nursery Industry

Calendar Year: 2002

Critical Needs: 27, 31

National Goals: 4

Key Themes: Nutrient management, water quality

Major Program Objective:

Improve irrigation application and fertilizer use efficiency Florida nurseries. Long-term objectives will be facilitated by educational programs conducted by cooperative extension personnel and will result in a 15-20% reduction in quantity of water applied per acre and an 8-10% reduction in fertilizer applied per acre at container nurseries in ten counties. Each year participating container nurseries will reduce quantity of irrigation water applied by 4% as a result of: changing irrigation frequency or run time, using cyclic irrigation, or implementing management strategies such as grouping plants by irrigation requirements, irrigating according to water holding capacity of the container media, using rain shut-off devices, monitoring amount of irrigation applied, or improving irrigation system The amount of fertilizer used will be reduced by 2% as a result of monitoring nutritional levels in the container and applying fertilizer only when needed.

Summary of County Programs for Clientele:

Educational programs were coordinated and conducted along with development of supporting educational resources needed for county faculty to assist container nursery producers with implementing irrigation and fertilization interim measures or BMPs.

Developed interim measure for the Florida Nursery Industry in cooperation with Florida Nurserymen and Growers Association, Florida Department of Agriculture and Consumer

Services (FDACS), Florida Department of Environmental Protection (FDEP), and Water Management Districts (WMD). Interim measure was adopted by FDACS as rule under the 1994 nitrate legislation. This legislation will directly impact all container plant producers by providing a voluntary waiver of liability from nitrate nitrogen ground water contamination. Accompanying producer adoption or implementation of interim measure, BMPs or best management practices regarding fertilization and irrigation will be implemented. Extension educational programs have been conducted that will help facilitate implementation. Educational support documents are located on website that contains extension publications and additional documents are under development. Additional, workshops for producers and in-service training for county faculty will be conducted. Producer adoption of interim measures statewide could result in millions of dollars in savings.

On a regional basis, Design Team Leader is chairman of committee to revise the SNA BMP Guide. Current SNA Guide has provided the framework for interim measure developed in Florida and FDEP has provided funding for statewide BMP education based on the Guide.

Summary of Impacts for Clientele:

Goal: Greater harmony between agriculture and the environment

Problem

Agricultural irrigation consumes over 40% of the fresh water used in Florida and one half of the nurseries are located within one mile of urban centers. Nurseries are producing plants in urban areas and must be environmentally conscious. Florida's limited water resources and increasing urbanization lead to competition between the public and agriculture for potable water. In addition, nutrient loss due to leaching and runoff from production areas can be excessive.

Key Theme: Water Quality, Nutrient Management

Solution/Objective

Environmental horticulture industries should strive to use water as efficiently as possible to prepare for any future water shortages that may result from drought, reduced water quality, or reduced allocations. Efficient use of water may include recycled runoff or reclaimed water. Additionally, nutritional management strategies such as monitoring the crop nutritional status and monitoring nitrate content of ground water or surface water leaving the nursery property should be practiced on a regular basis.

Water resources are limited and nutrient loss to runoff and ground water must be minimal.

Summary of Impact Statements

Workshops have been conducted on efficient irrigation. Irrigation workshop participants' comprehension of subject was 64 % before workshops and 72 % after workshops.

Success Stories

A major producer of container foliage crops is now using controlled-release fertilizer in the container substrate in place of reliance on a total solution fertilization program. This practice change resulted from an onsite demonstration where controlled-release fertilizer reduced nitrogen loading to ground by 98 % compared to solution fertilizer.

In one area, the nurseries represented in the “Effective Irrigation Management” classes made changes that saved 1.8 million gallons of water annually.

Outreach to Minorities:

Newsletters and program announcements are provided to all persons. Special effort has been made to reach minority audiences by sending news releases with attached flyer about programs to predominately minority newspapers, radio stations, and television stations.

Source of Federal Funds: Smith-Lever

Scope: State specific, integrated research and extension

SMP-FL108

Title: Citrus Management in Florida

Calendar Year: 2002

Critical Needs: 6, 19, 25, 27, 28

National Goals: 1, 2, and 4

Key Themes: Cold protection, Drought, Irrigation, Water Quality, Pest Control, Food Safety, Best Management Practices, Environmental Protection

Major Program Objective:

The Florida Citrus Extension group strives to meet the information and technology transfer needs of the Florida citrus industry, by providing user-friendly technical summaries, guidance in resolving emerging problems, updates on new opportunities, and ongoing educational programs.

Citrus Extension efforts are conducted by commercial citrus agents working in individual counties or multi-county areas, and citrus extension specialists stationed at Research Centers around the state or the University of Florida campus in Gainesville.

A series of action teams were formed in response to Florida FIRST initiatives to better address the informational needs of the FL citrus industry. These action teams are directed toward specific problem areas designated as priorities. Action teams are responsible for needs assessment, goal setting, educational planning, preparation and delivery of education materials and meetings, and collection of evidence that efforts were effective. The areas designated for action teams are current priority areas for Florida citrus extension.

Summary of County Programs for Clientele:

Educational activities relating to these topics were too numerous for an exhaustive list
Statewide:

Presentations on Citrus Canker, Diaprepes, IPM, Rootstock Selection, Nutrient Management, and Water Management were made in the FACTS citrus program, Citrus Expo, and the Indian River Citrus Seminar

Packinghouse Day and Annual Citrus Processing Short Course had several elements focusing on food safety.

A new citrus bloom prediction and management expert system was widely tested by commercial citrus growers

Regional: at a wide array of monthly meetings, production schools, and field days, many clients were educated concerning Citrus Canker, Diaprepes, IPM, Rootstocks, Nutrient Management, and Water Management.

Publications: More than 20 new citrus extension publications were produced on these subjects in 2002

Impact.

extension program estimating abundance of adult Diaprepes weevils at six sites around state with data posted on CREC web site as a grower alert .

All commercial citrus groves have a citrus canker management strategy, with rigorous enforcement of decontamination procedures.

Commercial citrus producers are united in supporting canker eradication from Florida, despite mandatory destruction of numerous acres of commercial grove

A substantial grant has been obtained to fund even more aggressive canker extension.

grower use of several expert systems that should increase efficiency of citrus production and reduce management burden

Success Stories

sponsorship programs for FAWN are developing which should be able to provide \$60,000 to \$70,000 a year in outside funding

use of FAWN data continues to save tremendous amounts of money for growers who can confidently avoid unnecessary cold protection responses.

Southwest Florida citrus growers participating in educational programs reported \$13 million in savings through reduced pesticide applications from better scouting for pests and disease as well as substantial savings through more efficient irrigation and fertilization

Situation and problem.

Recent concerns about the health of the Indian River Lagoon (IRL) and associated tributaries have highlighted the need for all users to develop environmentally friendly practices. Several of the most pressing problems with surface water quality probably result in part from standard practices in the citrus industry. FL-108 members are coordinating the effort to identify, evaluate, develop, and implement BMPs, that will protect and enhance estuary resources, while maintaining an economically viable citrus industry. In 2001 we obtained a \$517,000 grant to fund a BMP Implementation Team which was initiated in 2002 and was extremely active during that period.

In the central Florida ridge, the most pressing environmental concern relating to citrus production is reduction of nitrate leaching into ground water.

Educational activities to address the situation.

Numerous field days and seminars were held on these issues. During 2002 more than 2,000 Production Managers, consultants, and farm personnel were educated in the BMP process, through educational events custom scheduled at individual farm operations and delivered in English or Spanish according to audience needs.

Workshops were held as follows:

Indian River Citrus BMP / St. Lucie River Issues Team Research Forum was held Feb. 20, 2002 at IRREC, attracting 55 members of environmental groups, regulatory agencies and the ag community.

Citrus BMP Costsharing Showcase May 1, 2002 in Ft. Pierce attracted over 200 growers, production managers, and ag support personnel in addition to regional press and TV reporters

Two field days were conducted to demonstrate different rates and methods for application of plant debris and poultry litter as compared with controlled release fertilizers

Publications: Eleven new citrus BMP extension publications were produced in 2002. Almost all BMP-related information is available on a web-site (<http://ircitrusbmp.ifas.ufl.edu/>).

Impacts

The citrus BMP implementation team has been instated to accelerate educational of growers and help with BMP implementation: funded through a \$517,000 grant written by IFAS extension personnel and funded through FDEP.

Thus far, intensive evaluation of BMP related practices, recording of BMP implementation, and recommendation of BMPs to implement has occurred on 329 farms in the Indian River and a total of 142,329 citrus producing acres (65% of total IR citrus)

Indian River citrus growers continue to be active in facilitating the BMP process and request further educational activities on this subject.

Success Story.

Cost-sharing of BMPs is underway with over \$450,000 disbursed to help implement BMPs in 2002. Funding has been obtained from the St. Johns River Water Management District, the South Florida Water Management District, and DACS.

Over 2,500 citrus industry employees participated in BMP and worker protection programs

Outreach To Minorities: Many programs are available in both English and Spanish

Source of Federal Funds: Smith-Lever

Scope: State specific, integrated research and extension

SMP-FL111

Title: Tropical Fruit Crops Management in Florida

Calendar Year: 2002

Critical Needs: 2, 5, 6, 14, 17, 24, 25, 27

National Goals: 1 and 4

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness, Agricultural Profitability, Home Lawn and Gardening, Innovative Farming Techniques, Niche Market, Plant Germplasm, Plant Production Efficiency, Precision Agriculture, Small Farm Viability, Tropical Agriculture, Urban Gardening, Biological Control, Drought Prevention and Mitigation, Integrated Pest Management, Natural Resources Management, Nutrient Management, Pesticide Application,

Soil Quality, Sustainable Agriculture, Water Quality, Weather and
Climate, Wetlands Restoration and Protection

Major Program Objective:

Purposes and Goals

Organize, assist, educate, and inform commercial producers and homeowners about current production practices, IPM strategies, postharvest handling and processing, and marketing

Facilitate information transfer through meetings and distribution of written and electronic information from educational institutions, and regulatory and assistance agencies

Organize and participate in the USDA IR-4 Project and in-service training programs

Objectives

Assists the industry improve their socioeconomic status and sustainability

Produce meaningful programs that impact the necessary information for the industry to successfully compete on a national and international level

Potential Audiences: commercial producers, packinghouse/shippers, home owners, educators

Summary of County Programs for Clientele:

The FL111 design team offered 10 workshops, 1 workshop/field day, 4 festival/workshops, 12 seminars, 1 seminar/field day, and 1 tour held during 2002. Subject matter included programs on postharvest handling, irrigation management for fertilizer and irrigation BMPs, weed control, pruning, and crop production, economic viability, air transport, and export potential for tropical fruit crops, food safety, safety in the workplace, marketing, cultivar evaluation, production, IMP and insect control, and flowering mechanisms of tropical fruits.

Summary of Impacts for Clientele:

Several hundred tropical fruit producers were educated on irrigation management to improve irrigation and fertilizer BMPs. These programs focused on providing research results, practical information, and demonstration of soil water monitoring technology. An overwhelming majority of program participants at each event (>85%) evaluated the programs as very valuable and most (>50%) indicated they planned on changing or improving their water management.

Postharvest handling and food safety programs were attended by over 50 individuals. Over 30 participants from the packinghouse and producer community attended a major workshop on food safety and good agricultural practices. This resulted in numerous post workshop inquiries for more in depth information and 10 visits to local packinghouses for on-site educational consultations.

IPM program participants (>100) through post workshop surveys indicated that prior to our programs only 18-57% could not identify the one of the major insects (bark scale) limiting lychee production. However, post programs 82-84% indicated they could identify the scale and decide on when and if appropriate control was warranted. Ninety-eight to 100% of the program participants indicated they place a high value on the training programs designed to assist them identify, scout, and decided whether to treat significant insect pests. Sixty-five participants in a weed identification, control, and

equipment calibration workshop found the information provided would improve their weed control practices (>80%). These programs along with identification of various insect, disease, and weed pests by design team members were estimated to have saved the industry well in excess of \$1 million in either potential loss from lower production and/or unnecessary pest control applications.

Other programs that addressed cultural practices such as use of improved cultivars, protection from a disastrous freeze, and sustainable fertilizer practices were designed to assist producers stay competitive with producers from other areas of the U.S. and the world. In general, post program surveys found greater than 68-80% of the participants adopting improved cultural practices such as planting new cultivars, installing or making appropriate irrigation system modifications to prevent disaster from freezing weather conditions, and implementing a leaf tissue analysis program as a basis for their fertilizer program.

Success Stories

1. Lychee and longan acreage in Florida has more than doubled in the last 8 years. As a result of our workshops on lychee and longan production, producers have responded that the information provided has increased fruit production (96%), increased the use of sustainable fertilizer and irrigation agricultural practices (50% and 33%, respectively), and increased the use of scouting (over 90%) as a decision making tool in controlling the lychee web worm.

2. The workshop and seminar series on identification, scouting for, and control of the lychee bark scale has resulted in over 90% of participants indicating they could identify the lychee web worm, would be able to identify tree symptoms and scout for the insects' presence, and base chemical control measures on scouting. Furthermore, the overwhelming majority of program participants indicated they would agree to lychee and longan growers self assess to generate financial support for research to improve control of this pest.

3. The most limiting factor to the expansion of the papaya industry in Florida is papaya ringspot virus. The only successful long-term method to overcome this virus is through genetic engineering as no natural resistance to this virus is found in nature. Most of the participants at the papaya growers field day were familiar (88%) with the TREC genetic engineering program because of previous seminars and field days. As a result of our program 100% of the participants indicated that genetic engineering appeared to be a good method to overcome PRV.

Periodic freezing weather has in the past (1962, 1977, 1989, 1996) severely damaged and killed tropical fruit trees. Resulting in economic loss to tropical fruit producers and interruption of product in the market. Through experience cold protection methods have been developed which reduce tree damage from freezing weather. The workshops on cold protection in Palm Beach and Lee Counties targeted novice and new growers with little experience in cold protection of tropical fruit trees. Ninety-two to 100% of the Palm Beach and Lee County grower participants, respectively, indicated the information provided on methods of cold protection would result in them re-evaluating their current irrigation system and either improve their current system or install a new system. Ninety-two (Lee Co.) to 100% (Palm Beach Co.) of the participants indicated the information provided would assist them to properly utilize their cold protection systems.

In an effort to improve the competitiveness of the Florida tropical fruit industry, several design team members have worked with a local producer organization to assist them

compete for USDA funds to assist U.S. specialty producers. Through the efforts of several design team members and industry representatives, the tropical fruit industry (through the Tropical Fruit Advisory Council) was awarded a 2-year, \$636,680, USDA-Florida Dept. of Agriculture and Consumer Services, Specialty Crop Initiative Grant. Their proposal entitled Specialty crop initiative grant program - Tropical Fruit Crops has provided funds for a nation-wide promotional program of Florida-grown tropical fruits.

Outreach To Minorities: The tropical fruit industry of Florida is demographically diverse including women, Hispanic-, Asian-, African- and Caribbean-Americans. The largest minority group is Hispanic-American (~51%). Methods used to reach minority groups included advertising of programs in 2 or more local papers, use of electronic and regular mail, Extension newsletters, and offering bilingual programs and/or programs targeted to minority groups, and production of Spanish language Extension publications.

Source of Federal Funds: Smith-Lever

Scope: state specific, integrated research and extension

SMP-FL113

Title: Sustainable Communities Development and Enhancement of Natural Systems in Florida

Calendar Year: 2002

Critical Needs: 17, 29

National Goals: 1 and 4

Key Themes: invasive species, Air quality, Energy Conservation, Weather and Climate

Major Program Objective: To educate and empower Florida's citizens, including business and government professionals, to create communities that are environmentally sound, economically productive and **resource efficient.**

1. Environmentally Sound: Improve decision making to reduce the impacts of population growth and development on Florida's natural resources and environment.
2. Economically Productive: Encourage communities to make local capital investments to sustain local human, fiscal and natural resources.

Resource Efficient: Support programs, products and professionals in designing and constructing homes that are measurably termite and windstorm resistant and that conserve energy and water.

Summary of County Programs for Clientele:

Summary of Impacts for Clientele:

Success Stories:

1. Two south Florida Master Planned Community Developers, WCI and The Bonita Bay Group, have continued for the third year to use the 14-hour Build Green & Profit program as a basic continuing education course for delivery to builders working in their communities. Partially on the basis of the BG&P programs, both development groups have continued to strengthen their offerings of more energy and water efficient options in the homes being built

in their communities. The Energy Star and Florida Green Building program certification programs are readily available in their various communities.

2. The Florida Energy Extension Service is working with Carter Construction under a Cooperative Research Agreement to build the model center for Madera, a green development in Gainesville, Florida. The home's design is based on the use of readily-available, competitively-priced products with well recognized "green" characteristics. The house was the first permitted under the City of Gainesville's Green Home program that offers reduced permit fees for homes built to green standards. In addition, several specific products will be evaluated during and after construction in cooperation with HUD's Partnership for Advanced Technology in Housing (PATH) program. The model should be open and available for tours for at least two years.

Outreach To Minorities: Most FL-113 programs are designed to provide continuing education hours for professional license holders. These programs are equally advertised via direct mail to all license holders using lists provided by Florida's Department of Business and Professional Regulation.

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL114

Title: Environmental Landscape Management in Florida

Calendar Year: 2002

Critical Needs: 29, 33

National Goals: 4 and 5

Key Themes: Biological Control, Energy Conservation, Integrated Pest Management, Natural Resources Management, Nutrient Management, Pesticide Application, Recycling, Water Quality, Wildlife Management, Yard Waste/Composting, Community Development and Home Safety.

Major Program Objective:

To increase Floridians' and visitors' quality of life, the sustainability of the State's landscapes, and conservation of natural resources through the delivery of educational programs. Our overall objective is to reduce the environmental impacts resulting from improper landscape practices while creating beautiful, sustainable landscapes. Our goals are that Florida residents will: (1) incorporate environmental considerations in their landscape planning, design and management and (2) adopt lawn and landscape maintenance practices that minimize environmental impacts and conserve natural resources. The FL114 Design Team is addressing these goals by establishing and promoting educational programs to provide horticulturally-sound guidelines for environment-friendly management of landscapes in Florida. These educational programs are collectively called "Environmental Landscape Management" (ELM) and include derivative programs such as "Florida Yards and Neighborhoods" (FYN), which is a proactive method to market ELM guidelines to consumers and other stakeholders. These

programs appeal to participants through their interest in creating and maintaining attractive, healthy landscapes as well as the desire to protect the environment. The ELM and FYN programs use a "systems" approach to address environmental considerations for landscape design and management. The resulting guidelines integrate the landscape characteristics of site conditions, landscape design, plant selection and placement, irrigation, fertilization, pest control, mowing, pruning and recycling. At the same time, ELM and FYN stress the benefits of water conservation, Integrated Pest Management, recycling of yard wastes, wildlife enhancement, energy conservation and abatement of non-point source pollutants. Specifically, the ELM and FYN programs encourage consumers and other stakeholders to water efficiently, mulch, recycle yard wastes, manage pests through IPM (Integrated Pest Management), put the right plant in the right spot, fertilize as needed, provide food, water and shelter for wildlife, protect ground water and surface water bodies (i.e., bays, rivers, lakes, ponds, etc.) and minimize stormwater runoff. Emphases within FL114 for Fiscal Years 2000 through 2003 are:

1. Protecting Water Quality - Reducing the adverse impact of landscape practices on water quality (runoff water, surface water, ground water). This directly relates to the Florida FIRST Imperative, "Water Management, Quality and Allocation". 2. Promoting Integrated Pest Management (IPM) - Reducing the adverse impact of pest control practices on the environment. This component is associated with the Florida FIRST Imperative, "Plant, Animal, and Human Protection from Various Pests and Pathogenic Microorganisms". 3. Conserving Resources - Emphasizing landscape practices that reduce irrigation, fertilizer, pesticides, labor, and other inputs into landscapes while encouraging landscape waste recycling. This Emphasis is correlated with the Florida FIRST Imperatives, "Water Management, Quality, and Allocations", "Managing Urban, Rural, and Human Impacts

on Natural and Coastal Ecosystems and Resources", and "Human Resource Management". 4. Emphasizing the Principles of Environment-friendly Landscape Design and Management - Promoting the "right plant/right place" concept, the use of mulch and other horticulturally-sound practices, and practices that enhance wildlife habitat. These principles relate to the Florida FIRST Imperative, "Managing Urban, Rural, and Human impacts on Natural and Coastal Ecosystems and Resources".

Summary of County Programs for Clientele:

Our overall objective is to reduce the environmental impacts resulting from improper landscape practices while creating beautiful, sustainable landscapes. The FL114 Design Team is addressing this objective by establishing and promoting educational programs to provide horticulturally-sound guidelines for environment-friendly management of landscapes in Florida. These educational programs are collectively called "Environmental Landscape Management" (ELM) and include derivative programs such as "Florida Yards and Neighborhoods" (FYN), which is a proactive method to market ELM guidelines to consumers and other stakeholders. ELM/FYN programming addresses key AREERA concepts of Goal 4 (to achieve greater harmony between agriculture and the environment) and Goal 5 (to enhance economic opportunities and the quality of life among families and communities).

Programming for home owners ranged from one-on-one interaction at "plant clinics" to traditional extension programming for groups to independent learning venues such as web sites and demonstration plantings. For example, 321 participants attended Water Wise Workshops in Hillsborough County where they learned proper lawn and landscape care, water conservation tips and information about low-volume irrigation and micro-

irrigation. In Duval County, information was revised for the Duval County web site to provide information on the FYN program and display the 9 FYN principles and BMPs.

Landscape professionals were reached through a similar range of activities. For example, Lee County Extension provided 22 programs attracting over 1000 landscape professionals through such varied programs as a Citrus, Palms and Turf Diseases Symposium, the Fertilizer and Plant Nutrition Symposium, and the 4th Southwest Florida Garden and Landscape Conference.

Summary of Impacts for Clientele:

As a result of participating in ELM and FYN programs, home owners increased use and knowledge of recommended ELM/FYN landscape design and management practices. For example, a Duval County program on Landscape Design resulted in practice changes in 30% or more of the 141 participants such that 68% will match plants to the site, 53% will conduct a site analysis, 69% will landscape to attract wildlife, 31% will plan to shade critical areas, and 63% will keep plants away from home foundation. Through "Florida Yards & Neighborhoods" training in Miami-Dade County, pre- and post-test questionnaires showed that 225 participants (71.4%) increased their knowledge of 'Florida-friendly' landscaping practices by an average of 18.8%. Based on a telephone survey of 57 individuals who attended a Putnam County presentation of "Save the Water!", 74% said they would use slow-release nitrogen fertilizer, 88% said they would use herbicides only when necessary, 86% said they would learn to tell the difference between beneficial and harmful insects and 93% said they would select the most environmentally friendly pest control methods when pesticides were needed.

Another Extension audience, Master Gardener volunteers, improved their knowledge about ELM/FYN and further extended FL114 programming by transferring this information via Master Gardener programs for home owners. For example, in Citrus County, sixty percent of the Spring 2002 Master Gardener class had adopted at least four of the identified ELM practices as a result of attending Master Gardener training. Leon County Master Gardener participants recorded some significant practice changes as measured by surveys: 28% increase in use of fertilizers containing slow-release nitrogen, 21% increase in those using pesticides only if a pesticide problem has been positively confirmed, 25% increase in those using biorational pesticides such as soaps, oils, and BT, 22% reduction in those irrigating once or twice a week, 21% increase in those applying the proper amount of water per irrigation application, and a 22% increase in those recycling leaves on-site.

Landscape professionals also increased use of landscape design and maintenance BMPs as a result of ELM programming. For example, Alachua County programming resulted in 26 professionals obtaining FYN Landscape Maintenance Certification, which improves their professional standing and can be used to market their services. After attending the Orange County program, Lawn & Ornamental Pest Control and Maintenance, 224 participants reported practicing key IPM techniques including the following: 50% select a pesticide that is least harmful to the environment, 64% use appropriate personal protection equipment, 71% keep landscape pesticide treatments well away from bodies of water, 79% learned about pests and their life cycles to properly time controls, 79% were aware of pesticide movement into the environment, ground and surface water, 79% scout and monitor pests, 86% learned to identify the beneficial insects, 93% treat only the affected areas or plants. A survey of 50 Orange County recipients of the Environmental Horticultural Issues quarterly newsletter found that 76% of the responding landscape professionals were currently using 15 of the 19 recommended ELM/BMP practices.

These appropriate landscape practices were performed on a total of 991 properties equaling 752,423 acres in Central Florida.

Success Stories

Continued water reductions have been observed through the FY&N Condo Outreach Program. Of the 82 associations visited in the first year of this program, 74 (approximately 90%) have made positive practice changes. Of these, approximately 85% are adjusting their irrigation systems seasonally, have calibrated their irrigation systems, are capping unneeded irrigation heads or are installing micro-irrigation in tree and shrub beds. All of the 74 are selecting drought-tolerant plants when making landscape changes. This program is so successful that Sarasota County government decided to provide for it a permanently funded county position.

Trees and Construction: Keeping Trees Alive in the Urban Forest is a University of Florida Extension educational program designed to help participants understand the impact of site development and the construction process on trees and natural areas, and suggest ways in which undesirable impacts can be minimized. The program educates arborists, construction professionals and others on tree growth and the benefits of preserving trees in the landscape; evaluating trees on-site, assessing damaged trees; the impacts of the construction process on trees and ways to reduce it. In addition, it provides the continuing education requirements needed for licensed building contractors, certified arborists, and landscape professionals in the central Florida area. This program won three awards in 2002 - The National Association of Counties Achievement Award, the American Society for Horticultural Science Southern Region Extension Publication Award and the Florida Extension Association of Family and Consumer Sciences Environmental Education Award. This program was presented 3 times to 159 people. A total of 28 of the attendees completed both the pre and post survey. There was a 30% increase in knowledge gained.

UF/IFAS faculty collaborated with the turf industry, PCO's, water management districts, DACS and DEP to develop a set of Green Industries BMPs. Two years of effort have culminated in a set of BMPs that all parties agree on. At the beginning of this process, the turfgrass and PCO industry was very antagonistic towards Florida Yards and Neighborhoods and they began this BMP process partly to neutralize the perceived threat of FYN (and FL114) to their industry. As this process progressed, individuals began understanding each others' positions, and this antagonism has lessened.

Outreach To Minorities:

In general, every effort is made to reach minorities, including: utilizing mass media (newspapers, radio, TV), visiting and displaying promotional materials at various associations (homeowners, homebuilders, etc.), holding activities at convenient and accessible facilities, utilizing all county channels (cable access, media contacts, reader board, etc.), displaying brochures at other activities and events, and offering training on-site (ie. not required to be held on county property). All mailings and announcements carry non-discrimination statements and are sent to all known grassroots organizations. All news releases are sent to minority media. Programs are often taken to all areas of the county and are offered at facilities that are ADA compliant.

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL116

Title: Turfgrasses in Florida

Calendar Year: 2002

Critical Needs: 5, 7, 14, 17, 22, 25, 27, 31, 32,

National Goals: 1, 4 and 5

Key Themes: Home Lawn and Gardening, Invasive Species, Ornamental/Green Agriculture, Plant Germplasm, Precision Agriculture, Small Farm Viability; Urban Gardening, Drought Prevention and Mitigation, Integrated Pest Management, Nutrient Management, Pesticide Application, Water Quality, Yard Waste/Composting, Agricultural Financial Management, Jobs/Employment, Promoting Business Programs, Enhancing Customer Service/Satisfaction

Major Program Objective:

To design, develop and deliver the University of Florida turfgrass extension, research and teaching programs so our customers are provided with the best current information and technology.

To develop and deliver extension, research and teaching programs to all turfgrass customers so they can economically produce and manage the appropriate turfgrasses using resource conserving, energy-efficient and environmentally sound methods.

To develop and deliver extension and research programs to ensure quality of ground and surface water in Florida as development of Best Management Practices.

To develop methodology for informing and involving state and county faculty as well as customers about design team goals, activities and programs.

Evaluate the performance of the FL116 program annually to determine which areas need attention to enhance the competitive position of the Florida turfgrass industry.

Program Objectives:

Develop and deliver extension, research and teaching programs to all turfgrass customers so they can economically produce and manage the appropriate turfgrasses using resource conserving, energy-efficient and environmentally sound methods.

Develop methodology for informing and involving state and county faculty as well as customers about design team goals, activities and programs.

Evaluate the performance of the FL 116 program annually to determine which areas need attention to enhance the competitive position of the Florida turfgrass industry.

Develop effective marketing strategies for UF-IFAS products and discoveries.

Summary of County Programs for Clientele:

DEVELOPMENT OF TURFGRASS BEST MANAGEMENT PRACTICES (BMPs)

USDA-CSREES National Extension Goal #1 - To achieve an agricultural production system that is highly competitive in the global economy.

Key Themes: Home Lawn and Gardening, Invasive Species, Ornamental/Green Agriculture, Plant Germplasm, Precision Agriculture, Small Farm Viability; Urban Gardening

USDA-CSREES National Extension Goal #4 - Greater harmony between agriculture and the environment.

Key Themes: Drought Prevention and Mitigation, Integrated Pest Management, Nutrient Management, Pesticide Application, Water Quality, Yard Waste/Composting

Situation:

The turfgrass industry in Florida encompasses 4.4 million acres of managed turf. Over 3 million acres of turf are managed by homeowners and Florida has more golf courses than any state in the Union. Turf produced on the 53,000 acres of sod production makes its way on to golf courses, athletic fields, cemeteries, roadsides, and in the landscape. Because of the massive acreage covered in turf, a concomitant amount of inputs (fertilizers, pesticides, and water) are also used.

Proper fertility and cultural practices associated with turfgrass maintenance influence turfgrass vigor and physiological functioning, including photosynthetic rates, light attenuation, and carbon assimilation. Properly fertilized turfgrass develops deeper, denser root systems that are better able to cope with environmental conditions such as drought, shade, cold temperatures, and other adverse conditions. These grasses will not only cope better with environmental stresses, they will also have fewer associated problems with weeds, insects, and diseases, and will require fewer curative chemicals as a result of this. There will likewise be less potential for leaching or runoff of fertilizers or pesticides in these areas due to their denser root and shoot systems, which will result in less potential contamination of ground and surface water.

Without the development of Turfgrass BMPs based on sound research / demonstration, the turfgrass industry will be relegated to unnecessary regulation developed under political motives, motives that are often not based on sound science. Furthermore, once BMPs are developed for the turfgrass industry, the transfer of this information to the end user, whether it is a professional turfgrass manager or home landscape enthusiast, and its subsequent adoption are imperative to assure successful turfgrass management with the least environmental impact.

Program Objectives:

1. Develop methods for minimizing environmental impacts of turfgrass chemical use.

UF/IFAS turf faculty are actively conducting basic and applied research to develop integrated pest management practices. These research/demonstration activities serve as the basis for the recommendations contained in numerous print and electronic media. Similarly, turf faculty (and affiliates) have actively pursued development of natural and biological control agents for several turf pests including weeds and insects.

Success Stories

Pesticide Applicator Training

Most counties conduct an extensive number of training events aimed at reducing pesticide usage through providing proper training to pesticide applicators. Comments from those surveyed indicated that they plan to make changes such as: "Learn more about pesticides", " Spray less", "Use pesticides only when needed", and "Monitor pests more carefully."

2. Develop water quality and quantity requirements for each turfgrass species.

Research/demonstration projects are currently underway to assess the water requirements of several of our lawn grass species. Additionally, work is being conducted to develop

management practices for Seashore paspalum, a relatively new turfgrass species suitable for use in areas with poor water quality and/or saline conditions. As this research is being conducted, interim recommendations have been developed and are available in print and electronic publications.

Success Stories

Reducing Water Use in the Landscape

In one county, 66% of seminar attendees indicated that they were watering turf and plant beds separately to avoid wasting water. 85% were adjusting landscape irrigation frequency to use water more efficiently and 93% were using mulches to conserve water.

A graduate from the 2002 Okaloosa County Master Gardener training class significantly reduced her water bill by implementing what she learned. She reported that her water bill had gone from over one hundred dollars down to thirty-five dollars solely by implementing what she had learned in the Master Gardener Classes. Not only had she reduced the amount of water and money used to irrigate her landscape, she said her lawn looked better as a result of watering on an as needed basis.

Work with regulatory agencies to develop and adopt Best Management Practices for landscape Turf, Golf Courses, Sod Farms, and Athletic Fields.

Members of FL116 along with representatives from Florida Department of Agricultural and Consumer Services, Florida Department of Environmental Protection, Water Management Districts, and industry leaders developed Turfgrass Management BMPs that have been endorsed by these regulatory agencies. The document focuses on four areas: Nutrient / Cultural Practices; Pesticides; Irrigation Management; and Education / Training.

The team developed, at industry and DEP request, a 4-part educational module for teaching the industry workers how to use the BMP manual in their daily activities. Train-the-Trainer events are scheduled to begin in Jan. 2003 to train county faculty, industry management training personnel, Water Management District reps, and local government decision makers at 12 locations state-wide over a 5 month period. They will receive all materials needed to then conduct their own programs over the next several years.

Success Stories

Improved Communication and Coordination Results in Greater BMP Adoption

Due to discrepancies in information coming from within IFAS regarding lawn management practices, the lawn care industry has been unsure of what was actually being recommended and regarded IFAS with skepticism. In an attempt to clear these issues, turf faculty and Florida Yards and Neighbors (FYN) faculty collaborated on revisions to fertilizer recommendations that both groups would feel comfortable recommending. To bring FYN in line with proper turf fertilization and irrigation recommendations, all new materials from both programs are now reviewed by the other. This has minimized the conflicting message coming from IFAS and has enhanced the relationship between IFAS and industry. This has resulted in substantial IFAS input into the industry-driven BMP manual.

Provide Scientific Support to Shape Public Policy

Turf faculty interact with industry leaders to provide research-based information to shape public policy. Agencies include St. Johns County, the Village of Wellington, the South Florida Water Management District/ C-11 Canal Work group, Nitrogen Remediation

Work group, and Southwest Florida WMD to enact ordinances that would reduce fertilizer impacts and that were achievable in practice.

Reducing Environmental Impact

In one county, 54% of those attending extension educational programs indicated that they planned to make changes in their landscaping/lawn care practices based on what they learned. A few of the planned changes listed included: using less water and pesticides; enhancing natural areas; calibrating their irrigation system, and applying less fertilizer. A few of the participant's commented that the most important thing they learned from the seminar included: to use pesticides as a last resort and that winterizing a lawn can do more harm than good.

4. Develop regional fertilization recommendations.

Given the heightened level of concern over nutrient use in the landscape, we established the "Turfgrass Nutrient Oversight Sub-committee" to coordinate activities related to nutrient management. This sub-committee reviewed all relevant EDIS publications and developed "Interim Fertility Recommendations" for the various turfgrass species grown in Florida. These recommendations are contained in EDIS publication SL-21 "General Recommendations for Fertilization of Turfgrasses in Florida Soils". This subcommittee has also developed a policy statement which specifies that written information pertaining to turfgrass fertility must be properly reviewed to avoid any potentially negative repercussions associated with the dissemination of erroneous information.

Success Stories

Consumers Shifting to Fertilizers with No Phosphorus as a Result of Extension Education.

Phosphorus is a major factor in the pollution of Florida lakes. In Leon Co., the local market made a significant shift to no-phosphorus fertilizers this year as a result of the Extension training efforts. All of the major retail garden centers sold no-phosphorus fertilizers, 15-0-15. A July follow-up showed that even the large chains, Home Depot and Lowe's, were still stocked with the no-phosphorus fertilizers. The largest of the independent retailers, and probably the one largest retailer for the whole county, doubled their sales of 15-0-15, from approximately 300 bags in 2001 to roughly 600 bags in spring of 2002. Meanwhile, their 16-4-8 sales dropped from 301 in 2001 to only 98 in 2002 for the spring. Similarly, landscape maintenance companies are now using more of the no-phosphorus 15-0-15 also. The largest of these in Leon county used approximately 13 tons of the 15-0-15 fertilizer this year. They have made a complete shift away from 16-4-8.

Professional Landscape Management Companies Shift to Slow Release Nitrogen

Florida Cooperative Extension efforts to educate the commercial audience about the importance of shifting to slow release nitrogen fertilizers have been successful. Survey results show that 86% of seminar attendees had switched to using slow release fertilizers. This will result in less environmental pollution.

Develop base-line information describing the size, scope and value of turfgrass industries and design and implement business management and marketing programs to improve the economic performance of turfgrass related businesses.

USDA-CSREES National Extension Goal #1 - To achieve an agricultural production system that is highly competitive in the global economy.

Key Themes: Ornamental/Green Agriculture, Plant Germplasm, Precision Agriculture, Small Farm Viability

USDA-CSREES National Extension Goal #4 - Greater harmony between agriculture and the environment.

Key Themes: Drought Prevention and Mitigation, Integrated Pest Management, Nutrient Management, Pesticide Application

USDA-CSREES National Extension Goal #5 - Enhanced economic opportunity and quality of life for Americans.

Key Themes: Agricultural Financial Management, Jobs/Employment, Promoting Business Programs, Enhancing Customer Service/Satisfaction

Situation:

Golf is a highly popular recreational activity in the United States. In 2000, there were over 15,000 golf facilities in the country (NGF, 2001). Florida has over 1,300 public and private golf courses, more than any other state. Numerous acclaimed golf courses in Florida are host to prestigious tournaments, including the PGA tour, which is headquartered in the state. Golf courses in the Ft. Myers, Naples, and Ft. Pierce/St. Lucie areas of Florida are among the top five specific golf destinations in the U.S. Florida's warm climate allows golf play throughout the year, and golf is a primary activity for many of the millions of tourists who visit the state each year.

Program Objectives:

1. Develop base-line information describing the size, scope and value of turfgrass industries.

An economic impact study of the Florida Golf Course Industry was published in 2002. Economic impacts of the Florida golf industry were estimated for year 2000 based upon a survey of golf courses, together with other published data and regional economic models. Total annual revenues amounted to \$4.44 billion (Bn), including membership and initiation fees (38%), playing fees (27%), food and beverage services (18%), retail sales (6%), lodging (4%), and miscellaneous other activities (9%). The revenues for year 2000 were 49 percent higher than a previous estimate of \$3.0Bn in 1991–92, representing an average annual growth rate of 5 percent in nominal dollar terms.

Golf industry employment was 73,000 persons, including clubhouse personnel (68%), and golf course maintenance personnel (32%), with 71 percent as full-time and 29 percent as part-time, temporary or seasonal employees. Annual expenses amounted to \$3.70Bn, including golf course maintenance (29%), food and beverage service (20%), golf operations (13%), administrative overhead (12%), clubhouse (10%), capital (9%), tennis, fitness and other recreation services (4%), and miscellaneous other expenses (4%). The book value of assets owned by golf courses was \$10.8Bn, including land (58%), buildings and installations (26%), vehicles and equipment (10%) and golf course irrigation systems (6%).

Travel expenses in Florida by golf playing visitors were estimated at \$22.9Bn, of which \$5.4Bn may be attributed directly to the golf experience, based upon national average golf travel data. These expenditures had an impact on the Florida economy of \$9.2Bn in personal and business net income (value added) and 226,000 jobs.

Success Stories

There is a need for information to better inform policy makers about the economic value of water use by golf courses and the potential economic impacts of water use restrictions. Information from this survey will answers some of the key questions such as:

What is the history and projected future water use by golf courses?

What sources of water do golf courses use and what share of total use does each represent? (e.g. potable groundwater, treated effluent, de-salinated)

What are the capital and operating costs for golf course irrigation?

How many golf courses have upgraded to new higher efficiency irrigation systems?

Outreach to Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. In some counties where a large number of the clientele is Hispanic, programs and publications are done in Spanish. Some agents appear on Spanish radio and television. Agents sometimes do direct or personal contact with minority growers, nurseries or other individuals to promote programs. Agents report using Equal Opportunity and ADA statements on meeting announcements. Some counties report using minority newspapers when available. Meeting sites are selected where there is commonality and local support.

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL119

Title: Business Management for Horticultural Enterprises in Florida

Calendar Year: 2002

Critical Needs: 14

National Goals: 1

Key Themes: agricultural competitiveness, agricultural profitability, managing change in agriculture, niche marketing, ornamental/green agriculture, plant production efficiency, risk management

Major Program Objective:

The objectives of this program are to generally improve the awareness and implementation of strategic business management skills and techniques by owners and managers in the environmental horticultural industry. Four primary areas of management to be addressed are: 1) strategy/general, 2) finance, 3) marketing, and 4) human resources. General management issues include strategic business planning, business management professionalism, business decision making, and total quality management. Financial management includes managing for profitability, risk assessment, and cash-flow management. Marketing management includes marketing strategies, strategic selling, and managing sales and the sales team. Human resource management includes basic supervisory management, communicating effectively, and employee involvement.

Summary of County Programs for Clientele:

Counties reporting: (11) Citrus, Highlands, Hillsborough, Indian River, Miami-Dade, Okaloosa, Orange, Palm Beach, Pinellas, Putnam, Volusia.

In Alachua and Volusia Counties, a program entitled "Management Under Uncertainty in the Horticulture Industry" was offered in Gainesville (March), and Deland (June). Program consisted of a 5-hour long session with presentations by five economists (Haydu, Kepner, van Blokland, Degner, Hodges) on the topics of industry trends and outlook, customer retention, risk analysis, niche marketing, and nursery product and landscape service cost analysis.

In Gainesville (Alachua County), the 2nd International Agricultural Trade & Policy Conference was held November 14-15, 2002, with attendance by 150 members of the agricultural community and policy making groups. A presentation was made on the outlook for the ornamental plant industry in the United States and Florida (Hodges & Haydu). The conference was sponsored by the International Agricultural Trade and Policy Center and supported by the Florida Farm Bureau, Farm Foundation, CIBER, Florida Fruit and Vegetable Association, Florida Citrus Mutual, Florida Tomato Committee and Florida Nurserymen and Growers Association.

In Hillsborough Co, a program "Spanish for the Nursery Manager" was conducted as an eight week class, sponsored by the Tampa Bay Wholesale Growers. In-service training in horticultural career opportunities and necessary skills was provided for Hillsborough County Agribusiness and Natural Resource Education teachers.

In Miami-Dade County, several programs relating to horticultural business management were conducted:

A five hour seminar, New Crops For Nurseries And Business Management (1/22/02) was attended by 15 participants

A four hour seminar, Nursery Business Development: Finding New Markets For Nursery Products (8/16/02) was attended by 43 participants.

A half-day seminar, Getting Started In The Nursery Business (11/15/02) was attended by 19 participants.

An all-day seminar Staying Competitive In The Nursery Business (12/3/02) was attended by 35 participants.

Also, a quarterly newsletter was published four times and three fact-sheets and one article for a trade newsletter were prepared. Consultations were made with 291 clients by telephone, 43 in office-visits, and 26 on-site. Four group learning events with predominantly business topics were conducted; in addition three group learning events (with less than half business topics) were conducted, resulting in 239 contacts, with the agent teaching 21 hrs, and with invited speakers teaching 20 additional hrs. Thirty-five nurseries were visited for the first-time during the year. During the year agent worked with approximately 50 nurseries in both the production and business parts of their operations. With 35 nurseries we discussed business strategies.

In Orange County, business management and marketing of horticultural products is a major emphasis for programs serving the large greenhouse industry. A 4 hour statewide program entitled "Negotiating For Success" was for offered to the nursery industry, with 22 people attending. An objective of the program was for participants to identify and practice or modify their negotiating style. None of the attendees knew their style before taking the class, and all admitted they needed to modify their style. All participants said they could identify mistakes in their style and would make changes. For example, 65% said they didn't listen enough to the client during negotiations.

In Palm Beach County, displays were presented at the County Fair to advertise extension programming relating to nursery marketing, both for the general public, and the large number of nursery owners and employees who attend. Growers were encouraged to explore the in-depth marketing workshops offered. A thirty second public service announcement (PSA) "Growing Water Wise" was produced in collaboration with others to promote the continued use and purchase of nursery plants during the severe drought that has gripped the state for the past 4 years. Most landscape plant, and especially bedding plant producers in the county suffered severe losses in sales due to the drought. Many large landscape projects were paused and most of the public quit buying plants. The video was developed as a PSA to educate the public how to manage an attractive landscape even under one or two day per week watering restrictions. The agent also worked with the Palm Beach Wholesale Growers Association and Florida Nurserymen and Growers Association to prepare a successful bid to obtain \$10,000 from the Palm Beach County Agriculture Economic Development Program for purchasing air time for video as a paid commercial. Topics included aspects of niche marketing, customer service, the industry outlook, and various tools growers could utilize to better market their products and manage their firms. The Palm Beach Nursery Bulletin newsletter, which is distributed to approximately 600 nurseries, was about one third devoted to nursery business management and marketing topics.

In Putnam County, programs oriented toward the commercial horticulture industry included programs on Nursery Management, Marketing, Entering the Nursery Business, and Environmental Protection. These programs were delivered through newsletters, short courses, classes, on-site demonstrations, individual consultations, and by telephone and letters. The agent wrote five issues of the commercial newsletter "Putnam Grows", which was mailed to 315 retail and/or wholesale nurseries, garden supply stores, landscape maintenance personnel, local FFA and Ag programs. In conjunction with Clay and Duval County agents, two short courses on "Entering the Nursery Business" were conducted, with 36 new or potential nursery operators attending. Topics covered in these workshops included How to Be Legal, Marketing, Basics of Setting Up a Nursery Operation, Sources of Supplies, Protection of Natural Resources, Dealing With Pests, Alternatives in the Nursery Business and Plant Propagation. Individual consultations were provided to 81 commercial clients on issues related to nursery operations, cultural and pest control practices, business and marketing practices and propagation techniques.

Summary of Impacts for Clientele:

Clientele exposed to educational materials are better informed about business management in the horticulture industry. Clientele attending workshops have been trained in specific techniques for better business management. Attendance at the "Management Under Uncertainty" workshops in Gainesville and Deland totaled 90 persons.

The online business analysis system project (Hodges and Haydu) is expected to provide better and more timely financial information to the wholesale nursery and landscape services industry, for better business planning, marketing, and production management decisions. Users of the system will be able to evaluate their company performance against financial benchmarks.

The participants in the eight week class "Spanish for the Nursery Manager" (Hillsborough Co) regularly speak to their extension agent in Spanish and report better understanding of workers. Two have requested additional materials in Spanish to further enhance skills and knowledge. In-service training in horticultural career opportunities and

necessary skills for Hillsborough County Agribusiness and Natural Resource Education Teachers has resulted in increased participation by their students in horticultural events. One former recipient of the FNGA scholarship is now teaching agribusiness and natural resource education classes at a Hillsborough County high school. Thirty-four students from eight schools participated in the Nursery, Landscape and Floriculture Career Development Event. Successful marketing efforts by the agent in Hillsborough Co. have raised visibility of UF/IFAS extension programs in horticulture, resulting in more calls (6530) in the 11 months that this report covers, representing a 19% increase from previous years. The mailing list of "The Retail Gardener" increased to over 450, an increase of 12% from previous years. The agent's website for the professional horticulture services audience was visited 8,825 times by 6,646 different users, who viewed a total of 21,554 pages of content. While the vast majority of the visitors were from the US, visitors from at least 16 countries were also recorded.

In Miami-Dade County, it is expected that among the 100 wholesale production nurseries targeted by UF/IFAS programs, ten firms are expected to begin using cost-analysis figures of their operations for comparison to industry average benchmarks, and will identify and correct excessive costs of operation. As a result of this, they will become more profitable, and economically viable. Ten nursery owners will learn and apply practical marketing skills, resulting in their acquiring at least one new market outlet. After the business seminar in August, 25 of the 43 participants (58%) returned a seminar evaluation, and 22 reported having gained knowledge, and indicated that they will change at least one work practice as a result of knowledge gained at this seminar; 15 managers (60%) who had not done so before indicated that they will start using marketing plans; 19 (76%) indicated that they will start using cost-of-production analysis for some of their crops; 35 (81%) plan to start growing at least one of the new crops described at the seminar. After the seminar for new nursery owners in October, all 20 (100%) participants indicated that they had learned of new sources of information on new crops, and where to go for regulatory and licensing information; 10 (50%) indicated that they would use the handout provided to re-calculate the actual cost of establishing their proposed nurseries to determine if they can actually afford to start a nursery now. In summary, knowledge gained was reported by 45 of 63 program attendees (71%); 20 out of 20 (100%) learned new sources of information on crops and regulatory/license topics. Summary behavioral change: 15 out of 25, or 60%, will start using marketing plans; 19 out of 25 (76%), will begin doing cost-of-production analyses; 35 out of 43 (82%) plan to try some of the new crops discussed. Feedback from post-seminar surveys and one-on-one interviews, indicates that of the fifteen nursery managers who responded to a survey, 10 (67%) indicated that they will begin using marketing plans, and of these 10, six (60%) have started using cost-of-production analyses for some of their crops. After the new ornamentals seminar 35 out of 43 (82%) indicated that they would try some of the new crops discussed. Later in the year, twenty of the 35 (57%) were contacted and asked if they had in fact begun to grow a new crop. Of the 25, only seven have actually done so.

In follow up surveys to the Orange County program "Negotiating for Success", seven months later, 25% said they had made those changes, and as a result of the class 33% said they would negotiate better, and 11% said they would negotiate more. Participants were taught to utilize Win/Win strategies. All were familiar with that concept, but 40% of them said that since the class they were able to use this approach in handling customer and employee complaints so that everyone would be happy as an end result. In regard to identifying negotiating opportunities, 30% admitted they actually missed opportunities because they didn't recognize the situation, but now would be more aware of those chances.

In Okaloosa County, through planned programs, phone calls, on-site visits and newsletters, the agent made 4258 contacts with commercial horticulture customers providing them environmental landscape maintenance information. The agent assisted more than 313 commercial horticulture firms, including inexperienced landscape industry people, with 1,887 consultations via telephone, office and field visits. At an estimated savings of \$25 per consultation, these landscape personnel saved a total of \$47,175 in operating expenses. The agent had a total of 1,979 teaching hours.

In Palm Beach County, 95 percent of workshop participants for the program “Nursery Niche Marketing” indicated that they will adopt a new marketing plan for their nursery, according to a post-workshop telephone survey evaluation conducted in October. Results also indicated that 33% of participants implemented an evaluation of their business' customer service, 44% implemented suggested methods of evaluating new markets for their products and services, 22% conducted risk analysis of their business, and 44% conducted an analysis of their costs and determined unit costs for their products or services. In addition, 100% of the program participants ranked the workshop as good to excellent.

In Putnam County, 31 of the 36 participants (86%) completed written evaluations after completing the shortcourse “Entering the Nursery Business” Short Course (two sessions). Several business practices which had been emphasized in the course were listed and course participants were asked to indicate whether they intended to adopt the practices. The results were as follows: 71% of participants indicated that they intended to prepare a marketing plan; 77% said they would employ scouting techniques in pest management. In addition, 65% rated the quality of the program subject matter as Excellent and 32% as very good; 58% rated the effectiveness of program presentation as Excellent and 35% as very good; 52% said that the program exceeded their expectations, while 48% said it met their expectations; 100% said they would recommend this program to other people in their profession; 84% strongly agreed and 35% agreed that the information presented would help them in their work or business. Consultations were also provided to 81 nursery operators, who received accurate, research-based information which helped them address and solve problems they were having in their nurseries

Success Stories

Development of a Stable, Educated Work Force and a Safe, Productive Workplace for the Ornamental Plant Production Industry. In Hillsborough County, Youth Environmental Horticulture educational activities are very dependent upon plant auctions. The Youth Plant Show and Sale provides financial incentives to 4-H and FFA members who participate by producing plants which are auctioned to the public. Furthermore, the Tampa Bay Chapter FNGA plant auction provides the funds the chapter uses to reward participants in the Nursery, Landscape, and Career Development Event and to provide scholarships for Hillsborough County students seeking a college education in environmental horticulture. Significant improvements in the software used for the plant auctions made this year were funded by the Tampa Bay FNGA chapter. These improvements make it possible for more volunteers to participate in auction administration and will allow for continued growth of these programs. The weekly email newsletter "Weekend Update" has been very well received. Safety and Labor related topics are regularly featured, along with information about upcoming educational and industry events. Each weekly edition has produced at least one email response with a question, comment, or request for more information. The supervisor of the Hillsborough County School District Agribusiness and Natural Resources Education program regularly forwards the email to the 57 teachers at 35 middle and high schools that have agricultural

education programs. Many recipients have remarked that they appreciate the timeliness of the information that is distributed via email and that they have attended an extension event as a result.

Efficient Environment Landscape Management for Professionals. In Miami-Dade County, the commercial landscape agent received two "Star Performance" recognition awards for service to clientele. The agent began offering programs tailored to landscape architects (LAs) to earn continuing education credits (CECs) as required by Florida Statutes Chapter 481, Part II, to renew their licenses. Eight courses were submitted to the Florida Board of Landscape Architecture and all were approved. As of November 2002, 6 of the 8 courses have been held to date and 83 LAs have earned CECs in fulfillment for their license renewals before November 2003.

Nursery Handbook is a Hit! In Putnam County, the owners of Heritage Gardens Nursery wrote in an unsolicited letter: "We were thrilled to receive the Commercial Nursery Handbook...It is both functional and useful and we know that we shall be using it for many years to come. Also we thoroughly enjoy attending your workshops and classes. We always come away feeling motivated and refreshed and ready to tackle our next challenges..."

Outreach to Minorities

Minority operated firms currently participate in extension programming for ornamental plant producers at rates greater than the participation rate of nurseries as a whole. It is fair to say that parity has been achieved. Programming was offered to everyone in the nursery industry, with out regard to race, creed, religion, gender, age or disability. Non-discrimination statement included on all publications, and special accommodations for disabilities were offered on promotions for each educational event. Affirmative action was often discussed at advisory committee meetings. Every attempt was made to achieve parity next year by reaching out to the various and disparate groups via newsletters, newsprint, radio advertisements, news releases and contacts through the multiple professional organizations. In Hillsborough County, 48% of the total attendance at programs was by minorities, including 143 blacks, 158 hispanics, 11 asians and 686 females. In ethnically diverse Miami-Dade County, minority clientele and females attended all of the short courses, workshops, and other educational programs, and special efforts were also made to reach minority audiences, including advertisements in newspapers, radio and television stations. A large number of the clientele were minorities who attended programs or received telephone consultations, office assistance or field visits 648 women, 494 hispanics, 165 blacks, and 40 asians. In Okaloosa County, all available mass media are used to inform potential recipients of programs and opportunities to participate, and news releases about each program offered, are sent to the predominantly minority community groups. Also, personal letters and circulars are addressed to defined potential recipients inviting them to participate. In Orange County, the president of the Korean American Nursery Association is on the agent's advisory committee. In Palm Beach County, record minority and gender participation has been seen in workshops, seminars, office and nursery contacts, telephone communications and newsletter mailings. They offer programming to everyone in or entering the industry regardless of race, creed, religion, gender, age or disability. Mailings are sent to all nurseries in the county identified on the Florida Department of Agriculture and Consumer Services, Division of Plant Industry nursery list regardless of race, creed, religion, gender, age or disability. Notice of affirmative action needs and accommodations for disabled persons is made on all program flyers and publications.

Source of Federal Funds: Smith-Lever

Scope: multistate, integrated research and extension

SMP-FL121

Title: Small Farms, Sustainable Agriculture, and Alternative Opportunities and Crops in Florida.

Calendar Year: 2002

Critical Needs: 19, 24, 25, 26, 27,

National Goals: 2 and 4

Key Themes: Food handling, food quality, food safety, Agricultural waste management, biological control, land use, nutrient management,

soil quality, water quality, sustainable agriculture, pesticide application, yard waste/composting.

Major Program Objective:

The overall goal of this extension program is to enhance the economic viability of small farms, improve small farmers' management of natural resources and the environment, and strengthen the role of small farms in Florida's communities, including both rural communities and ties between rural farmers and urban consumers. The specific objectives are:

To assist small farmers develop markets for their products, including farmers' markets, green markets, community based markets, cooperative marketing associations, institutional markets, community supported farms, and food circles.

To provide research-based information about alternative crops and enterprises, including value added processing and packaging. To provide entrepreneurial and business skills training for small farmers.

To help develop small farm networks, stressing enhanced opportunities for exchange of information among small farmers throughout the state.

To improve the flow of technical information to small farmers, including materials appropriate for beginning farmers and stressing sustainable management practices and alternatives for small farms.

To build partnerships with other state agencies and programs, such as WAGES, to help small farmers gain access to labor.

To improve the whole farm planning process, including planning for the inter-generational transfer of resources and improved information delivery about state and federal programs important to small farmers.

To build community support for small farms, including marketing approaches such as community based markets and community supported farms, and community support for land use planning and economic development to support the establishment and growth of small farms.

Summary of County Programs for Clientele:

County faculty conducted programs to educate small and alternative-crop growers in the following areas: 1) small farm economy and marketing; 2) alternative crops, production systems, and enterprises; 3) small farm safety; 4) harvesting and post-harvest handling; 5) food safety; 6) sustainable and organic agriculture; 7) best management practices; 8)

integrated pest management; 9) conservation of water and other natural resources; and 10) small farm business management.

Educational programs provided information on a number of alternative crops and commodities, and for conventional commodities produced by unconventional methods. Some examples are low input grasses and native ornamental plants, hydroponically-grown greenhouse vegetables and herbs, high-tunnel okra, low-chill, early-season, blueberry and peach, wildflower seed, cut flowers, muscadine grapes, goats, organically produced cattle, ornamental fish, and others.

For many of these alternative enterprises to be economically viable in Florida, new production methods are needed. Some examples of alternative production methods and systems addressed by the program during 2002 include hydroponic vegetable and herb production, protective tunnel culture of vegetables, methyl bromide alternatives, plastic mulch culture for vegetables and herbs, and bark culture for early-season blueberries.

Educational methods used included field days, intensive short courses, demonstrations, on-farm research, newsletters, Extension fact sheets and circulars, web site development, and individual analysis and problem solving. Programs were commodity (i.e. blueberry), discipline (i.e. marketing), or concept (i.e. sustainable ag.) driven and reached a wide audience of small and alternative farmers throughout Florida. Four regional Small Farm Conferences were held in Okeechobee, Ocala, Homestead, and Mariana. These conferences provided information on a wide variety of topics relevant to the region of Florida in which each was held. Topics included aquaculture, animal husbandry, fruit and vegetable production, agroforestry, risk management and agri-tourism, just to name a few.

Summary of Impacts for Clientele:

Informal surveys of pesticide distributors in southwest Florida indicated that the vegetable industry has reduced its use of persistent broad spectrum pesticides by over 50% in the last five years, this trend will reduce the industry's impact on environmentally sensitive areas in southwest Florida.

The vegetable industry has increased in acreage and regained much of its competitive footing. In addition to the increase in acreage, there has been a shift in the crop mix to a more diverse commodity base which is less vulnerable to competitive forces from abroad. Snap bean acreage has increased from 2,500 acres in 1997 to over 10,000 acres in 2002. Production of specialty crops including oriental and ethnic vegetables has risen from 500 acres to over 3000 acres. Acreage in organic production has increased by 400 percent from 50 acres to over 200 acres at present.

Blueberry acreage continues to increase statewide. Most current growers expanded their acreage in 2002 and new growers also entered the industry. Small grower success with blueberries has attracted the attention of larger entities resulting in a projected 50 acre small farmer production cooperative currently being established in Immokalee.

Benlate fungicide was widely used in Florida blueberries in the past. Last year EPA withdrew Benlate use on many crops including blueberry. An Emergency Use Permit for use of Indar fungicide on blueberry to replace Benlate was approved as a result of work done under FL 121. This was critical for disease management in blueberries during 2002.

Disposal of horticultural waste is a major problem for the state's urban and suburban communities. Research and educational efforts have led two conventional vegetable farms in southwest Florida to begin large scale composting operations using horticultural

waste products and to incorporate the resulting organic soil amendments into their production programs. Application rates currently range from 20 to 70 tons of compost per acre. The benefits of organic matter in crop production have been known for many years. Benefits to growers include increased nutrient and water holding capacities of soils, reduced dependence on chemical fertilizers, and a more favorable environment for plant growth and higher crop yields.

Over eighty five percent of growers surveyed indicated that they have begun on-farm testing for the incorporation of methyl bromide alternatives into their cropping system. Several grower meetings have been conducted to present growers with up to date information regarding various methyl bromide alternatives and their advantages and disadvantages. Results of trials and interviews with growers indicate that most growers will be able to make a relatively smooth transition to the post methyl bromide era.

Attendance at municipal green markets located in West Palm Beach, Delray Beach, and Boca Raton has dramatically increase over the last year, with an estimated total attendance of 161,000 for the winter season. Total vendors and small growers for the three markets numbered 121 for the start of the 2002-03 season.

As of 2002, about 45 growers have registered approximately 122 ferneries with the Florida

Department of Agriculture for participation in the nitrogen best management practices (BMP) program. The nitrogen application rates listed in the BMPs are approximately half those commonly used when the growers were surveyed in 1991.

The University of Florida Drip Irrigation School is for intensive training to teach growers about the specifics of drip irrigation. The curriculum and concept evolved into the University of Florida Drip Irrigation School, first held in Live Oak on November 2001. Fifty growers, industry, and agency representatives participated. The school was especially well received by industry members and they encouraged the school to be offered at other locations in Florida. As a result, additional schools have been offered at Dover and Homestead and others are planned for Immokalee, Bradenton, and Ft. Pierce. Due to the popularity of the practical teaching methods used, the proceedings of the University Drip Irrigation School was highlighted as a 12 page color feature in the November issue of the Citrus and Vegetable Magazine.

Plastic mulch and drip irrigation technologies in watermelon and cantaloupe production have been incorporated on over two-thirds of the production acreage in Columbia County. Of the approximately six-hundred (600) acres of these crops grown in Columbia County, currently two hundred fifty (250) acres are using the complete plastic mulch/drip irrigation system of production. An additional one hundred fifty (150) acres incorporated drip irrigation on open bed culture.

And on-farm irrigation scheduling program continued in 2002. The main two impacts documented were: 1) early season water use reduction by 50%; and 2) improved efficiency of scheduling during peak demand periods. For 100% of the grower participants, changes were made to improve their irrigation efficiency and reduce costs.

Success Stories

An Alachua County blueberry grower continues to expand his blueberry planting. He now produces more income from blueberries than from his other crops which are watermelon and cattle. He is currently the largest southern highbush blueberry grower in the southeastern United States. His success in blueberry production is in part related to

use of new blueberry cultivars developed from the University of Florida and from adaptation of cultural practices developed at the University of Florida through research and extension programs such as proper use of Dormex, a growth regulator which advances fruit harvest date and increases fruit quality and yield.

During 2002, a new peach grower harvested his first crop in 2002. These low-chill peach cultivars, when grown in central Florida, are the first early-season peaches available from the U.S. He was able to sell all his fruit to the Publix Supermarket chain for a high price typical of the early season market. He expanded his acreage during 2002-3. Peaches have become a significant alternate crop for this central Floridavegetable/strawberry grower.

Production of Florida ecotype native wildflower seed increased from 2001, with one producer winning an FDOT wildflower seed bid. Florida producers sold all seed that they did not put back into production for increasing their production acreage. Georgia DOT was so pleased with their test plot of Florida-produced Dye Flower that they put out a bid this for about 600 lb of this species.

Demonstrating the benefits of containerized systems and perlite has resulted in widespread adoption of this culture in Florida greenhouses. One specialized use of this system has been the addition of drip tape inside the bags of perlite. The initial attraction for this method was cost savings when perlite bags are used in a large scale field system. In addition to field modifications, specialized greenhouse crops such as chives benefit from such a system. This system was developed at the North Florida REC - Suwannee Valley during the past five years. The system was adopted by one field grower on a five acre farm in Ft. Pierce. Also the system was adopted by one greenhouse herb grower in Suwannee County on one-half acre of chives and mint. In addition, a partner operation in Homestead, Fla. is converting over to this system on an even larger scale. The practice has also been modified by a local greenhouse cucumber grower on 1 acre of mini-cucumbers.

Outreach To Minorities:

The FL 121 design team has made the following efforts to reach minorities.

1. Three members of the Small Farm Advisory Council are minorities (African-Americans).
2. We work closely with Heifer Project International, whose major focus is minority and limited resource farmers.
3. We played a major role (with Florida A&M University) in planning and conducting a small farm conference in Mariana attended by about 75 farmers, mostly African-American farmers.
4. We planned and conducted (Cesar Asuaje, major county faculty person) a small farm conference in Homestead where approximately 100 farmers of Hispanic heritage attended. This conference was conducted in Spanish.
5. We continue to collaborate closely with the New North Florida Coop, a cooperative of mostly African-American farmers established under the guidance of the Natural Resources Conservation Service. Our collaborator is Glyen Holmes, who directs the cooperative. Glyen serves on our advisory council as well.
6. Co-chair Mickie Swisher presented a workshop at the National Small Farm Conference about how to write proposals. This workshop focused on the needs of non-profit organizations and tribal groups and nations.

Source of Federal Funds: Smith-Lever

Scope: multi-state, integrated research and extension

SMP-FL122

Title: Pesticide Applicator Training in Florida

Calendar Year: 2002

Critical Needs: 19, 25, 26, 27

National Goals: 2 and 4

Key Themes: Food Quality, Food Safety, Agricultural Waste Management, Endangered Species, Hazardous Materials, Integrated Pest Management, Pesticide Application, Water Quality

Major Program Objective:

To provide educational programs designed to assist pesticide applicators to use safe, environmentally sound pesticide application practices

To improve pesticide applicators' knowledge and attitude about personal safety and protection of the environment when using pesticides and about the regulations that affect pesticide use.

To assist pesticide applicators in meeting federal and state pesticide applicator certification and licensing requirements to use pesticides in Florida.

Summary of County Programs for Clientele:

County Extension agents provided initial certification training in county offices around the state for General Standards (Core), Private Applicators and the following categories: Right-of-Way Pest Control, Aquatic Weed Control, Natural Areas Weed Management, Agriculture Row and Citrus Pest Control, Limited Commercial Landscape Management. Agents also provided educational programs approved by the Florida Department of Agriculture for Continuing Education credit for pesticide applicators seeking to renew their certification and license. The programs offered provided Continuing Education Credit for General Standards

(Core) and 17 categories. County Extension Agents also responded to clientele questions related to applicator regulation and licensing, pesticide safety, agricultural worker safety, and pest management issues related to the various applicator categories in Florida.

Extension Specialist faculty, also delivered training for initial certification and continuing education. The Extension Specialists participated in county extension programs and in regional and state wide programs as well as association sponsored programming. The topics and categories addressed by Extension Specialists included pesticide law and regulation, pesticide safety, environmental protection, application technology, household and structural pest control, lawn and ornamental pest management, aquatic and natural areas weed management, right-of-way pest control, and agriculture row and tree crop pest management. Specialists provided support for county extension faculty in the form of information on pest management topics and pesticide safety and regulations related to the various Florida applicator categories. This support was in the form of in-service training, fact sheets and other publications, computer tutorial programs, talks & lectures for county extension programming and response by telephone and email to specific questions or information requests. Specialists also responded directly to clientele questions on pest management topics by responding to telephone and email questions.

County Extension Offices administered certification examinations for applicators seeking applicator licensing from the Florida Department of Agriculture and Consumer Services. Examinations were provided at county offices in several ways: by appointment, on a schedule, or following training programs. Most applicators must take at least two exams to qualify for a license. Applicators must retake examinations if they score less than 70% on the examinations.

Applicator training materials developed include a national Public Health Pesticide Applicator Training Manual. Manual was funded by USDA-CSREES. It is first new national Public Health Pesticide Applicator Manual in 20 years. Work continues on new applicator training manuals for the Ornamental and Turf and Right-of-Way categories. These manuals will replace current publications that have been in use for over 20 years.

Plans are progressing for the development of a facility at the UF/IFAS Mid Florida Research and Education Center to train termite control technicians in proper treatment of structures infested with termites. Plans and equipment for facility have been donated and instructors are being identified. Additional funds are being sought to build the facility.

Agents in several counties developed, offered, and/or coordinated Pest Control Technician training programs to address a new state requirement for the technician (unlicensed person working under the supervision of the certified operator) to have 4 hours of specified training.

Extension Agents in one county and a multi-county agent working in five counties provide applicator training in Spanish for an increasing number of Spanish speaking pesticide applicators. Although applicator certification examinations must be in English according to state regulation, providing the training in Spanish has increased the number of Spanish speaking applicators who pass the exam.

Summary of Impacts for Clientele:

During the period of January 1, 2002 to December 31, 2002, 7,072 exams were administered at UF/IFAS County Extension Offices for 14 applicator categories plus General Standards.

*As a result of passing the required examinations, FDACS issued licenses to 445 new applicators in 2002 to apply pesticides on their farm, grove or ranch, or that of their employer, to control pests on crops or livestock.

As a result of passing the required examinations, FDACS issued licenses to 807 public/commercial applicators in 2002 to apply pesticides as a part of their job with a government agency or with a commercial/for hire application business.

An estimated (based on county reports) 5,754 persons attended training in 2002 designed for applicators seeking initial certification/licensing.

*During FY 2002, 7,819 applicator training manuals for 16 applicator categories including General Standards (Core) were sold by the UF/IFAS Extension Bookstore. * UF/IFAS County Extension programs and UF/IFAS extension specialist faculty provided over 75% of the 494 programs and 2,162 continuing education units approved by FDACS to licensed pesticide applicators during 2002.

An estimated 12,200 persons participated in educational programs approved by FDACS in 2002 for continuing education credit for licensed applicators.

An estimated 26,500 persons received pesticide safety education training in 2002 from programs that are not designed for the applicator certification and licensing program.

This audience includes master gardeners, residential users of pesticides, and other non agricultural and non professional users of pesticides.

98 % of applicators receiving training on Natural Areas Weed Management reported information received in training would improve their understanding and skills for performing the duties of their natural areas weed management profession. 91% reported the training was helpful for the Natural Areas Weed Management certification examination.

Agent reports following applicator training indicate 85% of training participants will adopt a practice change as a direct result of the educational program. Observations reveal an 85-90% adoption rate.

Agents in several counties report persons who attend their applicator training programs have a high pass rate on the certification exams compared to those persons who do not attend training.

Pest Control Operators who attended a Lawn and Ornamental applicator training program report they intend to “learn more about pesticides,” “spray less,” “use pesticides only when needed,” and “monitor pests more carefully.”

County Extension Office promoted the state’s Clean Sweep program for collection of cancelled, suspended or unusable pesticides in the county. Over 10,000 pounds were collected from eligible sites.

A survey of school and public employees by a county agent two years after a pesticide training class provided the following: Of the persons responding 97% dispose of pesticides properly, 92% wear personal protective equipment, 81% believe they are mixing chemicals more exactly, 13% read label for before using pesticides, and 93% believe they have reduced their own and the environment’s potential harmful exposure to pesticides. The respondents also reported 75% believe these practices reduce department or business costs.

*89% of Spanish speaking participants in Worker Protection Training conducted Spanish by a multi county agent reported an increased knowledge of how to prevent pesticide contamination at the family sites. Agent determined this increased knowledge through an oral survey of the participants.

Success Stories

Licensed pesticide applicators in one county report information provided by county extension program prevented them from being in violation of state law and subject to penalties imposed by the Florida Department of Agriculture and Consumer Services. The information provided allowed them to secure the appropriate pesticide materials and equipment.

One county extension office reports the shared knowledge gained about pesticide storage between several county departments attending at training session for the County Environmental Management Department provided possible ways to improve their storage areas. Improved communication between county departments on pesticide license and safety was also gained from the training.

issues occurred.

As a result of receiving pesticide applicator training in Spanish, several applicators in at least two counties reported being able to pass the state applicator certification exam and

receive higher pay (estimated in this case to be 50-75% higher) as a result of being qualified to obtain a state pesticide applicator license.

*In Spanish pesticide applicator training classes conducted by the agent, younger participants expressed a strong interest in continuing to improve their English and recognized that education should be a priority in order to have more opportunity in agricultural employment. Following the his Worker Protection Standard training, the agent reports farm managers told him of seeing some attitude changes in workers. The managers now want to allocate more time for training. Previously some employers considered training to be a requirement to fulfill a regulation.

The Urban Entomology Extension Specialist reports significant success in generating support from the Florida Department of Agriculture and Consumer Services and the pest control industry for the development of a termite training facility. The state's pest control industry is supportive of long term plans to also develop a training facility for General Household Pest and Lawn and Ornamental Pest Control applicators .

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. In some counties where a large number of the clientele is Hispanic, programs and publications are done in Spanish. Some agents appear on Spanish radio and television. Agents sometimes do direct or personal contact with minority growers, nurseries or other individuals to promote programs. Agents report using Equal Opportunity and ADA statements on meeting announcements. Some counties report using minority newspapers when available. Meeting sites are selected where there is commonality and local support.

Source of Federal Funds: Smith-Lever

Scope: State specific,

SMP-FL124

Title: Prevention and Preparedness: Agricultural Safety and Disaster Management

Calendar Year: 2002

Critical Needs: 15, 29, 35

National Goals: 1, 4 and 5

Key Themes: Bioterrorism, Home Lawn and Gardening, Managing Change in Agriculture, Risk Management, Small Farm Viability, Urban Gardening, Drought Prevention and Mitigation, Hazardous Materials, Weather and Climate, Wildfire Science and Management, Child Care/Dependent Care, Farm Safety, Home Safety, Workforce Safety, Youth Farm Safety

Major Program Objective:

Prevention: The overall objective for the Prevention part of FL124 is to inform people about ways to be safe and secure, and thereby reduce the number of deaths, injuries and occupational diseases, particularly to agricultural workers and their families. We seek to build a safety infrastructure for Florida through five activities: training of workers, training of students, publications, networks, and linkages. We are increasing our safety programming to encourage adoption of safe practices among employees and clientele.

Every employee or client should be exposed to a safety tip or safety practice on a regular basis.

Preparedness: The objective of the Preparedness part of FL124 is the mitigation of losses, both in life and property, due to disasters of any kind in Florida. To accomplish this, Florida Extension has several programs and linkages in place.

Summary of County Programs for Clientele:

Florida's county Extension faculty are very safety-aware and present a great deal of safety information to a wider variety of audiences, either as stand-alone programs or as part of programs on other topics. We're working to make safety the first thought of every worker, manager and owner in Florida, and county faculty made tremendous strides toward that goal in 2002.

We've summarized the impact of FL124 in five areas:

- Training for the People of Florida
- Putting the "Cooperative" in Cooperative Extension Service: Bringing Agencies Together
- Reaching Small Communities and Rural Populations
- Safety in Small Doses: Maintaining Awareness
- Reaching Youth

In each area, we've provided exemplary stories which, in most cases, represent many similar efforts throughout the state.

Training for the People of Florida – The core of our program is direct training of Florida's citizens. Extension agents throughout Florida conduct dozens of training sessions related to either safety or disaster preparedness each year. They are supported in these efforts by an extensive publication effort including summaries of OSHA standards, a Safety Tractor Operations series, the Safety/Jeopardy safety training game and the award-winning publications and videos in the Disaster Handbook series. This information is distributed both through UF Extension's our Web-based publications system, called EDIS, and through our farm safety and disaster preparedness Web sites.

Putting the "Cooperative" in Cooperative Extension Service: Bringing Agencies Together – One reason that Extension is so powerful is because our mission is educational. Another reason is that Extension is well established and has a large clientele. So, when Extension partners with other agencies, a new opportunity is created. To create programs in 2002, Extension agents coordinated activities with many other agencies at the county, state and federal levels.

Reaching Small Communities and Rural Populations – Large areas of Florida are sparsely populated. These places don't often appear in popular media representation of Florida, but the people who live in these areas think of them as the "real" Florida. In addition, almost every county in Florida has a rural or agricultural population. The state is fortunate to have support for a state safety specialist and to have a very active safety program that reaches into all parts of Florida. Some programs that have reached these populations are highlighted below.

Safety in Small Doses: Maintaining Awareness – Safety and disaster preparedness messages must be refreshed continuously; frequent, small reminders are very important. Many common tasks involve hazards, and a moment of carelessness can lead to a life-altering event. Similarly, preparedness is like insurance: if you're lucky, you'll never use it – but you should have it anyway.

Reaching Youth – One of our best opportunities for changing societal attitudes and practices with regard to safety or disaster preparedness is to get the message to young people. They take these messages home, and often motivate changes in their families.

Summary of Impacts for Clientele

- Over 1500 horse owners in Broward and surrounding counties received training in what to do with their livestock in the event of hurricane. This effort was supported by a special video "What About My Horse? A How-To Guide to Prepare Your Horses and Stables for Hurricanes."
- Training was provided to Broward County police and fire fighters in the proper use of emergency rescue harnesses for horses.
- Broward County Extension created a Web site where horse owners can register their animals and provide a detailed description. As of December 2002, over 50 owners had created records on this site.
- Safety training conducted through the UF/IFAS Citrus Research Center in Lake Alfred, Florida reached 250 workers.
- An annual safety workshop was again given for municipal grounds maintenance workers in Marion County. Also offered was chain saw safety, attended by over 70.
- Disaster-related materials available from Florida Cooperative Extension was presented to a large audience at the Governor's Hurricane Conference in Tampa, Florida in June 2002.
- Safety training was provided in both Spanish and English for over 3700 agricultural workers, managers and owners in Miami-Dade County.
- Seventeen tractor safety sessions were conducted by Palm Beach County Extension staff reaching over 1400.
- Farm Safety Day Camps were conducted in three Florida counties reaching over 900 children and adults.
- Alachua County Extension participated in the annual Get Ready! Hurricane Awareness Expo, which was attended by approximately 2000 children and adults. Educational activities were created to increase the interaction between exhibitors and attendees.
- Fourteen medical residents in the Florida Agromedicine Program were treated to the fifth annual Farm Field Day, during which the residents are taken to various agricultural

operations for a first-hand look at the environment, the equipment, the operations, and the hazards.

- Over 100 people from a variety of federal and state agencies participated in a workshop hosted by Miami-Dade Extension on the topic of flooding and agriculture in the county. In attendance was USDA Deputy Under Secretary For Natural Resources and Environment, R. Mack Gray.
- Over three hundred people plus the IFAS mail list of over 1100 faculty and staff receive our e-mail newsletter, Safety News and Notes, which comes out periodically every few weeks. Six issues were sent out in 2002
- SMP 124 participated in state 4H events this year and supplied judges for the safety competition.
- SMP 124 also publishes some materials through the National Agricultural Safety Database. Twelve publications in our Safer Tractor Operations series have been published through NASD. The site receives millions of hits per year and its materials are widely accessed and used.

Success Stories

- For over 20 years, Extension agents in Lake and Orange counties have been conducting tractor rodeos. The event involves a half day of classes on safety, followed by lunch, and then the tractor competition on a specially designed driving course. Participation in this event fulfills OSHA requirements for employers with respect to tractor operators and directly impacts their worker compensation insurance premiums by lowering premiums for companies in compliance.
- Broward County has been a leader in developing disaster materials. Under the leadership of Mary Peters, Broward County Extension undertook a wide range of programs in the area of Large Animal Disaster Preparedness. Peters chairs the Broward County Large Animal Disaster Committee, which provides a point of coordination between Extension and County government. Through this committee, a special video was produced "What About My Horse? A How-To Guide to Prepare Your Horses and Stables for Hurricanes." Training in this topic was provided to over 1500 horse owners from Broward and surrounding counties. A special workshop on large animal rescue was offered, which was presented by the Clemson Extension Large Animal Rescue Team (LART). Also, special extraction harnesses were purchased, and training was provided to firefighters and police offices in their use. Peters' group has also created a Web site where owners can register horses to make it easier for horse and owner to be reunited after a disaster.
- Hardee County is a focal point for safety training for citrus workers. Every year, Stephen Futch delivers safety presentations. This year, he conducted three safety sessions in which over 250 workers participated.
- Agents work to make safety training a regular event, and there are many annual safety training opportunities. One of these is in Marion County where David Holmes coordinates and helps conduct safety training every year for municipal and commercial

grounds maintenance workers. Another of Holmes' safety programs this year was a chain saw safety workshop, a half-day event which had over 70 participants.

- Florida has a very diverse population, and a large number of Spanish-speaking citizens, including agricultural workers. At the Miami-Dade Extension Office, Carlos Balerdi provides safety training on pesticides and general worker safety in both English and Spanish for the benefit of the many farm workers, managers and owners whose first or only language is Spanish.
- Since Hurricane Andrew in 1992, Don Pybas of Miami-Dade Extension has taken hurricanes and flooding very seriously. Flooding has always been a danger in South Florida, which is very low and flat, but in the 1990s, a series of hurricanes and severe rain events caused major agricultural losses. Pybas has become a leader in bringing Extension resources to bear on this problem. He's involved with several projects to get agricultural producers better and more timely information so that their planning helps mitigate potential losses.
- Agriculture remains one of America's most dangerous occupations, and its most dangerous tool is the cornerstone of many ag operations – the tractor. Tractor incidents, including collisions and overturns, kill more farmers than any other single cause. The statistics have improved over the years due to the requirement of rollover protective structures (ROPS) on tractors and through widespread training and awareness on the parts of workers and managers. Laura Andrews of Palm Beach County has made this a special emphasis. She conducted 17 tractor safety sessions in 2002 that reached almost 1400 operators. Tractor safety is the result of three components: safer working environments, safer equipment, and safer operators; none of these can be taken for granted.
- Another annual safety event is the tractor and pesticide training seminar conducted by William Oswalt in Polk County. One feature of this event that draws participants is the tractor rodeo, in which operators must demonstrate their driving skills under the watchful eyes of an expert panel.
- Three counties hosted Farm Safety Day Camps in 2002: Jackson, Marion, and Palm Beach. Over 900 children and adults participated in these programs. Each one of these camps depends on the efforts of local Extension to create an event in which numerous other groups participate.
- Alachua County Emergency Management coordinates an annual hurricane awareness event called Get Ready! Alachua County Extension Director, Bill Brown, and State Extension Agricultural Safety Specialist, Carol Lehtola, have participated in this event in each of the three years it has been held. In addition, they participate in the planning of the event and preparation of educational materials to help children and adults get more involved in the event rather than just browsing the booths.
- Carol Lehtola, State Extension Agricultural Safety Specialist, planned a Field Day for medical residents in the University of Florida's Agromedicine Program. This was the fifth year for this event, which takes the residents out to working farms and ranches and introduces them first-hand to the environments, the hazards, and the workers. Very few medical residents – even those with emergency room experience – have seen the kind of mechanical trauma that can occur in an agricultural incident, so it is a very revealing and

interesting day for them. Feedback from the residents consistently rates the day as informative and valuable.

- Don Pybas, Miami-Dade County Extension Director, presented a seminar on agriculture and flood issues to about 100 people drawn from several county and commercial groups. One of the attendees was USDA Deputy Under Secretary For Natural Resources and Environment, R. Mack Gray. Dr. Gray also participated in a tour and special seminar conducted by Pybas. Flooding is a critical issue in Miami-Dade County, which is virtually at sea level with very little variation in elevation.
- We keep the message out there with our e-mail newsletter “Safety News and Notes,” sent periodically to an extensive list of Extension agents and safety professionals both in and out of Florida.
- SMP 124 participates in 4-H State Congress each year. We provided judges for the Safety Demonstration competition.

Outreach to Minorities

Florida and its agricultural industry are employing an increasing number of Hispanic workers. SMP 124 is committed to supporting worker training and disaster preparedness for these citizens through our ongoing program of translating materials into Spanish. In service of this goal, numerous safety training opportunities are provided in Spanish. Also, we continue to have safety materials translated into Spanish whenever resources and personnel permit.

SMP 124 also supports efforts at Florida A&M University, and 1890 land-grant institution, to reach minority farmers in the sparsely populated Florida panhandle.

Awareness of disability issues is integrated into our university courses in agricultural safety.

Source of Federal Funds: Smith-Lever

Scope: state specific, multi-state

SMP-FL128

Title: Sustaining the Economic Viability of the Florida Dairy Industry

Calendar Year: 2002

Critical Needs: 2, 14

National Goals: 1

Key Themes: Adding Value to new and old agricultural products, Agricultural Competitiveness

Major Program Objective:

Provide educational programs and technical assistance to Florida dairy farmers in the areas of:

Reducing environmental stress

Improvement of business management practices

Cost-effective nutrition

Use of forages and grazing for profit

Reduction of losses from mastitis, foot disorders & other disease

Use of DHI record information with emphasis on graphics and management evaluation

Develop uniform formats for collecting and reporting financial information from Florida producers

Hold meetings and training sessions for campus and county faculty to coordinate delivery of consistent financial service programs

Enroll Florida dairymen to participate in financial reporting analysis program

Summarize and report financial data to Florida dairy industry

Meet with dairymen to evaluate performance in comparison to state benchmarks

Summary of County Programs for Clientele:

All Dairy agents participated in gathering on farm financial data on 27 dairies state wide, the agents gathered all the data it was analyzed by specialists in Gainesville and the results given back to the dairymen by the agents and the specialist. The Agents also fielded other financial questions, such as return on investment for building new facilities or remodeling existing facilities, this service is very important to our dairymen.

County faculty have been instrumental in keeping up with livestock waste management issues from state and federal agency's, DEP, FDACS, SFWMD. Ten meetings have been held in the Lake Okeechobee area alone.

Agents and specialists work together also in the areas of dairy cattle nutrition, not only individual dairymen's problems but in transmitting specialists research on carbohydrate's in preventing acidosis in dairy cattle, other ration formulations to not only provide the dairy cow the best ration for milk production and the cows health and her output of nutrients into the environment

The DHIA program provides the dairymen with production records, both agents and allied industry people are trained in this area which provides the dairymen with workable records to make management decisions.

Agents select dairies who request to have milking procedures videos made on their individual dairies for only their dairy in both English and Spanish, these videos are then edited by a specialist and returned to the counties for distribution.

Summary of Impacts for Clientele:

DHIA information has been provided to 422 participating dairy farms in a comprehensive and complete form. Data is collected during on-farm visits by DHIA personnel. The data are entered into laptop computers, summarized and immediate management reports printed on site. A data file is transmitted directly to the DHIA computer system at DRMS at NCSU in Raleigh NC. There these data are edited and audited, collated with data from USDA and the participating milk analysis laboratories. Data from over 14,000 cooperating herds are then pooled and made available for benchmarking, comparison, research projects and other educational efforts. One new feature which is being developed, called DAIRYMETRICS, makes comparison of data to selected cohort averages via world-wide-web access. Herds on DHIA use the information to improve herd performance. Comparison of herds in Florida shows over 3,400 pound advantage for participating herds.

Upon presentation of their 2000 DBAP report saw that their purchased feed costs and machinery costs were 20% and 78% higher than the average of other DBAP dairies. After recommendations on ways to lower the costs in these two areas the dairy was able to lower its purchased feed costs from \$8.76 to \$8.11 a decrease of 7% and their machinery cost from \$2.03 to \$0.87 a decrease of 57%. Overall this dairy was able to increase its net farm income from a loss of \$42,894 in 2000 to a profit of \$228,646 in 2001. Showing an increase of \$271,540 in net farm income an increase of 118%. Overall 6 dairy operation (85%) of the 7 that participated in the DBAP program this year showed an increase in net farm income totaling over 1.06 million dollars.

Four of the dairies have been selected as demonstration sites for installation of the latest dairy BATs. The proposals have been submitted and are under initial review by the dairymen. 258 dairymen have adopted IFAS recommendations regarding animal health, heat stress abatement, nutrition and waste management. 24 persons were certified as AI Technicians. The DBAP data of one local dairy shows an volume growth per year of 2.6%, equity growth of \$0.9 million, debt reduction of 62% as a result of enterprise changes resultant from 7 years of DBAP data analysis and agent recommendations. DBAP statewide: The net farm income of one dairy rose from \$-13,053 in 1997 to \$1,082,576 in 1999. Feed cost reduction on another dairy helped total net farm income from operations to be \$784,686 higher than the previous year. Total feed costs were reduced \$.5 million on another dairy. A grant has been received to determine the true cost of dairy waste handling systems on Florida dairies.

Working with the dairy farmer and his nutritional consultant, we determined that some manner of antinutrient in the cottonseed or sorghum silage was causing the health and production disorders. We recommended removing these feeds from the diets and reformulated the rations accordingly. After this change, the cow's production increased by 5 pounds of milk per cow per day, and has increased by an additional 5 pounds per cow per day since then. With 300 cows, and an average increase over time of 10 lb per cow per day, and a milk price of \$15 per 100 lb of milk, the farm is earning an additional \$3,150 per week.

Success Stories

Four dairies implemented new technology to better cool cows during summer. Sprinkler's in the holding areas of parlors (installed on one dairy), and water sprinkler's added to return traffic lanes from parlor to barns (installed on two dairies). Two dairies built new facilities which also reduced somatic cell counts in these herds. Milk production on these

four dairies did not dip in the summer months as they had in previous years when these practices were not used. Impact, 10% more milk produced.

Developing multi-lingual milking procedures video tapes

The twenty one dairies are now able to train new help and retrain new help in the proper way to milk cows on their dairy. On more than one dairy's, the owners had no way of communicating with the help on how to do herd health procedures, they had to do much all the work themselves. Because antibiotics are often used and they can get into the milk supply if withdraw times are not correctly followed, the milk will be destroyed and no payment will be made, if this milk would contaminate other milk in a tanker truck of milk, the costs could be \$10,000.

Outreach to Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs.

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL129

Title: Profitable and Sustainable Sugarcane Production in Florida

Calendar Year: 2002

Critical Needs: 5, 14, 16, 22, 25,29, 31

National Goals: 1 and 4

Key Themes: Agricultural competitiveness, agricultural profitability, biotechnology, GIS/GPS, plant germplasm, precision agriculture, tropical agriculture, biodiversity, integrated pest management, natural resources management and nutrient management.

Major Program Objective:

1) To provide educational leadership and support to Florida sugarcane growers in the adoption of sustainable practices that will maintain or improve commercial production practices while minimizing environmental impacts. 2) To provide information concerning sustainable commercial production practices that will be cost-effective, including practices such as fertilization, crop protection, and rotational crops. It is anticipated that 40% of the growers will adopt such practices within the next four years.

Summary of County Programs for Clientele:

Training done under USDA national goal 1, an agricultural system that is highly competitive in the global economy. Key themes: Agricultural competitiveness, agricultural profitability, biotechnology, GIS/GPS, plant germplasm, precision agriculture, tropical agriculture.

Multiple training seminars were held during the year relating to the production and sustainability of sugarcane including, development of BMP's, rodent control, run-off and water and soil quality, weed control and the introduction of new cultivars. **Summary of**

Impacts for Clientele and Success Stories:

Objective 1. To provide educational leadership and support to Florida sugarcane growers in the adoption of sustainable practices that will maintain or improve commercial production practices while minimizing environmental impacts.

This addresses USDA national goal number 4, greater harmony between agriculture and the environment. Key themes: biodiversity, integrated pest management, natural resources management and nutrient management.

Sugarcane production has increased considerably in the state of Florida since 1960. The sugarcane acreage harvested in the Everglades Agricultural Area (EAA) in south Florida increased from 320,700 acres in 1980 to 466,500 acres in 2001/2002. Environmental concerns with water quality, removal of large previously cropped acreage for storm water treatment, and subsidence of muck soils in the Everglades have been playing an increasing role in reducing the percent acreage planted to organic soils. Concerns regarding phosphorus levels in the Everglades National Park have led to increasingly stringent requirements on P levels in agricultural waters.

The FL-129 design team has been instrumental in grower adoption of sustainable practices that will contribute towards maintaining acceptable production and will minimize environmental impacts. These practices include integrated pest management, calibrated soil nutrient tests, and precision agriculture. The implementation of best management practices (BMPs) for reducing P loading in the EAA proposed by the University of Florida will greatly reduce the amount of P in agricultural drainage waters.

Some examples of design team impact:

The Everglades Soil Testing Lab (ESTL) continues to provide improved service to the UF/IFAS agricultural industry and grower clientele. From 1991 through 1995 (pre-BMP regulatory period), soil sample submittals averaged 5,709 samples per year. In recent years, growers have increasingly used soil sampling as a tool in their efforts to adopt economically and environmentally sound nutrient management strategies for agriculture. In the recent 5-year period (1997-2001), soil sample submittals averaged 8,123 samples per year, representing a 42.3% increase relative to the pre-BMP period.

The design team has implemented a pest control program using barn owls as a means of sustainable rodent control in sugarcane. One NATURE episode on PBS, entitled “Extraordinary Birds”, featured the EREC’s barn owl program and grower participation in this program, posing a very positive view of agriculture with regards to environmental stewardship. “Extraordinary Birds” aired on November 10, 2002, and was watched by millions of PBS viewers.

Four workshops were conducted to inform managers of the latest BMP practices to reduce P export from their farms. The workshops were attended by approximately 220 participants. The BMPs covered in the workshops included Soil Testing and Soil Fertility, Fertilizer application and Spill Prevention, Particulate P Transport, and Farm Hydraulics and Drainage.

As a result of design team efforts, the following Success Stories have been documented:

Improvements in computerization, staff training, lab management, and analytical instrumentation continue to support a 4-day soil sample turnaround time (compared to 7 to 14 days in 2000) in the ESTL. Furthermore, the establishment of an electronic database allows for improved service delivery to clients, such as the computerized generation of billing invoices and emailing of soil-test results directly to growers.

Grower awareness has increased regarding the many agronomic and disease resistance benefits that accrue with silica fertilization. This practice is particularly important for sugarcane-rice rotations, with both crops widely recognized as silica accumulators that readily exhibit favorable responses to Si amendments. From 1991-1995, Si analyses averaged 339 per year, but during the 1997-2001 period, Si requests averaged a 14-fold increase to 4,787 per year.

In cooperation with Cornell University's Birdhouse Network, design team members have created a "Barn Owl Webcam" installed in an active barn owl nesting box at EREC. The only nocturnal bird featured on the website, the EREC webcam has been one of the most popular selections on the network. Upon visiting the Barn Owls at EREC, a board member of the Whitefish Point Bird Observatory noted that the tour had "changed my perspective of agriculture being sterile and not supporting any wildlife."

As a result of best management practices proposed by the design team, the amount of P measured in agricultural drainage waters has greatly declined. The P load discharged from the EAA basin in 2002 with BMPs in place was 55% lower than predicted using Water Year 2002 rainfall data.

Objective 2. To provide information concerning sustainable commercial production practices that will be cost-effective, including practices such as breeding improved cultivars of sugarcane, improved fertilization recommendations, and rotational crops.

This addresses USDA national goal number 1, an agricultural system that is highly competitive in the global economy. Key themes: Agricultural competitiveness, agricultural profitability, biotechnology, GIS/GPS, plant germplasm, precision agriculture, tropical agriculture.

Sugarcane is the most important row crop in Florida, with an estimated value of \$750 million in 2002. The Everglades agricultural area in Florida produces 25% of all sugar grown in the US. This tremendously important sugarcane production area is dependent on a continuous supply of new sugarcane cultivars to both improve agronomic yield and increase resistance to diseases. Most of the sugarcane in Florida is produced on the muck soils of Palm Beach County, but an increasing percentage is grown on the sandlands of Hendry and Martin Counties. A problem that sandland sugarcane growers face is considerable variability within fields, which results in drastic yield reduction in those areas. Knowledge on geographical location of these areas and on the factors that contribute to this variability, combined with new technologies such as precision agriculture, will allow growers to have a more cost-effective production while reducing environmental impacts.

The FL-129 design team is continually providing sugarcane growers with new technologies and sound management practices in order to be efficient and profitable. Design team members collaborate with USDA-ARS at Canal Point and the Florida Sugar Cane League to produce new "CP" sugarcane clones adopted by growers.

Some examples of design team impact:

Two sugarcane variety release committee (VRC) field days were held in 2002 in conjunction with USDA-ARS and the Florida Sugar Cane League. This participatory process involves a 23-person committee composed of representatives from grower, industry and research organizations. Three CP clones were released over the last 2 years. Recently-released clones CP 89-2143 and CP88-1762 are already grown on 43,490 acres in the EAA.

The sugarcane handbook, a compilation of over 60 fact sheets on sugarcane agronomy, economics, pests and diseases and water quality was completely revised and put online on the EDIS system in 2002. A mass mailing from the design team to sugarcane growers in August, 2002 informing them of the handbook contents increased web hits on the articles by 89%.

Due to workshops and seminars conducted in the previous year, Precision Agriculture Techniques are becoming more widely employed by sugarcane growers. At least four major growers are variable rate applying lime to their fields according to pH maps constructed using precision agriculture techniques. This makes soil pH variability less of a problem in their production systems.

As a result of design team efforts, the following Success Stories have been documented:

The design team, in collaboration with USDA-ARS and FSCL, plays an integral part in the release of the CP sugarcane clones for the sugarcane industry. These clones are currently grown on 75% of the entire sugarcane acreage in Florida, and generate \$550 million annually in farm income.

A Hendry County grower reported that the potassium application to his fields (> 9000 acres) has been reduced by at least 40% due to results of research conducted by IFAS and disseminated at grower's meetings.

Outreach To Minorities:

Research and Extension programs conducted by the design team were offered to all interested parties without regard to race or gender.

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL131

Title: Quality and Management of Florida State Diagnostic Services

Calendar Year: 2002

Critical Needs: 7, 16, 17, 19, 25, 27

National Goals: 1, 2 and 4

Key Themes: Agricultural Competitiveness, Agricultural Profitability, Bioterrorism, Emerging Infectious Diseases, Invasive Species, Niche Market, Ornamental/Green Agriculture, Plant Health, Plant Production Efficiency, Tropical Agriculture, Food Quality, Food Safety, Integrated Pest Management, Pesticide Application, Water Quality

Major Program Objective:

The purpose of this program is to provide the framework for integrated management of the diagnostic services provided by the Florida Extension Diagnostic Services and to enhance the quality of services provided. The program will seek to enhance services by coordination of the diagnostic services at the various state locations and between specialties and to link these services by mutual effort. A major component of the program will involve the education and training of county extension agents and the clientele to evolve the most effective usage of the services including interpretation and application of diagnostic results.

Summary of County Programs for Clientele:

Timely and accurate identification of plant pests and management recommendations as the first step in IPM were provided to growers, county agents, IPM providers, researchers and homeowners in Florida through FL131 program. Extension specialists, diagnosticians and county agents provided correct diagnosis of pests, training, educational materials to clientele in Florida.

The newly developed Web-based distance diagnostic system (DDIS) provided several new features and greatly enhanced services compared to the previously used stand-alone system. Feedbacks from extension agents were very positive for the new system. The system allows users to submit digital samples obtained in the field for rapid diagnosis and identification of weeds, diseases, and insects. DDIS provided an environment for agricultural extension agents and specialists to share information on plant insects, diseases and weeds. The system creates a digital image library with associated site, crop, and pest or disorder data that could be used in educational programs, assisted diagnosis, and data mining.

An extension of DDIS (in part) was the awarding of CSREES to UF/IFAS (Florida) of the lead state status for crop bio-security surveillance and communications through the Southern Plant Diagnostic Network (SPDN). Some FL131 members are serving in this project. Five land grant universities in the United States have been designated as the coordinators for their Plant Diagnostic Regional Centers for the U.S. Plant Disease Surveillance and Detection Network called the National Plant Pest and Disease Diagnostic Network. A \$900,000 homeland security grant from U.S. Department of Agriculture (USDA) providing initial funding for a new Southern Plant Diagnostic Network (SPDN) at the University of Florida (UF) coordinated by IFAS. The University of Florida is establish this network with 11 other southern states and one U.S. territory (Alabama, Arkansas, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, Texas, Virginia) to improve regional capabilities for rapid and accurate identification and diagnoses to safeguard against newly introduced and re-emerging pests and pathogens, genetically modified pathogens, pesticide-resistant pathogens and natural changes in endemic organisms.

Several web pages have been updated regularly in 2002 to better communicate and connect with counties and the target audience.

Several presentations made in Master Gardner Training Programs on plant pest diagnosis.

Presentations were given and multimedia database was initiated on household and structural insect pests.

Summary of Impacts for Clientele:

Plant disease clinics, the nematode assay laboratory and research education centers processed 8,813 nematode and disease samples.

By providing accurate diagnosis of pests on plants, the number of application of unnecessary pesticides was reduced.

Disease management and diagnostic skills of extension agents, growers and master gardeners have been enhanced through field sample diagnosis, field days, seminars, workshops, and publications. Specific disease problems have been brought to the attention of commercial ornamental and vegetable growers, and management strategies were implemented by these clientele for more profitable production.

Pests problems are often misdiagnosed. By providing accurate diagnosis of nematode disorders on plants we reduce the number of applications of unnecessary pesticides. This

saves money for our clientele, reduces environmental impacts resulting from excessive pesticide use, and preserves the efficacy of pesticides by reducing the chance of pesticide resistance. By identifying effective management options in our recommendations we help insure the economic viability of our green and agriculture industries.

Databases will provide a resource for those trying to identify pests and household and structural insect pests or the damage they cause. This should reduce the amount of time spent on positive identifications and improve effectiveness of insect diagnostics by county agents and other extension personnel, Master Gardeners, pest management professionals, researchers, and homeowners.

SPDN will :(i) establish a secure, regional network for the detection and diagnosis of plant health problems, (ii) extend and support sound public policies, implement rapid and accurate diagnoses, management and response strategies, and (iii) provide leadership and training in Florida and southern region of US.

Success Stories

DDIS project is a Success Story of team efforts from agents, specialists, and IFAS/IT staffs. In 2002, the project was completely redesigned as a Web-based system. Now DDIS has been deployed in 44 out of 67 counties with a microscope or stereoscope, and all counties are equipped with a digital camera that can participate the program. Within second half 2002 about 300 hundreds digitals samples (over 1200 images) were received for diagnosis and identification. With the new system, through interactions on the Internet between extension agents and specialists, problems can be quickly communicated and assessed. Specialists around the state can perform diagnosis and identification and provide best management practice recommendations to the users. Turnaround time is reduced from days, or sometimes weeks to hours compared to traditional, manual techniques for submitting biological samples. The system has potential economic impact on saving plant by quick identification. Also, an extensive archive of images with associated data is built statewide. These archived images become a reference to aid in the identification and understanding of weeds, insects, and diseases.

The South Florida Vegetable Pest and Disease Hotline, which began in 1998 as the Southwest Florida Vegetable Pest and Disease Hotline is now entering its fifth year of publication and has emerged as the premier vegetable pest and disease newsletter in Florida. The 15 - 18 page hotline is produced bi-weekly during the South Florida Vegetable season from August to June and now reports on the occurrence of vegetable insect and disease pests on over 120,000 acres of vegetables in south Florida. The hotline is sent directly by e-mail fax and surface mail to over 1200 subscribers and is also reproduced and distributed by other extension agents and many other companies and businesses in Florida and throughout the country. The hotline has been critically acclaimed by the vegetable industry and is recognized as the definitive source of pest and disease information for south Florida. The hotline receives strong industry support and has received more than \$24,000 in contributions from sponsors since it's inception. The hotline draws on thirty two collaborators from the vegetable industry and UF/IFAS Extension provide up to date information which is collated and provided to users every two weeks during the south Florida vegetable growing season

An extension specialist and diagnostician worked with a local nursery that produces potted palms that had a disease problem on approximately 40% of his plants. They diagnosed the disease problem, recommended cultural and chemical control techniques. The grower implemented 100% of the recommendations and was very satisfied with the service. They diagnosed plant samples for two leaf spot diseases for a 100 acre

commercial nursery that adopted 100% of our cultural and chemical recommendations and was extremely happy with the services provided.

Several insect samples from the clinic were sent to taxonomists for identification or verification. Four new insect records were established from these samples: 1. 4/15/02 New host record: *Euwallacea fornicotus* (Scolytidae) on *Delonix regia*. 6/20/02 New DPI host record: *Heniberlesia diffinis* (Diaspididae) on *Swietenia mahagoni*. 10/28/02 New DPI host record: *Montandoniola moraguesi* feeding on *Holopothrips* sp. on *Tabebuia pallid*. 10/28/02 Possible new record (status unknown): *Catinathrips* sp. (Thripidae) on *Nolina recurvata*.

Outreach To Minorities:

Educational programs and services are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Notification sent of programs and meetings in local newspapers and news letters. Programs were held statewide in different geographic locations and at diverse sites accessible by all people.

Source of Federal Funds: Smith-Lever

Scope: Multi-state, state specific

SMP-FL135

Title: Food Safety, Quality and Technology in Florida

Calendar Year: 2002

Critical Needs: 16, 19

National Goals: 1 and 2

Key Themes: Bioterrorism, Food Handling, Food Quality, Food Safety, Food Security, Foodborne Illness, Foodborne Pathogen Protection, HACCP

Major Program Objective:

The mission of the State Major Program FL135 is to focus and coordinate extension food safety and technology programs in the State of Florida. This effort will include the participation of county extension faculty, on- and off-campus state faculty, government, and industry. The overall goal is to increase the amount, quality, and accessibility of information available to our constituents.

SMP FL135 will employ a coordination team to ensure seamless and effective coverage and integration of the various food safety-related efforts. This team will function as the administrative arm of FL135, and will be responsible for performance and accountability reporting. Within FL135 three separate, but interconnected design teams, will focus on the critical areas of consumer, retail, and processing food safety and quality.

The leadership for the coordination team will rotate every two year, and be sourced from the members of the individual design teams. Members of the coordination teams will be recruited as needed for their expertise in individual areas covered by the mission of the SMP.

Programmatic activities and materials will largely be the responsibility of design teams that function as the primary work teams of the program. Due to the complex nature of the food industry, FL135 will be supported by three major teams. Each of the design teams will have individual goals, objectives, and deliverables that, as parts of the total program, seamlessly meet the stated mission of FL135. These teams are designated as follows:

Consumers

Retail

Commercial Processing and Handling

Summary of County Programs for Clientele:

Summary of FL-135

FL-135 is divided into three distinct units, Consumer, Retail and Processing. Each sub-group targets specific clientele. Described below are a summary of county programs conducted for cliental chosen from the many reported for 2002. The summaries are meant to be a representation of the work performed in the counties but does not list of the individual programs which were conducted.

Consumer Team:

In-service training for county agents is conducted each year to update their knowledge on the current issue dealing consumer related food safety issues. This training ensures that the county agents have the most current information to pass their clientele.

Cooperation between FYCS, FSHN, Hort. Science and other departments have led to several interdisciplinary training opportunities which have been recorded under FL-107 and FL-110. These activities included GAPs training, post-harvest training and consumer safety workshops.

One of the major programs conducted is the Food Safety Training and Certification Workshops which is conducted in of 20 counties in the state. The program gives food handlers the opportunity to learn the most important aspects of food safety through a 6-hour program. This training prepares them to take the National ServSafe Food Protection Manager's Certification exam, offered immediately following the program.

During the second year of the FAMU CESTA Small Farm Programs, more than one thousand people (1,000) participated in the statewide education and hands-on training sessions; including participation from across Florida, Georgia, Alabama, Louisiana, Virginia, and Missouri.

Food Safety and Quality Program ServSafe Trainings - Approximately 523 food establishments are currently on our mailing list. Twenty-seven individuals have participated in the program received their certification.

Food and Nutrition related classes and workshops continue to help improve the behavior and lifestyle change of people within in our state. Based on evaluations and responses received, the objectives have been met. Responses and evaluations are continually complied and review to assure the information being provided reflects the needs of the communities.

Master Food and Nutrition Education Program recruits and trains Master Food and Nutrition Educators to provide preservation/nutrition/preparation educational assistance to clients. This program is conducted in numerous counties in the state and expansion is planned for 2003.

Culinary Camp for Kids is a program designed to teach youth culinary knowledge. Pre- and post evaluation scores of basic food safety, nutrition and food preparation information taught in the four-day culinary school show an increase in basic knowledge as a result of the training.

Retail Team:

No county programs for clientele information are available for the retail section of FL-135. As this program will initiate in 2003, all retail efforts have been reported under the consumer and/or the processing teams.

Processing Team:

Cooperation between FYCS, FSHN, Hort. Science and other departments have led to several interdisciplinary training opportunities which have been recorded under FL-107 and FL-109. These activities included GAPs training, post-harvest training and consumer safety workshops.

The Florida A&M University College of Engineering Sciences, Technology and Agriculture Small Farm Programs is a participatory, multidisciplinary, training, education, research and development program designed to help underserved populations, small farmers, farm workers, and their families.

The Annual Citrus Processing Short Course has served as the major technical meeting for scientists, marketers and managers of the juice and beverage industry for several decades. The conference, an official UF/IFAS event, is self-sustaining financially and receives significant industry sponsorship and support. Other citrus related activities include Packinghouse Day and Processor's Day. The focus is on the needs of specific audiences within the citrus industry. Programs such as these provide venues for extending the research of UF/IFAS scientists, as well as other collaborators.

Pesticide training programs continue to be a vital function of our county personnel for reaching our clientele involved in vegetable crop production. Programs are attended by a diverse cross-section from the nursery, vegetable, row crop and forage producers in our county. These pesticide trainings provide updated information, as well as CEU's. CEU credits were offered at a pesticide training session during Spring 2002, and a Worker Protection Standard Train-the-Trainer program was held later in the Summer

Program such as Vegetable Field Days and Certified Crop Advisors continue to draw large audiences and produce valuable CEU's for growers in the state. In addition Worker Protection Standard Handler and Worker Training were conducted in both English and Spanish.

Extension Advisory Committee Task Force developed an advisory committee module on Parliamentary Procedure for the Southern Region Extension Advisory Leadership (SEAL) Committee in a pilot testing mode through Ag. Ed, 4-H and FCS. This included on-line evaluations. Sustainable Communities - a UF/Audubon International effort established a leadership role in brokering an IFAS/Audubon International Sustainable Communities program founded on BMPs developed locally and nationally for implementation in new communities.

Summary of Impacts for Clientele:

Summary of FL-135

FL-135 is divided into three distinct units, Consumer, Retail and Processing. Each sub-group targets specific clientele. Described below are impacts for cliental chosen from the many reported for 2002.

Consumer Team:

During the second year of the FAMU CESTA Small Farm Programs, more than one thousand people (1,000) participated in the statewide education and hands-on training

sessions; including participation from across Florida, Georgia, Alabama, Louisiana, Virginia, and Missouri.

The Master Food and Nutrition Education Program which recruits and trains educators to provide preservation/nutrition/preparation is a program currently conducted in numerous counties throughout the state. In Duval County alone, educational assistance was provided to 4000 clients. Twenty-one volunteers were trained and in turned delivered 3177 MFNE volunteer hours (397 days) to Duval Extension serving as program assistants or teachers in a number of activities and reached 9008 clients. This represents \$50,991 in volunteer time in just one county. Total numbers for all counties was not available.

The Dining with Diabetes program attracted some one hundred ninety-five persons over a series four classes. Evaluations from this program should increased knowledge by the participants.

The Food Safety Training and Certification Workshops were conducted in 20 counties throughout the state. The program gave food handlers the opportunity to learn the most important aspects of food safety through a 6-hour program. This training prepares them to take the National ServSafe™ Food Protection Manager's Certification exam, offered immediately following the program. Numerous persons were train and certified in the state during 2002. In one county, the results of the food manager certification program showed that 93% (81) of those attending received certification on first test attempt: 90% of participants completed a pretest with 50% of those scoring below 80%. The final scores on the certification test show that 86% (75 out of 87) scored higher than 80% on the certification test which followed the training.

The 2002 Fall Field Day was attended by over 130 persons from all over the panhandle and the state of Florida. As guests came on the vegetable tour, much interest was voiced among homeowners and small farmers concerning our ongoing work with Bacterial Spot management, TSWV and thrips, Whitefly control, reflective mulches, and tomato varieties

County extension faculty working with commercial vegetable grower/shippers continue to handle a greater number of post harvest questions posed by local industry personnel as a result of postharvest information and training that I have provided to them. Additional postharvest information developed for mamey sapote and other tropical fruits will lead to testing of new technologies to extend postharvest life of this highly perishable tropical fruit during commercial handling and shipping.

Monetary impacts as surveyed in the advisory committee and post-workshop interviews showed ten growers who were educated in crop input reduction cut their costs by 10 percent, saving \$300.00 per acre in tomatoes (200 acres), \$150.00 per protected acre (15 acres) in peppers, and \$60.00 per acre in watermelons and cantaloupes (500 acres). Most of the cost reduction was in the judicious use of fertilizer and water, and selection of effective insecticides and application techniques. This amounted to \$60,000.00 for the two commercial tomato growers, \$22,500.00 for the five pepper growers, and \$30,000.00 for the three watermelon/cantaloupe growers.

Retail Team:

No county impacts for clientele information are available for the retail section of FL-135. As this program will initiate in 2003, all retail efforts have been reported under the consumer and/or the processing teams.

Processing Team:

This extension program produces critical information and extension products serving the juice and produce industries in Florida. New federal and state regulations that govern juice production has created an information gap that requires UF workshops and training programs to assist the Florida juice and produce industries. In 2002, this extension program had direct interaction with over 600 industry personnel on issues related to governmental regulations and new UF programs.

The Annual Citrus Processing Short Course has served as the major technical meeting for scientists, marketers and managers of the juice and beverage industry for several decades. The conference, an official UF/IFAS event, is self-sustaining financially and receives significant industry sponsorship and support. Other citrus related activities include Packinghouse Day and Processor's Day. The focus is on the needs of specific audiences within the citrus industry. Programs such as these provide venues for extending the research of UF/IFAS scientists, as well as other collaborators. These meetings draw some 700 attendees, with over 500 coming for the Citrus Processing Short Course alone. The Short Course attracted nearly 20% international participation, bringing worldwide recognition to the program.

The annual economic impact of agriculture on the Miami-Dade County economy is approximately \$1 billion per year. If the agricultural land retention study is successful in increasing agricultural output by 10 percent or successful in preventing a 10 percent loss in output, the overall impact on the economy could be approximately \$100 million per year.

As a result of FGGA activities, membership has been increased about 10% over the last year, from 120 to over 140. We've conducted and are developing events to address the needs of both amateur and industry membership via Grape Field Days, workshops and symposia.

The food safety programs have resulted in Florida vegetable and fruit growers, packers and shippers being more aware of the proper sanitation procedures necessary to minimize postharvest decay and the risk of cross-contamination by human pathogens due to our extensive educational program during the past three years. Collaboration with the Florida Fruit & Vegetable Association and the Florida Tomato Committee has also been valuable in reaching these clientele groups.

Specialist on campus prepared several fact sheets pertaining to food safety related issues. An agent in Dade County prepared alone or with the Fruit Crop Specialist or other agents, 16 publications dealing with tropical fruits and helped translate to Spanish 5 of these publications.

Sixty eight percent (400) of mango, lychee and longan growers (238/350 growers approximately), has adopted leaf tissue mineral content as a tool to optimize yields. The same percent also adopted irrigation practice management to optimize production. One hundred percent (40) of the longan growers adopted fruit thinning as the moisture content determination. There were 40 programs on cultural practices (fertilizer, pruning, tree size control, propagation, crops, etc.) for growers. A total of 1352 growers attended the programs.

Success Stories

Summary of FL-135

FI-135 is divided into three distinct units, Consumer, Retail and Processing. Each sub-group targets specific clientele. Described below are selected Success Stories chosen from the many reported for 2002.

Consumer Team:

The Food Handler Education and Training has many Success Stories are documented in the county reports. Currently 18 counties participate in the program. In 2001 county faculty have trained 750 people. The average first time exam passing rate in 2001 was 77% with an average score of 86; a minimum passing score is 75. In 2002 (as of Dec. 9) 1100 people have registered through the program. We also able to recruit a more county faculty to participate in the program 2003.

A record 630 employees successfully completed the 2001/2002 Wellness Program offered by Osceola County Government. County wide employees shared in reimbursements totaling \$112,050. The Risk Management Office has indicated that our efforts in the process have played a significant role and that the results listed above would not have been obtained with our support. This agent saved the county an estimated \$7,250 through well-ness programs that were offered. The importance of food safety continues to be a hot topic and agents have continued with the ServSafe® Training and Certification classes on a monthly basis. This training and certification is accepted by all three regulatory agencies including the Department of Business and Professional Regulations (DBPR), the Department of Agriculture (DACS), and the Department of Health (DOH). A total of 10 training classes were conducted with 80% of the participants receiving their Food Manager Certification which is good for 5 years. Upon post evaluations conducted through the mail it was evident that many of the participants are putting what they learned into practice which will ultimately help to prevent and reduce foodborne illness outbreaks. One comment made by a respondent was "We have changed employee hygiene drastically. We have overall changed our store's cleanliness." Both employee hygiene and overall cleanliness is very important in keeping food safe. Other behavioral changes and impacts can be seen in other sections in this report. In addition to the Food Manager training, the agent continues to offer training to employees. Those regulated by DBPR are required to attend 2-hour training in food safety.

Retail Team:

Focus on retail to consumer related food safety has resulted in numerous training workshops and seminars. This program has lead to linkages with the departments of Horticulture, Plant Pathology and Family, Youth and Community Sciences. One specific example was training consumers at the retail level, specifically a local Albertson's Supermarkets, in proper food handling techniques. Over 50 individual thermometer trainings were conducted

Processing Team:

Value-added Processed Citrus Products and Training curricula have been developed with the assistance of UF/IFAS scientists heavily involved in citrus product technology. This position serves as the organizer of the UF/IFAS efforts in juice HACCP through membership on the Juice HACCP Alliance and coordinator of Juice HACCP Workshops. This program has been delivered to over 80 individuals who represent over 50% of the citrus processing capacity in the state

The South Florida Vegetable Pest and Disease Hotline, which began in 1998 as the Southwest Florida Vegetable Pest and Disease Hotline is now entering its fifth year of publication and has emerged as the premier vegetable pest and disease newsletter in

Florida. The 15-18 page hotline is produced bi-weekly during the South Florida Vegetable season from August to June and now reports on the occurrence of vegetable insect and disease pests on over 120,000 acres of vegetables in south Florida. The hotline is sent directly by e-mail fax and surface mail to over 1200 subscribers and is also reproduced and distributed by other extension agents and many other companies and businesses in Florida and throughout the country. The hotline has been critically acclaimed by the vegetable industry and is recognized as the definitive source of pest and disease information for south Florida. The hotline receives strong industry support and has received more than \$24,000 in contributions from sponsors since its inception. The hotline draws on thirty two collaborators from the vegetable industry and UF/IFAS Extension provide up to date information which is collated and provided to users every two weeks during the south Florida vegetable growing season. Growers call it a useful tool.

Outreach to Minorities:

Summary of FL-135

Within the three distinct groups of FL-135, all efforts were taken to inform minority clientele of program being conducted. Efforts focused on direct mailing and the use e-mail, as well as mass media outlets. All educational programs were conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. In select counties, the Food Manager Certification program has attracted both Hispanic and Asian clientele. When available, materials in several languages are routinely distributed at workshops and other training opportunities. One such example is the use of Spanish language versions of the Good Agricultural Practices training materials. Agents do direct or personal contact to target minority clientele groups, such as programs targeted specifically at the Seminole Native Americans. Agents used Equal Opportunity and ADA statements on meeting announcements. Some counties reported activities using minority newspapers when available. Meeting sites are selected where there is commonality and local support.

Consumer Team:

Programs have been offered in different libraries around the county to encourage participation from all areas. Times and locations have varied to make programs more accessible. Materials and presentations highlighted ethnic foods whenever possible. Programs are advertised in free and subscription newspapers, use of banners, the marquee and flyers. All news releases are sent to all known minority newspapers. Classes are advertised on the Government Channel which is available to everyone in the county with cable. Each newsletter, flyer, and news release leaving the Family and Consumer Science office carries the affirmative action statement and the ADA notice is attached to all course offerings.

Educational programs reached 17% minority clientele. Educational materials include the Affirmative Action and ADA statements. Programs were advertised with grass root organizations and in the newspaper.

Programs are advertised in free and subscription newspapers, by use of banners, the marquee and flyers. All news releases are sent to all known minority newspapers. Programs are offered in predominately minority neighborhoods. Each newsletter, flyer and news release leaving the Family & Consumer Sciences office carries the affirmative action statement and ADA notice and is attached to all course offerings.

Mass media announcements were sent to all minority media sources available. Educational programs were conducted in many geographical areas of the county.

The inspectors for the Department of Agriculture, and Department of Business and Professional Regulation distribute our brochures, advertising the course. Business owners of all races receive the information. Brochures sent to all local agencies inspected by the Health Department. Beginning this year, we send fliers advertising our program dates to all restaurants in Lee, Charlotte and Hendry counties. Advertising of the Food Handler training in the Fort Myers News-Press which is distributed in all areas of Lee County.

Collaboration with various organizations and agencies that serve a high percentage of minority clientele. Target programs in neighborhoods in which a high percentage of minorities live. Held advisory meetings in locations other than office. Send information about program to churches. Provided Nutrition Education programs to The Seminole Tribe of Florida

Outreach to ten minority growers, and three other minorities who are labor crew chiefs, throughout the year, for a total of 41 minority contacts. We did this through farm visits, meeting contacts, and first class mail. Minority growers make up 10 percent of the 60 commercial vegetable farmers in the county, those who grow 160 acres or more of crops. Sixty-eight farmers grew vegetables in Jackson County in 2000, according to the Farm Service Agency in Jackson County.

Food safety programs are advertised throughout the community. The Food Manager Certification program has attracted both Hispanic and Asian clientele this year, however, more effort needs to be made to reach other minorities.

Mass media news articles were published; promotional materials were mailed and personally distributed by DBPR, DACS, and DOH Sanitarians; monthly workshops were held at an easily accessible facility, and special on-site workshop locations (for specific geographic areas) were scheduled.

Visits with representatives from the literacy programs and Judicial Domestic Violence Services. United Basket Program Organization for local non-profits Churches Newspapers.

A new initiative begun in Palm Beach County provided an increased opportunity for Worker Protection Standard Worker and Handler Training resulted in over 300 minority workers being trained in pesticide safety in southwest Florida in August 2002.

Newspaper articles on food safety refer readers to Extension for additional information. Invitations to Farm-City Week Banquet are mailed to minority residents. Washington County Youth Fair rule books are distributed to public and private schools and to home school families. Fairs and festivals are advertised through fliers placed in locations serving minority residents, local newspapers, and local television stations.

Direct outreach to the general public with special emphasis to those with compromised immune systems and their caregivers. These audiences span racial lines and are underserved because of their greater need for specialized information not commonly available. The Marion County Extension Service is the only community known resource of home food handler information. Conducted educational programs throughout the community as well as dedicate approximately 75% of my weekly newspaper column to this effort.

The IPM/BC program is sponsoring two joint projects with the FAMU Center for Biological Control: "Detecting and Controlling Grape Root Borer in North Florida

Vineyards" and "Demonstrating Emerging Pest Management Technologies in Hot Pepper Production to Resource-Limited Producers".

Efforts have been made to serve the underserved and underrepresented. Many of the senior citizens and AIDS patients attending programs are very limited income individuals as well as being of a minority racial group.

Letters, program announcements, newsletters and newspaper articles include the affirmative action statement and ADA guidelines. Program announcements and newsletters are sent to grassroots organizations and minority groups.

The following activities were planned in order to increase the participation of minorities in the Healthy People Program: Newsletter advertising programs were mailed to minority churches. Mail to all restaurants, mass media and a marquee on a major highway was used to advertise Food Manager Certification Trainings. Programs were held in our auditorium and county buildings which are easily accessible by minorities.

Recruited minorities by personal contact, newsletters, newspaper, radio, community leaders and agencies. Held teaching activities where minorities attend meetings.

Programs will be held on site at the senior citizen facilities/meal sites in order to assist minorities in attending.

Activities for students in the FNP classes will be held in schools during regular hours so that minority students are available to attend.

This nutritional program works closely with the following community partners to serve Food Stamp-eligible minorities

ServSafe™ is advertised across the state to all food service industries. Head Start/Early Head Start serves at risk children, both minority racially and those at risk due to low income or other familial or societal problems. Their staff reflects the racial makeup of their students. The classes are also advertised through Child Care Licensing and the two sponsoring church ministries to all child care homes and centers in their programs, regardless of race. Participants in the classes were 58% African-American, 17% Hispanic, and 1% Asian. RCMA staff is mostly Hispanic, with some African-Americans.

Hispanic workers were provided GAPs training and workshop materials in Spanish.

Florida A&M University College of Engineering Sciences, Technology and Agriculture Small Farm Programs has been developed to assist and equip underserved small farm populations, farm workers and their families. The participants include: Hispanic, Black, Native American, Asian, Ethnic European, and women.

Several research and extension projects are being conducted with minority faculty members from UF and FAMU. The Mississippi State University short course is attended predominately by women and minorities. Many of the grape growers are limited resource farmers and some are under represented groups. Key members of the mole cricket working group are female and African-American. A considerable amount of guidance is provided to female and minority students. Three of the five IPM Florida employees are female.

Retail Team:

No minority outreach information is available for the retail section of FL-135. As this program will initiate in 2003, all retail outreach programs have been reported under the consumer and/or the processing teams.

Processing Team:

A large number of the clientele are minorities: 821 white, 661 women, 834 Hispanic, 237 black and 146 Asians attended programs. Several meeting announcements were also done in Spanish. The agent appeared twice in a two hour Spanish radio and once on a TV program discussing and answering questions (60,000 in attendance).

A new initiative begun in Palm Beach County to provide increased opportunities for Worker Protection Standard Worker and Handler Training resulted in over 300 minority workers being trained in pesticide safety in southwest Florida in August 2002.

A significant proportion of agricultural producers in Miami-Dade County are of Hispanic origin. Mail surveys to approximately 2,800 farmers and agribusiness firms included cover letters that were written in Spanish and English to ensure a high degree of Hispanic participation. The Spanish letter encouraged Hispanics to call a toll-free number to speak to a Spanish-speaking interviewer.

Notification of programs and meetings in local newspapers, newsletters, mailings, personal web page, and periodically by phone recording. Holding programs in different geographic locations and at sites accessible by all people.

The four known minority farmers in Union County were specifically sent copies of the agriculture newsletter.

Florida A&M University College of Engineering Sciences, Technology and Agriculture Small Farm Programs has been developed to assist and equip underserved small farm populations, farm workers and their families. The participants include: Hispanic, Black, Native American, Asian, Ethnic European, and women.

Source of Federal Funds: Smith-Lever

Scope: multi-state

SMP-FL203/FL703

Title: 4-H EFNEP in Florida

Calendar Year: 2002

Critical Needs: 20, 34

National Goals: 3 and 5

Key Themes: Human health, Human nutrition, Youth development/4-H

Major Program Objective:

To assist low-income youth in acquiring the knowledge, skills, attitudes, and changed behaviors necessary for nutritionally sound diets and the improvement of the total family diet and nutritional welfare. To contribute to the personal development of limited income youth.

Summary of County Programs for Clientele:

Training Adult and Teen Volunteer Leaders and Program Assistants was an important aspect of program success. County Extension Faculty spent countless hours training Volunteer Leaders (including Teen Leaders) and Program Assistants in providing food

and nutrition education and thereby extending each County Extension Faculty member's outreach multi-fold. This facilitated the opportunity to provide the required six or more hours of food and nutrition instruction by the county faculty member and/or by the leaders or assistants.

Schools were targeted. Lessons were presented at schools that had a high percentage of limited income youth as indicated by the high percentage of students receiving free or reduced price lunches. Extension Agents (county faculty) worked with the teachers and school curriculum coordinators so that lessons and activities were compatible with the classroom curriculum.

The lesson series and topics targeted the nutritional needs and interests of school age children. Some examples: Hillsborough county used catchy topics and activities to support the 2002 goal of "Eating a Better Breakfast"; Escambia County used "International 4-H Day Camp", because it was such a success last year and was brought back this year by popular demand; Miami-Dade County used age appropriate lessons in Healthy Eating and Food Safety; Duval County included lessons through the program called "Kids Café" and Dixie County utilized the Fun with Food Bingo Curriculum.

Evaluation was included as an important part of teaching and reporting. Students were evaluated for the knowledge gained as well as for how well they could apply the knowledge.

Data was collected for the ERS Report which is part of the required reporting for the EFNEP program for both the adult and youth (4-H EFNEP) components. Statistics from this report are used to promote the youth EFNEP program to county officials, advisory groups, collaborators and others.

Summer programs were conducted as Summer Day Camps through schools, community centers, Boys' and Girls' Clubs, etc. Counties used the summer months to enhance youth outreach through established collaborations with other county programs.

Collaborative efforts included multi-agency and multi-county endeavors.

"4-H EFNEP youth are encouraged to participate in traditional 4-H activities."

Summary of Impacts for Clientele:

During FY 01-02 a total of 5753 youth were enrolled in the 4-H EFNEP counties.

These youth were reached through 59 organized clubs, 103 special interest groups and 53 school enrichment groups.

Of these youth, there were 3157 females and 2626 males. Ages ranged from less than 6 to 19 year old with the majority being in the 9-12 years old age group. Most of the program participants are Black (56%), Hispanic (24%) or White (20%). One county reported 2% in the American Indian/Alaskan category. Two other counties each reported 2% in the Asian/Pacific Islander category.

Counties are encouraging 4-H EFNEP youth to participate in all 4-H programs. Three counties reported a total of 828 youth as the number participating in other 4-H programs.

Counties reported on selected impact indicators that show results of participating in EFNEP.

One county reported that 78% of 112 youth from 8 groups increased knowledge of the essentials of human nutrition, 84% of 315 youth from 19 groups increased their ability to select low-cost, nutritious foods and 100% of 9 youth from group improved practices in food preparation and safety.

Another county reported that 62% of 50 youth from 2 groups improved practices in food preparation and safety.

Another county reported on a 6-hour series of lessons on breakfast. Of the 51 tested, 60% increased their knowledge of proper food storage, and 67% increased in their choice of the healthiest breakfast.

Volunteer support is a key component of reaching youth. For example, one county also reported that 122 4-H EFNEP volunteers were provided nutrition education training that was delivered to 2462 youth. The volunteers donated 964 hours equivalent to \$1547.20 in in-kind at \$16.05 per hour.

Success Stories:

In Miami-Dade County Food and Nutrition (county enrollment 3219) 789 members were enrolled in the food and nutrition 4-H project by this agent. Trained 4 youth in a food safety puppet show presentation in Spanish and English before an audience of 100 senior citizens. This was a promotional

“kick off” for the UDA’s Spanish language meat and poultry hotline to raise consumer awareness of food safety issues. It was attended by Dr. Elsa Murano, USDA, Under Secretary for Food Safety and Inspection Services and Dr. Eric Bost, USDA, Under Secretary for Food Nutrition and Consumer Services. The play was so well received the USDA officials stated they would like to video the children’s play for use throughout the U.S. A 4-H nutrition exhibit was also provided for this event. A total of 587 students were recipients of nutrition and food safety lessons conducted by this agent. Provided a 4-H and 4-H EFNEP nutrition display and 3 guest speakers (a member, a parent and a program assistant) for 38 U.F. Administrators, Deans and Foundation members. This served to educate those in attendance about youth nutrition programs in Miami-Dade County.

In the programs addressing Improving the Diets of Low-Income Youth in Hillsborough County, the result of the program on food safety, the school’s nurse reported that because of the lesson on washing hands and the posters on how to wash hands correctly placed in all the school’s 24 bathrooms there were significant reduction the school’s absentee attendance due to illness. She has requested that the program be implemented for all entering freshmen beginning the new school term.

In Escambia County the 4-H EFNEP youth exceeded in a 4-H state and national events. The Salt ‘N Peppa 4-H Club is sponsored by Catholic Charities and is located in a limited income neighborhood. This program has supported a 4-H program at their site for the past 16 years. The youth program at Catholic Charities has been instrumental in encouraging members from their club to participate in all 4-H activities and opportunities beyond the county level. Catholic Charities supplies staff to work directly with the youth, addition to staff, the center also supports the youth financially. Over \$5,000.00 is budgeted in staff, transportation and fees each year to financially support youth in their 4-H activities. Because of this type of support, many of their youth are offered opportunities to excel beyond the local level. This past year two youth have done exceptional because of their support from 4-H and Catholic Charities. Cordaryl and Marcus are two young men that started participating in the program at Catholic Charities when they were Junior 4-H’ers. This past year both have achieved outstanding credits in 4-H at the local, district, state and national level. Both 4-H’ers participated in 4-H County Events and won in their respective categories. They both traveled to District where they won a spot to compete at the state competition. Cordaryl placed 3rd at state in the Food and Nutrition Preparation category. Marcus attended state congress and was selected to represent the state of Florida in the National 4-H Youth Conversations held in Washington D.C. While in Washington, Marcus participated in a national radio program from the USDA Farm Show. He was also the winner of our annual 4-H Langley Bell Award. Cordaryl will be attending National 4-H Congress in November which is also a great honor and opportunity for him. He placed first in Consumer

Judging this past year at our county level and at the North Florida Fair in Tallahassee. These youth are just two examples of the great success stories that can be reported because of the support of our 4-H Program Leader, Kay Brown, 4-H Agriculture Agent, Roger Elliott and Chinesa Sunday, 4-H EFNEP Program Assistant along with our partners from Catholic Charities.

In Franklin County 702 students received eight hours of nutrition and food safety education. The program also expanded this year with the addition of a half-time FNP/EFNEP Agent to provide increased program coverage. The Butterfly Development School Enrichment Program was a big success again and greatly expanded in Gulf County Schools. A total of 495 students participated in the program and everyone wants the program back in 2003.

Outreach To Minorities:

Program materials and methods used for teaching the programs as well as those used to recruit participants to attend the programs have been designed to reach all segments of the Florida multicultural population. This inclusiveness approach has been used to reach different age groups, income groups, and males and females from different ethnic backgrounds. Effort is made to provide reasonable accommodations for people with disabilities, bilingual materials are used as needed, and mass media sources (broadcast and print) that target minorities and majorities are utilized to reach “everyone.”

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL211/FL711

Title: Animal Sciences Education for Youth

Calendar Year: 2002

Critical Needs: 12, 34

National Goals: 1 and 5

Key Themes: Animal Health, Animal Production Efficiency, Communications Skills, Leadership Training and Development,

Workforce Preparation - Youth and Adult, Youth Development/4-H

Major Program Objective:

To assess agents, leaders and teachers relative to professional development, curriculum and support needs to successfully offer youth educational programs in the animal sciences.

To provide professional development programs for agents, teachers, youth and leaders in animal sciences, topics to include production, management, industry issues, availability and use of curriculum, career development events and instructional strategies to teach about animal sciences.

To review, develop and secure curriculum in the animal sciences for agents, teachers and leaders.

To secure longitudinal data on perceptions of youth and parents on state level animal science competitive/educational events.

To secure animal science project related skills and communication needs of youth.

Summary of County Programs for Clientele:

In the Florida 4-H Program, there were 11,168 youth engaged in learning life skills of care and responsibility, resource management, and decision-making through their involvement with production animal projects in 60 counties. Close to 3,150 youth from 49 counties were involved with small pets or companion animals. During FY2002, sixty (60) counties provided 3,131 youth in horse projects with educational experiences or curricular material. Additional support was given to FFA, although this data and narrative does not reflect those experiences.

In a typical program year, support for animal sciences education is seen in a variety of educational opportunities including, but not limited to the following: training judging teams, teaching workshops, site visits to animal projects, monitoring nutrition and production techniques, classes, mentoring youth in club meeting, non-competitive and competitive events, teaching record keeping, classroom instruction, facilitating exhibitions, training 4-H club leaders, writing newsletter articles, and reviewing existing written curriculum materials.

Participation in Animal Sciences 4-H projects on the ES237 data entry form is as follows:

Animals – 3643

Beef – 2695

Birds and Poultry 1989

Cats – 127

Dogs – 727

Dairy Cattle – 1243

Goats (dairy, hair, meat) – 396

Horse and Pony – 3128

Sheep – 255

Swine - 3139

Alachua County: In order to educate 4-H youth in Alachua County on livestock related projects, the following activities were taught or conducted: basic broiler nutrition, basic beef showmanship, Livestock Marketing, Livestock Steer Carcass evaluation, USDA grading, Livestock Judging Skills, County Youth Fair, School Tours, "Where Milk Comes From", Steer Selection, Swine Selection, Alachua County Youth Fair and Livestock Board.

Baker County: Provide animal science education to Baker County youth, which are not currently enrolled in the 4-H program. Interactive educational animal exhibits were held at the Baker County Youth Fair, Baker County Fair, Northeast Florida and the Greater Jacksonville Fair where members and volunteers taught fair visitors about their animal projects through individual conversations and workshop presentations. The "Animal Encounters" Day Camp provided animal science education to seventeen Baker County youth that are either not enrolled in an animal project or not enrolled in 4-H.

Citrus County: A special interest program for the Livestock Judging team was conducted for seven senior 4-H members. Two 4-H volunteers coached this team with an interest in the livestock industry. This team met twice a month, for several months prior to the contest season, for approximately two hours each session. These sessions were high intensity learning events, including trips to local cattle farms, practice giving oral reasons on everything from tennis shoes to swine, and preliminary livestock judging contests throughout the state

Palm Beach and Clay Counties: Developing Life Skills Through Animal Science Programs" included educational activities that occurred in Palm Beach and Clay counties. These activities included judging events, livestock and horse shows, showmanship clinics, skills clinics, and miscellaneous activities. Activities conducted in Palm Beach County included two judging events in both dairy and horse. A pre-contest training session was conducted. Youth were taught decision-making, relating with others, problem solving, and communication skills. The contests lasted between 3 and 5 hours. The training session took 3 hours. A total of 164 youth were reached face-to-face. A total of 492 teaching hours were devoted in the delivery of the group sessions. Another 4 hours of instruction were devoted to "teachable moments" through telephone conversations or one-on-one meetings with individuals. 4-H Embryology, a school enrichment program that studies the growth and development of chicks, included 4 educational programs in Palm Beach County. The programs generally lasted 45 minutes each. A total of 122 students and teachers were reached face-to-face. A total of 91.5 instruction hours were devoted in the delivery of the group sessions. Another 10 hours of instruction were devoted to "teachable moments" through telephone conversation or one-on-one meetings with individuals.

Escambia Dairy Day Camp -- a two-day Dairy "day camp" was conducted in June at the Langley Bell 4-H Camp. Participants were taught about the complete cycle of milk production, from the digestion of feedstuffs and water consumed by the cows through the cows mammary system to the final product of fluid milk/cheese in the grocer's shelf. Nutrition of various milk products was also taught. Showmanship Workshops/Clinics-- Taught showmanship principles for poultry and livestock. Grooming techniques, showing etiquette, halter training, techniques to train to lead, watching for judge's

instructions, etc. Showmanship Clinics/Workshops preceded all of the activities listed below: GCA&NRA Livestock Show, Pensacola Interstate Fair Livestock Show, Pensacola Interstate Fair Poultry Show

Hamilton County: Third grade youth at North, Central, and South Hamilton Elementary schools were taught the importance of science to agriculture and the basics of embryology by the 4-H/Agriculture Agent in nine (9) class sessions. Transparencies and displays were used in the presentation, so the youth could actually see the developmental stages. Youth had the opportunity to see the eggs candled to observe the developmental stages of the embryo. Youth were taught the important roles that temperature, humidity, and egg turning had on the development of the chick embryo. The youth were also taught the procedures and operation of the incubator and brooder. Lastly, youth witnessed the miracle of life as the chicks hatched from the eggs. Seven (7) teachers/volunteers and three (3) principals were oriented and/or re-oriented about embryology and how to maintain project through completion.

Multi-County Dairy Program: Planned a four-day 4-H Dairy Quiz Bowl Camp, focusing on Lactation, Mastitis, Milk Quality, Milking Machines, and Reproduction. This camp was held June 7-10, 2002 in Okeechobee, FL. 25 youth and 7 adults attended this camp. Conducted an oral 4-H dairy Quiz Bowl contest at the Central Florida Fair. Two divisions were held (junior and senior) in which each division was giving a series of 8 questions including all aspects of dairying. There were a total of 32 4-H's in the contest. Held quiz bowl breed tryouts in Hillsborough County on April 27, 2002. 16 youth attended the tryouts, 9 youth (4 SR and 5 JR) were selected to enter the summer workouts for the National Quiz Bowl trip.

DeSoto County currently is in the rebuilding mode in the Judging Team situation. During the 2001 4-H year the leader who undertook this responsibility was unable to see it through. Currently DeSoto County has three senior members and one junior member who are learning the different aspects of Livestock Judging. The four members meet bi-weekly to study livestock judging. The 4-H Agent has undertaken the leadership for the team. Teaching styles that have been utilized are lecture, reading, discussion, game style activities and the use of the Internet.

St. Lucie County. 4-H and the St. Lucie County School Board work cooperatively to provide a facility at which elementary youth, can learn hands on about farm animals. The high school agriculture teachers and I have jointly worked to make this program a leadership building effort for agriculture high school students as well. 25 high school students were trained to assist Farm field trips. The high school students are assigned a class to give a tour of the farm and to talk to the elementary youth about the purpose of each animal on a farm and what products people get from each animal. Elementary youth learned about animals and the by products from the animals. At the end of the field trip a fun game was played to evaluate youth gained knowledge. Youth were able to correctly identify the animal products and by products. The high school students reported a rise in confidence level by being able to speak in front of groups about subjects that they are knowledgeable in. They also reported an increase in leadership abilities because they were able to control, direct and answer questions from groups. The teen volunteers for the farm program plan to identify the farm tour as useful additions to their college applications and their job searching resumes.

Sarasota County: Agent is currently working with 25 local youth interested in the cattle industry through the Sarasota County Jr. Cattlemen's Association 4-H Club. The purpose of this association is to provide additional opportunities for youth to develop leadership,

citizenship and life skills through informal educational learning experiences, as well as to promote the beef industry through community interaction and service, under the guidelines of the Sarasota County 4-H Club Policy and the Florida Jr. Cattlemen's Association. The association holds monthly meetings where this agent and the officer team conduct a short presentation on a different aspect of the beef industry. This agent coached a youth marketing team and a quiz bowl team who successfully competed at the Florida Cattlemen's State Convention. Ag-Day at Campbell's Grove was an educational event that this agent helped plan and participate in. A local grove hosted 150 youth to visit and travel through 4 stations each representing a different section of the Agricultural Industry. With the help of the Sarasota County Cattlewomen this agent planned and presented the Beef Section. Each student was able to see a live beef cow and learn about the ranching way of life, the students were also told about by-products that come from beef. At the end of the presentation, each student received a beef sticker and a small bag of marshmallows wrapped in cellophane (both beef by-products). Agent presented the Beef Station at the Manatee County Ag Venture. 350 students visited the station, learned about the ranching way of life, and played beef to educate them on beef by-products. The students were able to better comprehend the idea of by-products after seeing them in the game, while using marshmallows as markers.

Marion County: The Embryology Project was under the guidance of the 4-H Program Assistant and supported by the 4-H Program Leader. The teacher lesson plan was designed to be used either in sequence or as an independent lesson within the classroom curriculum. The lesson plans are designed to address specific math, science, and language arts concepts in combination with chick embryology. Within the classroom, fertile eggs are set in Extension supplied incubators. A video, developed by the 4-H office is utilized to explain the incubation process. Furthermore, a series of plastic eggs were developed by the Program Assistant -- a total of 21 eggs with pictures of each day's development inside for students to open

Okeechobee County: The Southeastern Youth Dairy Retreat is a five day series of workshops that provide youth and adult participants an opportunity to develop a better understanding of many components of the Dairy Industry as well as to interact with youth and adults from five southern states. The location of the SEDYR rotates between Florida, Georgia, Virginia, North Carolina and South Carolina. This year was Florida's "turn" to host. It was decided (advisory committee) that participants needed to understand the size and scope of the dairy industry in Florida, as well as the environmental problems Florida dairymen face (in other words, what it takes to make milk in Florida) and Okeechobee was the best place for both. Participants received "hands on" training that will enable them to provide leadership to their local, County, regional and state dairy programs. Workshop topics included DHIA Records, Dairy Foods, Dairy Marketing, Hoof Trimming, Ultra Sound Pregnancy Detection, Skillathons, Quiz Bowl contests, Junior Dairyman contest, Dairy Judging, Florida Agriculture as well as tours of dairies, citrus groves, beef ranches, exotic animals and wildlife rehabilitation. This agent gave leadership to the SEDYR by planning, securing funding, facilities, food, transportation, programming, coordinating volunteers, designing tee shirts, and implementing activities. Impacts of Southeastern Regional 4-H Youth Dairy Retreat: as a result of the SEDYR over 208 youth and adults from five states have a greater understanding of the dairy industry and the agriculture industry in Florida as well as the environmental problems and concerns faced daily.

Okeechobee: The Dairy Quiz Bowl program teaches youth life skills including critical thinking, decision-making, problem solving, teamwork, listening and speaking skills, as

well as independent thinking. Youth also learn dairy management, nutrition, genetics, anatomy, physiology, calf care, reproduction, herd health, showing and fitting, grooming, lactation, feeds and feeding, milk quality, udder health, marketing, dairy foods, and breed specific knowledge. Knowledge is tested through written tests, oral questions (individual and team discussion) and head to head competition. This agent coached all Okeechobee Quiz Bowl Teams and assisted coaching the Florida 4-H and breed association quiz bowl teams. The quiz bowl teams were taught through many different methods (group instruction, practice and learn days, quiz bowl quiz bowl camps, etc.) using many different materials (Hoard's Dairyman, Dairy Herd Management, breed magazines, fliers, fact sheets, text books, The Florida Dairy Quiz Bowl Study Questions, etc.) This agent taught, co-taught, or facilitated the following: Quiz Bowl workshops/ practices/ State Quiz Bowl Camp (Okeechobee host) - 27 total County and state impacts of Dairy Quiz Bowl Participants in the Okeechobee County and state quiz bowl workshops taught and/or facilitated by this agent showed an average increase in knowledge of 39%, as indicated by pre/post test scores.

Volusia County: 39 trainings supported the horse program areas, 3 trainings concerning Livestock Judging and 12 trainings were held concerning rabbits and rabbit judging. Additionally 4 contests were held in Volusia County to support hippology, horse bowl, livestock judging program and a mock wildlife habitat evaluation contest. Additionally, thirty-two clubs meeting bi--monthly yielded 768 club meetings, which is the foundation of the learning process for youth. By participation at club meetings, youth learn and participate in the various Fairs, County, state and national level events. This agent added a carcass contest back to the Volusia County Fair, after a 15-year absence. Ultra-sound technology was utilized. The data is being submitted to the 2003 state fair for steers and market hogs. Carcass data is being supplied back to the youth along with rear and side views of the animal. This information is to be used by Agriculture teachers and 4-H leaders as an educational tool. 4-H Showing and Grooming Workshop are held annually for youth to enhance their presentation skills or to serve as a foundation for beginning showman. This workshop covered showmanship and grooming for six species and included sportsmanship and presentation. Past successful 4-H showman were utilized to assist in presenting the daylong course. 100 youth and 25 adults attended this program. Poultry showmanship was presented again as a workshop to interest youth in poultry as project animals and a poultry showmanship contest was added to the fair

Washington County: Educational programs are being offered to the Washington County 4-H Livestock Clubs. This year students participated in a full-scale livestock program, which included presentations on: Animal Nutrition and Health, Showmanship, Fitting & Grooming and Record Book Completion. Parents and program volunteers were also included in these educational workshops. Meetings are being held at a 4-H leader or volunteers home with fun activities and sessions planned for. Club animal workshops proved beneficial in monitoring livestock project progress throughout the year. A 4-H leader, volunteer, or agent visited every child's animal during the year. The youth had an opportunity to ask questions and leaders had an opportunity to provide input to assist the youth with their particular project and situation. Washington County 4-H had one judging team programs this year. Twenty-nine 4-H members participated in the livestock-judging program with practices held at least twice monthly. There were three livestock judging field days held during the year where members traveled to local producers farms and learned about their particular livestock and facilities. Each of the judging team members on the livestock teams learned about sound selection practices through hands-on educational opportunities.

Summary of Impacts for Clientele:

Alachua County: As a result of educational efforts to reach youth enrolled in Livestock related projects, the following impacts were noted:

- As a result of the Poultry Workshop, Broiler exhibition in this years Youth Fair increased by five exhibitors.
- As a result of the mock showmanship contest at the Showmanship Clinic, 75% of those 4-H members participating increased their showmanship skills as noted by the agent.
- As a result of the Steer and Carcass Meeting, 75% 4-H members increased their knowledge in grading and pricing of carcasses as a result of a pre and posttest.
- The Alachua County Livestock Judging Team won the State Contest as a result of much time and dedication in practice and workouts.
- As a result of the school tours approximately 800 youth and 200 adults were educated on the importance of Agriculture and how it relates to their everyday lives.
- As a result of the Alachua County 4-H Fish Camp, 100% of those participating indicated that they would like to see this program taught again next summer.
- As a result of both Steer and Show Pig Selection Workshops, the quality of animals weighed in for this years fair was considerably higher in quality as noted by the Youth Fair Board.

Baker County: Seventeen non 4-H members who had no experience around animals learned about the basic needs of animals, the different purposes animals have in our society and some even overcame fears of touching certain animals by participating in the "Animal Encounters" day camp for 5-7 year olds. Six livestock club members reported teaching approximately thirty adults and youth about their project while exhibiting the projects animals at three regional fairs this fall. Two members participating in the Hog and Ham project learned and demonstrated how to harvest, process, and smoke pork carcasses. They also learned pork retail cuts and the difference between wholesale and retail prices. Eight new project animal 4-H members demonstrated the grooming and showmanship skills they learned during their club workshops by their participation in the Baker County Fair. Approximately 40 visitors to first annual Baker County Youth Fair were taught desirable characteristics when evaluating horses, beef and swine by attending three educational workshops that were offered to fair goers. Five individuals reported sharing the new knowledge with friends and family. Four new, horseless horse project parents reported their enthusiasm to stay involved in the horse club as a result of seven teen leader's individual attention and instruction they shared with their children. As a result of a record book workshop provided to livestock club members, a nine year-old 4-H member won the most outstanding record book award for the entire swine show.

Bradford County: directions Twenty-five youth successfully completed their animal science project books and submitted them for judging for the Awards and Recognition Banquet. Of these 24, 15 were awarded medals for their outstanding achievements in the animal science area. It was evidenced by the educational activities completed and records kept, these youth had a good understanding of how to raise and care for their animals.

Columbia County: Teachers at Lake City Middle School were tremendously positive about the 6th grade Agriculture Information and Career Day. All indicated that this was one of the best programs of the year. In additional to that, 16 new 4-H members signed up due to the presentation on the 4-H program. Youth that participated in the 4-H animal science program and skill-a-thon, with their club increased their basic knowledge of

animal science by at least 80%. Of the 28 youth participating, 35% of the children scored 100% on their skill-a-thon, 22% scored 90% or above, 25% scored 80% or above, while the remaining 18% scored 70% or above. Only 3 of the 28 students had previous knowledge of animal science prior to the program and skill-a-thon

Dixie County: One hundred (100) white or light brown fertile eggs were secured from local individuals. Seventy-six (76) elementary students (87% at-risk) observed the incubation process, candled 7 day, 10 day, 12 day, and 18-day embryos, observed the hatching process, and brooded chicks for approximately 4 days. Students demonstrated an average increase in knowledge of thirty-eight percent (38%). Eighty percent (80%) correctly articulated incubation procedures. Fifty-three percent (53%) demonstrated proper candling techniques, and ninety-eight percent (98%) accurately demonstrated the skills necessary to record their observations in the "Egg to Chick Booklet.

Hillsborough / Multi-County: In the Central Florida Fair quiz bowl contest an increase in dairy knowledge was recorded at 25% by the results of the oral exam over 2001. In the quiz bowl breed tryouts the participants averaged a 75% score on the written and oral exams administered at the event. At the dairy quiz bowl camp the youth averaged 81% score on written and oral exam over the material presented at the camp. The state dairy quiz bowl contest showed a mean score of 85% on written and oral exams, an increase of 31% over last year. The 9 youth selected to represent Florida at the national contest in Green Bay, WI averaged a mean score of 92% on written and oral exams though the 5 events in 2002. Overall dairy knowledge gained for youth participating in dairy quiz bowl was 28% over the previous year.

Jackson County: Steer Clinic--19 4-H and FFA youth along with their parents learned how to and grooming techniques and how to market their projects. Agent worked in conjunction with Heather Schultz and volunteers to conduct the program. The agent conducted the steer weight evaluation lab and presented the project marketing presentation. 10 out of 11 youth who returned exit surveys rated the information provided at the steer clinic as excellent, very good or good, yielding a 91% satisfaction rating. 10 out of 11 youth who responded to exit surveys indicated that they gained new knowledge as a result of attending the Steer Clinic. 10 out of 11 youth who returned exit surveys indicated that they intended to use at least one tip provided at the Steer Clinic to change the way they raised or exhibited their steer project

Osceola County: The fair ambassador program educated youth on agriculture, proper treatment of animals as well as animal science education. The ambassadors guided 908 pre-school and elementary children around the fair on a field trip. Two educational workshops were given to 82 ambassadors on animal science and how to respond to young children. The workshops focused on the proper treatment, care and processing of livestock. Also, as part of these workshops, agriculture career opportunities were discussed and represented to the youth. 908 elementary children participated through the fair ambassador program. The teachers left the fair with a teacher lesson plan and coloring books for each of their students. Most teachers commented that the program provided their children the opportunity to learn and experience farm animals up close, which they may not have otherwise been exposed. The program also provided the ambassadors with another leadership opportunity and exposed them to teaching others and provided them with possible career opportunities

Taylor County: Evaluations were given at the end of each 6- hour livestock clinic, and it was reported that the workshops were very helpful to youth showing animals for the first time and for veterans participants as well. They also reported they were now more

knowledgeable of what to feed their animal for best performance and how to groom their animal prior to the show. 90 percent of the participants indicated by pre and post tests that they had an increase in knowledge for facility needs for swine project animals including space requirements, Grooming techniques for swine and steer, about the simple stomach digestive system of swine and how a diet that included essential amino acids, vitamins and minerals needed to be designed and fed for proper growth and development, how to select feeder pigs for market swine project animal, showmanship techniques used in showing market swine, again, including attentiveness in the ring, maintaining composure and avoiding dangerous situations, how to halter break, training to lead, set up and movement techniques that would later be utilized in the show ring, and selection of prospect steers for project animals in regards to producers selected to supply show quality animals, recommended breeds, disposition, age and size of animals to look for basic space requirements for raising their steer projects including proper construction for strength and durability, functionality and safety. Increase awareness and participation in animal science & agriculture related projects and activities

Hernando County: The Black Stallion Literacy Program offered by the Pony Express 4-H Club brought a book and horses into the lives of 2000 more elementary students. In addition, it provided fourteen youth an opportunity to volunteer as literacy promoters. These youth and adult volunteers packed up horses and transported them to different schools and distributed books donated by the BSL Program. They demonstrated and taught horse care while discussing the book and the love of reading. As follow up, the youth and volunteers planned two days of field trips to bring 500 students to a horse farm for a second opportunity. Youth and adult volunteers set up seven educational stations, each providing a verbal, visual and audio program on a horse related topic. Junior Achievement has allowed us to reach hundreds of youth. JA has made the school contacts and invited us in to the classroom. It is unusual to teach five and six classes simultaneously, but this has permitted me to see achievements over the years, as some of the students are moving through the program each school year. Pre and posttests indicate a high level of information retention and skills to apply the knowledge. Tests show each student had an increase in concept knowledge and was able to show how concepts were applied to activities.

Brevard County: 100% (245) of the students in the animal projects increased their knowledge level in their respective area. Life skills were improved in most of the participants. All animals were raised humanly. The students understood the usefulness of their animals and how they fit into the food chain. Record keeping skills were improved. Parent/child relationship appeared to be strengthened. 100% (245) of 4-Hers practiced good sportsmanship at all 4-H animal project activities. 99% (243) of 4-Hers used sound herdsmanhip practices compatible with animal production. All of the second year in project and above 4-Hers helps educate others

Success Stories

Non-Traditional 4-H'ers Benefit from Traditional 4-H Activities In 2002, this agent reached out to the clientele served through the Bronson Adventure Based Challenge (ABC) program, which is an Afterschool 4-H program for at-risk youth, funded through the Department of Juvenile Justice. Youth in this program were invited to partake in Poultry Judging Workshops held on-site, with several seeking out this opportunity. The end result- this year's Levy County 4-H Poultry Judging team for the Florida 4-H state competition, came solely from this program. The members of this team were the only minorities present at this year's state competition, and earned 2nd place team statewide. None of these youths had prior experience with poultry, little to any public speaking

experience, and none had ever competed in a 4-H judging contest. The members that participated in this program were so impacted, that word has spread and this agent has been requested to more such programs in the coming year.

Clay County: A 4-H parent reports that she had considered her daughter to be "at risk." Her daughter's grades were falling and she was involved with the "wrong crowd." The parent enrolled her daughter in the 4-H horse project two years ago. The parent states that as a result of her participation in 4-H, her daughter's grades have improved, she has a more positive outlook, and she is no longer socializing with the "wrong crowd."

Indian River County: One of the 4-H members who had a hog in the County fair several years and participated in the Hog and Ham program wrote a thank you note to her leader for encouraging her to participate in Hog and Ham. She is now in college to be a dental technician and she said that participation in the hog harvesting part of the program prepared her for adjusting to and accepting the blood that was part of being a dental technician. She said that if she hadn't been in Hog and Ham she probably would have considered dropping out of the dental technician program.

Flagler County: there is growing concern that youth raising livestock make the connection between the animal that they are raising and the product that they are producing for the consumer. Meat industry organizations and the University of Florida have been working hard to educate livestock producers in methods that enhance the marketability of their products. Having received information from the University of Florida on the initiation of carcass evaluation as an aspect of meat production at fairs, I suggested the idea of a carcass evaluation contest offered at our fair. The discussion by the fair association members was overwhelmingly positive. Immediately they recognized this as a link to industry trends. After lengthy discussion and a University staff presentation at a fair meeting, details were worked out to eliminate the concerns of participants since the ultrasound carcass evaluation had led to some unpleasant controversy at other County fairs. Once the commitment was made, sponsors for the contest were secured. Because the contest and the ultrasound method had never been used in Flagler County before, we scheduled meetings for all contest participants and their families. The contest was offered for beef and swine producers, a meeting focusing on each species. University specialists presented at both meetings. Attendance at the meetings was high and there was a lot of interaction between specialists and producers. Most people were positive about the upcoming contest despite previous misgivings and had a clearer understanding of the process of carcass evaluation and its importance to the finished product. At fair time, the contest went off without any problems and the final results were revealing. The reserve grand champion steer won the carcass contest, and one of the pigs in first place in its class won the pork carcass. As the results were passed out, it was the adult producers who showed the greatest interest in the placings and the statistical information.

Polk County: Six months after Afri fest, while standing in the check out line in a Publix Super Market, a youth along with his parents approached me. The youth introduced me to his parents as the 4-H agent that taught him about cows and proceeded to explain to them why agriculture was important and how a beef animal was able to convert grass into by products while naming some of the different products. I asked, if he had remembered the different compartments. He was able to name all four.

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority

clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. In some counties where a large number of the clientele is Hispanic, some programs and publications are done in Spanish. Agents sometimes do direct or personal contact with minority leaders, business owners, ministers, youth workers, or other individuals to promote programs. Agents report using Equal Opportunity and ADA statements on meeting announcements. Some counties report using minority newspapers when available. Meeting sites are selected where there is commonality and local support.

Bradford County: 1. Offer school enrichment programs and special interest projects with a science focus to teachers and students2. Hold activities within minority neighborhoods to remove participation barriers. 3. Hold day camps at facilities that are easily accessible to targeted audience4. Distribute flyers to minority churches and community centers telling when programs are offered5. Personal visits to minority leaders6. Use of reduced fees, fee waivers for youth to attend overnight 4-H camp

Sumter County: Use grassroots organizations and posting of program flyers to recruit minority participation.

Taylor County: Monthly 4-H newsletters are sent out to minority churches in Taylor County, as well as flyers on local horse shows, day camps, residential camping and special interest classes. Recruitment letters are sent out as well for both 4-H volunteers and 4-Hers. This agent and volunteers make personal phone calls, writes personal letters, uses community leaders for recruitment efforts, and uses mass media for program announcements.

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL212/FL712

Title: Plant Sciences

Calendar Year: 2002

Critical Needs: 4, 34

National Goals: 1, 5

Key Themes: Plant health, Plant production Efficiency, Youth development/4-H

Major Program Objective:

Summary of County Programs for Clientele:

Fifty six counties enrolled 24,674 youth in plant science projects, or in programs to gain knowledge and skills during 2002. Florida youth were educated in plant sciences through a variety of programs including school enrichment, summer camps, institutes, school and 4-H clubs, county fairs, and individual 4-H projects and record books. Subject areas taught included horticulture, citriculture, vegetable gardening, butterfly gardening, soil science, entomology, ecology and horticultural photography. Several county newsletters were produced for youth by master gardeners and/or county faculty covering a variety of horticultural topics. In addition to learning about plant sciences and the environment, youth gained valuable life skills in areas such as leadership, public speaking and personal pride and responsibility.

State specialists conducted plant judging and identification contests and demonstrations (Plant Connections) at the 2002 4-H State Congress. A horticulture track was also conducted at the 4-H State Congress. The winning team and high individual in the plant identification and judging contest competed nationally at the National Junior Horticulture Association meetings.

Summary of Impacts for Clientele:

With 56 counties and several specialists reporting, the impacts reported for FL 712/212 during 2002 were too many to mention individually in this summary. Some representative examples of impacts from county programs during 2002 are provided below.

At least 267 third graders and 13 teachers participated in the Madison County Ecology Field Day. The teachers involved reported that they were very satisfied with the level of education imparted to the children. The teachers especially appreciated the opportunity to participate in a field trip in order to enhance learning in the classroom. All youth actively engaged in experiential learning and had the opportunity to practice and apply scientific facts learned in the classroom in real-life settings.

In Columbia County, a total of 1563 children and youth were reached through horticulture programming during 2002. Master Gardener volunteers established a relationship with a local preschool and plan to conduct bi-monthly educational programs for the students there. In the same county, the plant sciences school enrichment program reached 167 participants by teaching them plant anatomy, plant care, garden design, and product marketing.

Palm Beach County: Youth partook in environmental adventure trips with the program assistant. These trips were organized to emphasize the importance of natural resources. Trips during the past year included snorkeling at John D. McArthur State Park, guided kayaking to the intercoastal mangrove islands, participating in the 4-H Leadership Retreat at the Everglades Youth Camp, alligator presentations and participation at Everglades Day at the Arthur Marshall Refuge, presentation on wading birds at the Wakodahatchee boardwalk, presentations on the coastal environment at Gumbo Limbo Nature Center, manatee visitation at the FPL learning center, and canoeing at Grassy Waters Preserve, the Loxahatchee River, and Osborne Lake. For many youth, these trips represented their first experience, understanding, and appreciation of their local natural resources. Thirty-two trips were held in 2002, with 384 educational contacts and 604 instructional hours

Volunteers and 4-H members constructed a pumpkin patch at a local business in Washington County. The youth and volunteers sold pumpkins, gourds, Indian corn and other harvest novelties during the entire month of October (from 10:00 am - 6:00 p.m. daily). On weekends, the members sold barbecue sandwiches and plates for additional fund raising. Volunteers hosted a Pumpkin Patch story time where all day care centers and kindergarten classes in the county came to the pumpkin patch for fun harvest stories and great literacy exposure. Many of the small children would purchase \$1 pumpkins for decorating in their classrooms. On weekends, families would attend the pumpkin patch just to hear great stories and enjoy the friendship of the club. This experience was wonderful not just because it was a great fund-raising activity, but also because the club served the community as a social gathering and place to celebrate the Harvest and Thanksgiving season..

According to program evaluation results in Hamilton County, there has been a 45% average increase in knowledge gained by 4th graders over the past seven years in the area of several farm production systems and other farm enterprises represented at our annual "Ag Day" program. Examples include goat, beef,

dairy, poultry and pork production, corn growing, cotton growing, understanding vegetable production, forestry, soil conservation, bee keeping and improved farming equipment. This greater awareness of agriculture in Hamilton County will be very important to these youth as they form opinions and make decisions as adults that may effect the survival of the agriculture industry as we know it today.

Five hundred and eighty-eight (588) elementary school youth (89% at-risk), teachers, parents and community volunteers planted a butterfly garden, landscaped the media center, landscaped the administration building and planted shade trees in the parking lots. Birdhouses constructed by the students and placed in the landscaped area were monitored for nesting.

Ag Venture 2002 involved Manatee County third graders and adults from 10 elementary schools, two private schools, and one home school group in programs about agriculture and water conservation as related to agricultural, homeowner, and personal uses. A teacher's guide was assembled using Plant Connections, Water Wise Guys, Solving Florida's Water Puzzle, Florida Ag in the Classroom, and Food, Land, and People curriculums. Teachers were trained on how to use the six-lesson curriculum. During the training, student booklets and support materials were distributed to the teachers.

The Alachua County Junior Master Gardener day camp was delivered to a diverse group (63% White, 30% Hispanic, 7% Black) of 3rd and 4th grade students, from different schools throughout the county. The children came away from this camp with much more than an increased understanding of plant science, entomology, and ecology. They also learned the power of team work from the creative activities they participated in, as well as a sense of personal pride when an activity was done well. In addition, these future voters and consumers were exposed to the difficulties of farming by visiting farms and the farmer's market. The students also worked closely in their class with ten Master Gardener volunteers and two teenage 4-H camp counselors, allowing for positive role model exposure and cross generational mentoring. All of the parents of the students were impressed with the amount of knowledge the children were able to gain in just two weeks of Junior Master Gardener Camp.

In recent years decreasing habitats in Florida have caused eight wildlife species to become extinct, 118 wildlife species are legally listed as endangered, threatened, or species of special concern, and 49 species have been found to be in just as much in jeopardy of extinction as the legally listed species. Dixie County Extension in cooperation with Old Town Elementary established the "Environmental Classroom Curriculum" to educate youth concerning Florida's ecosystems as to what they are, why they are important, how man affects them, and what they can do to protect Florida's ecosystems and biological diversity. The "Environmental Classroom" has been in use at Old Town Elementary since 1996 and its importance is evidenced by 78 percent of the teachers utilizing the curricula to influence an average of 58 percent of the student body.

The Gadsden County 4-H AgriScience Club at Carter Parramore Middle School was developed to expose middle school students to opportunities in agriculture and provide them with career choices in Agriculture. It encompasses both vegetable gardening and container tree production. Bare root tree material supplied by Simpson's Nursery in Monticello, Florida was planted in containers and maintained by the students at the school. This activity gave the student an understanding of container plant production which is a prominent industry in the county. Biweekly scheduled visits to the school provided students with 40 minute classroom and garden activities. Classes were taught in botany (plant structure, flower structure, seed structure) as well as Garden Insects.

Success Stories:

The Washington County 4-H Livestock Club challenged themselves and succeeded in the largest fundraising endeavor of my 4-H career. Volunteers and members constructed a Pumpkin Patch at a local business in Chipley. The youth and volunteers sold pumpkins, gourds, Indian corn and other harvest novelties during the entire month of October (from 10:00 am - 6:00 p.m. daily). On weekends, the members sold barbecue sandwiches and plates for additional fund raising. Volunteers hosted a Pumpkin Patch story time where all day cares and kindergarten classes in the county came to the pumpkin patch for fun harvest stories and great literacy exposure. Many of the small children would purchase \$1 pumpkins for decorating in their classrooms. On weekends, families would attend the pumpkin patch just to hear great stories and enjoy the friendship of the club. This was not only a great fund-raising activity, but it also served as a social gathering and place to celebrate the Harvest and Thanksgiving season.. The club profited \$1900 from the fund-raiser.

Sixty six youth (including the camp counselors) participated in 4-H Camp Cherry Lake. Eight volunteers and two additional Leon County Extension Faculty helped to carry out the week's program. Comments from youth and parents about these camps have been very positive and we have a number of repeat attendees. This past camping season a camper survey was developed and given to campers at the end of camp. All campers completed the survey prior to leaving camp. While all 28 statements received at least one response, the ones receiving the most responses related to improving leadership skills as a result of the training and actual counselor role were: 1) I encourage others; 2) I feel good about myself and my abilities; 3) I am a responsible person; 4) I can involve people; 5) I am enthusiastic; 6) I can admit and deal with mistakes; 7) I am a good listener; 8) I can teach others; 9) I can make choices; 10) I can cooperate with others; and 11) I can work as a team member.

When the Havana Middle School Tomato Club was first started in 2001, faculty there seemed a bit unconcerned about the project. However, after the tomatoes and peppers were planted, several teachers visited the greenhouse and commented on the beautiful plants. Harvested fruit was given to office personnel and various teachers. When the program ended, the cooperating science teacher and school principal were enthusiastic about continuing support for the project for 2002. The project is being continued Fall semester 2002.

During 2001, a partnership was created between the Sarasota County 4-H Program and the Parks and Recreation Department with the specific goal of educating home schooled children in the North Port region. The program began with only 3 participants and finished with 50 children participating in the monthly workshops ranging in ages from 7-18 years. The final surveys rated the 4-H environmental science program as one of the most valued program areas among all those programs presented to those individuals participating. A \$2700 grant was awarded to Keith Wilson by the Venice Foundation to continue his work with North Port children and to purchase microscopes to enhance his classroom resources.

An 8-week Spanish for the Nursery Manager Class was sponsored by the Tampa Bay Wholesale Growers. In-service training in horticultural career opportunities and necessary skills was provided for Hillsborough County Agribusiness and Natural Resource Education Teachers. Three \$667.00 scholarships were awarded by the Tampa Bay FNGA chapter in 2002 to Hillsborough County students studying horticulture at Florida Southern College and Hillsborough Community College. The Nursery, Landscape and Floriculture Career Development Event provided youth in Hillsborough County FFA and 4_H programs an opportunity to demonstrate proficiency in ornamental plant, pest and tool identification, ornamental horticulture subject matter, decision making and problem solving. This event is held at the Florida Strawberry Festival and approximately 500,000 visitors to the Festival have an opportunity to see the projects which are on display for four days. The plants are sold at a public auction. Rules require strict quality standards to participate in the show. Many young people maintain ongoing plant production projects as a result of participation in the show and sale.

Palm Beach County: Terry, a Hispanic male, is a sixth grade student participating in the community garden program since the fall of 2001. Before joining the program Terry had no previous experience in growing plants of any kind. Through weekly hands-on garden club programs, Terry began to learn more about the world of horticulture. He adopted his own 4' x 6' garden plot and devotedly tended vegetable and flower plants from seed to harvest. When offered fifty dollars by his father to buy new sneakers, Terry used the money to buy soil, seeds, and plants to create his own home garden. Terry entered a vegetable and potted plant into the South Florida Fair, winning first and second place ribbons for his efforts. Now, a year later, Terry volunteers his time helping the new gardeners work on their plots and serving as a mentor. Through the 4-H experiential learning process, Terry's enthusiasm and interest in environmental science has soared. He has greater self confidence in his ability to learn and a more positive attitude towards his peers.

Palm Beach County: At age 13 Jesse, an African American male, began participating in the community garden program while living in transitional family housing. Jesse was one of several community garden participants who also attended the various 4-H day camps offered in the summer of 2002. At the day camps, Jesse would attempt to elicit attention through negative behavior, such as physical aggression towards the other youth. Shortly after summer, Jesse's family moved out of the transitional housing unit. Their new neighborhood included another 4-H community garden site. Jesse continued to stay actively involved in 4-H. Late in 2002 Jesse attended the 4-H Leadership Retreat. While there, his attention seeking behaviors were much more positive. He was playful and friendly toward his peers. During the campfire sharing, Jesse expressed how much 4-H meant to him and also thanked the adults for being so caring and involved. At the close of the retreat, Jesse asked if he could attend again next year. He was told yes and it was suggested that he consider coming back as one of the teen instructors to teach leadership skills to the other youth. Jesse was very excited about the suggestion. Now age 14, Jesse also seeks out community service to be done through 4-H.

Outreach To Minorities:

Efforts to contact minorities are made through local churches, school enrichment programs, local newspapers, and direct contact with area minority leaders and special interest groups. Agents report using Equal Opportunity and ADA statements on meeting announcements. Some counties report using minority newspapers when available.

Source of Federal Funds: Smith-Lever

Scope: State Specific

SMP-FL213/FL713

Title: Science and Technology

Calendar Year: 2002

Critical Needs: 34

National Goals: 5

Key Themes: Agricultural Financial Management, Workforce Preparation - Youth and Adult, Youth Development/4-H

Major Program Objective:

Today, Florida's youth require computer skills relevant to their education and future employment, require math and science skills necessary to be competitive, require access to technology and/or individuals knowledgeable enough to provide meaningful educational experiences, and require an improved understanding of how science and technology impacts their every day lives.

Summary of County Programs for Clientele:

In F.Y. 2002, 31,272 youth were enrolled in science and technology 4-H projects. Science & Technology Literacy – 30, Biological Sciences - 1, Animal Science – 2884, Aquatic Science – 16, Entomology and Bees – 6261, Marine Science – 9452, Meat Science – 44, Plant Science – 22, Poultry Science and Embryology – 8748, Veterinary Science – 144, Aerospace – 1528, Automotive – 36, Bicycle – 138, Computer Technology – 191, Electric – 873, Engines/Tractors/Field Equipment – 122, Wood Sciences and industrial arts – 44, Physical Sciences – 345, Astronomy – 269, Mathematics – 1.

Madison County – Implemented an Ecology Field Day for 200 third graders. Coordinated & Conducted Ecology Field Day collaboratively with North Florida Community College and the Madison Public Schools District for all third graders in the county. Secured workshop presenters and personally taught one rotation. - Subjects taught were: Recycling, Plant Identification and Uses, Fish and Insects, Soils, Forest Ecology, Nature Art, and Entomology. All youth participated in hands-on instruction in an outdoor setting.

Levy County - Develop a countywide technical science education club/group with at least 4 trained volunteers to conduct a variety of programs/activities in this subject matter area. -Two adult and 3 teen leaders recruited to start a new radio control technology club. -The volunteers are being trained by a local R/C store owner. Local adult R/C club has offered educational support and use of their facilities. Club will be advertised in the current 4-H year.

Marion County - Computer classes were offered by one of our 4-H Leaders. These classes were separate from club meetings and open to any 4-Her in Marion County. Participants worked through several activities in the CCS Level 1 Computer Series. A spring class and a fall class were offered with a total of nine 4-Hers participating. 4-Hers learned hardware and software basics and some software applications.

Nassau County – county faculty and program assistant conducted summer Aeronautical day camp for 15 youth with 30 hours of instructional time. Topics included model rocketry, field trips to the FAA center, Cecil Field and Cape Canaveral, and careers in the aeronautical industry.

St. Johns County - The agent received \$995.00 from two separate sources for aerospace education programs. The Agent taught six classes to twenty high risk students at Evelyn Hamblin, SJC dropout prevention school. The Agent trained two interns to teach rocketry to community groups in Hastings and Armstrong. The Agent met one on one with teachers at Webster elementary to discuss the rocketry program. The Agent conducted a county launch day for the Webster Rocket group. The Evelyn Hamblen students demonstrated their knowledge of rocketry principles in demonstrations to the agent. 100% of the students could demonstrate and identify at least one principle of flight, and increase of 80% from the pretest. The interns conducted eight workshops in two locations. Twenty youth in the targeted areas were able to successfully build and launch rockets. Seventy-five youth at Webster Elementary successfully launched a rocket. When the agent first began teaching flight principles at Evelyn Hamblin, only five of the twenty youth could either demonstrate or define the following flight principles: lift, thrust, drag. Every time one of these words was mentioned, they snickered and made sexual references. By the end of the six week session, the agent was not only able to say these words and not get snickers or sexual references, but the students were using them in the proper context. The program had become so popular that the school staff were using it as a reward for good behavior.

Broward County - Two hundred minority youth within the under-served population will be targeted for special interest group involvement or community club formation using environmental and/ or scientific project materials. Colbert Elementary 4-H Club and City of Hallandale 4-H Club both participated in gardening and other scientific project work within the past year in 4-H. 18 of 25 enrolled in Colbert Elementary are African-American, 4 are Hispanic, and 2 are Asian-American for a total of 24/ 25. 57 of 62 enrolled 4-H members in City of Hallandale are African-American. In addition, Plymouth Colony 4-H Club with 8 minority members enrolled in aquatic science projects including a fish tank activity. Thus, 89 minority members were introduced to 4-H through environmental and/ or scientific projects. While this falls short of the 200 minority member goal, a recent contact with the Boys and Girls Clubs in Hollywood and Pompano Beach who is interested in forming gardens along with our strong Master Gardener and Florida Yards and Neighborhoods programs should help meet this objective for next year.

Holmes County – 4-H Afterschool Activity Program. Targeting at-risk middle-school students, this afterschool program was funded with a CYFAR grant. Most of the students in the program do not have computers at home and did not select computers as their elective, so at the beginning of the program some students did not know how to turn on a computer. On a computer post test , 80% of students correctly identified internal computer parts and 99% correctly identified external computer parts. - 100% of the students were able to identify search engines and conduct a search for educational information. 68 youth successfully used the Internet to complete searches for specific geography and science project information as assigned by their teachers. - 27 students were also able to use a word processing program to generate a letter and import graphics into the document. 15 of those students assisted the PA with design and production of the ASP Parent Newsletter. However, all of the students are lacking in correct typing skills and an effort will be made to include this in the program.- 100% of the students were able to successfully use the Edison program for solving electrical problems and building circuits.-so far 15 students have been able to use the LEGO CAD program to complete a working model. Electricity- Seventeen students completed Electricity Project Book Level I; 11 students received either a blue or red ribbon indicating a score of 80% or greater. Six students received white ribbons for scores below 80%, this was mostly due to sections of the book that were not complete.- Eleven students progressed to Electricity

Project Book Level II; 9 students received blue or red ribbons and 2 received white ribbons. - Students successfully built: a simple flashlight; a test switch; open/closed circuit; parallel/series circuits; compass; electromagnet; galvanometer; simple electric motor.- Students mastered the use of an soldering iron and voltage meter; they successfully identified magnetic material and conductors of electrical current; identified simple electrical materials.- Six students used the materials and information learned as part of their science fair project.- Two students used the materials in a 4-H demonstration for County Events.- The 7th grade science teacher noted that the students who were part of the ASP electric program understood and scored better on that portion of their science materials. (no real scientific data just his observations)- 24 youth successfully used the Edison Electric Program to solve multiple problems in electrical designs and build complex circuits. Simple Machines - Learning with Lego's- The pre-test indicated that only 2 of the 18 students could correctly identify the three parts of a lever system, only 5 of the 18 students correctly identified the rigid structure but did not know why it was more rigid. Only 1 student identified the structure which keeps a roller coaster rigid but again did not know why. Only 3 of the 18 were able to draw a mechanism which uses gears and pulleys.- 18 students have successfully completed the two introductory lessons in each of these areas: Levers, Pulleys, Gears, Wheels and Axles.- 100% of the students participated in the design and construction of the educational fair booth for the county fair and North Florida Fair.- 15 of the students have been able to use the LEGO CAD program to design and build a working model. Other Science and Technology Activities- The 4 high school students who used Quattro Pro for their school project told me that it took them less time than other students in their class who didn't understand how to use a data processing program. They felt their graphs and program for other projects.- The two teen prepared illustrated talks and demonstrations for county and district events. The senior youth won at district events and presented his demonstration on "How a Computer Processes Information" at 4-H Congress. This was his first attempt at demonstration and participation in an activity outside the district.

Nassau County - 767 youth demonstrated mastery of science-based standards through classroom evaluations of participation in 4-H school enrichment programs.596 youth were introduced to traditional 4-H science related projects through participation in 4-H day camps or through programs presented by Extension faculty, staff, and volunteers for other youth groups.

Palm Beach County - As a result of involvement in the Palm Beach County Youth Science and Technology Team, a youth volunteer served as the coordinator and leader of the "Solar Day Camp." There were approximately 20 youth participants in this 5 day camp. Youth developed knowledge and skills in areas such as sun-wise behavior, the greenhouse effect, solar energy, and ozone depletion.

Summary Impact Statements:

Levy County - Recruiting and Training Teen Leaders Proves Successful in Science/Outdoor Education Club Expansion. It has always been difficult to find volunteers to lead clubs in the Science and Outdoor Education subject matter areas. Most of the available volunteers in a small county like this just don't feel competent. This Agent has always had to lead or teach in these areas yet young people have always been excited about learning and growing in these types of activities. Several years ago we started recruiting and training teens to serve as counselors at camps in these subject areas as well as assist in year round programming. They jumped at the opportunity for leadership roles in areas they enjoyed .The next step was matching them with adult volunteers to take care of the organization and supervision roles while these teens took

care of the teaching and recreation roles. It has provided for club expansion with limited increase in agent effort. Today these clubs are expanding (2 clubs this year), youth are getting leadership experiences, and adult volunteers are learning a little more from teens.

Success Stories

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. In some counties where a large number of the clientele is Hispanic, some programs and publications are done in Spanish. Agents sometimes do direct or personal contact with minority leaders, business owners, ministers, youth workers, or other individuals to promote programs. Agents report using Equal Opportunity and ADA statements on meeting announcements. Some counties report using minority newspapers when available. Meeting sites are selected where there is commonality and local support.

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL214/FL714

Title: Environmental Education

Calendar Year: 2002

Critical Needs: 24, 27, 29, 34

National Goals: 4, 5

Key Themes: Agricultural Waste Management, Biodiversity, Endangered Species, Energy Conservation, Forest Resource Management, Global Change and Climate Change, Land Use, Natural Resources Management, Recycling, Soil Quality, Water Quality, Wildlife Management, Yard Waste/Composting

Major Program Objective:

The major goal of the Extension Environmental Education program focuses on the need to improve environmental literacy of Florida's youth with science/research-based information, which is delivered through proven educational methods. The educational objectives that define and ultimately measure environmental literacy require that as a result of the program, youth participants will have:

acquired a substantial amount of science and social foundations that directly relate to Florida's environmental problems, issues and changes

increased their awareness of the varied and critically important environmental problems, issues and changes that exist within Florida and extend beyond its borders

acquired and applied the skills needed to understand the complex and multiple perspectives that surround environmental issues

acquired investigation skills needed for the independent investigation and evaluation of environmental problems, issues and changes

developed and evaluated community based action plan focused on the need for responsible citizenship behavior related to environmental issues

Ultimately, these objectives are operationalized and implemented through the educational methodology employed in the program.

Summary of County Programs for Clientele:

The SMP FL 714/214 Environmental Education reported 48 counties and the Seminole Tribe participating and/or providing programs for clientele in 2002. These counties included: Bay, Bradford, Brevard, Broward, Charlotte, Citrus, Columbia, Dixie, Duval, Escambia, Flagler, Florida Sea Grant College, Gulf, Hamilton, Hardee, Hendry, Highlands, Hillsborough, Holmes, Jackson, Jefferson, Lafayette, Lake, Leon, Levy, Manatee, Marion, Martin, Miami-Dade, Monroe, Nassau, Okaloosa, Okeechobee, Orange, Osceola, PalmBeach, Pasco, Pinellas, Polk, Putnam, Saint Johns, Santa Rosa, Sarasota, SeminoleTribe, Taylor, Union, Wakulla, Walton, Washington.

The youth environmental education programs and associated activities offered by these counties were varied and may include the use of national, state or county 4-H curricula. In some counties the use of other nationally or state recognized environmental education curricula (e.g. Project Learning Tree, Project WET) are employed dependent on clientele needs and requests. According to the Florida 4-H 2001-02 "Annual ES 237 Youth Enrollment Report" generated for Federal reporting purposes, youth enrolled in environmental education projects during this period total 44,288 for all environmental education and earth science projects and 9,452 for all marine science projects.

Programs and activities are also varied for the adult/volunteer training component for FL714/214 but generally focus on current issues/trends that can be supported by available curricula and programs. Training for adult clientele in FL714/214 provides these individuals with the skills and tools to work with youth using 4-H curricula and other environmental education programs.

Supporting activities and curricula currently in use and newly developed materials for FL714/214 will cover multiple objectives listed in the SMP description. These objectives collectively support the main goal of the SMP, which is to improve environmental literacy for Florida youth.

The county 4-H environmental education programs are organized and presented via several delivery modes for youth clientele including: youth organized in clubs, short term special interest activities, day camps, overnight camping programs, school enrichment, individual study, instructional TV and video programs. Typically, each county will have a mixture of these delivery modes that it uses to present activities and programs to its clientele.

Below are listed selected county programs that represent environmental education programs, activities and types of delivery modes utilized in 2002. Several of these county programs also describe the collaborative efforts with other agencies and educational institutions that support and enhance programming for clientele.

Selected County Programs as described from ROA:

4-H Environmental Education Day Camp is a weeklong day camp program that provides hands-on learning experiences, emphasizing environmental education as well as fun activities for youth. The camp is repeated four times annually during the months of June and July. This camp is made possible through grants from The Children's Services Council of Okeechobee County. In addition to the informal teaching of subject matter for youth, the program serves as subject matter and leadership training for adults and youth. Youth are involved in learning situations that enable them to comprehend water as a

resource that can become limited through the interaction of man and his lifestyle and/or as a result of nature's course. These learning situations also create an awareness of the need to preserve our water supplies as well as increasing knowledge of marine and freshwater ecosystems.

Home School Camp is a two-day, overnight natural resource camp targeted home school 4-H youth in Jackson and Walton Counties. This event helped individuals understand their interdependence with the environment, local ecosystems, and natural resources. Information in this program was presented in collaborative effort with other state agencies and involved hands-on learning in a non-formal educational setting. Classes focused on forestry, aquatics, and marine systems.

"Indian River Lagoon Series" (101 - 7th grade students) Learned about the Indian River Lagoon, its ecology, flora and fauna, and human impacts which affect its ability to sustain marine life. Students received classroom instruction prior to a field trip to the St. Lucie County Marine Center and the Smithsonian Marine Ecosystem Exhibit. Students and teachers are provided printed materials to support instructional program.

In collaboration with the 4-H County Faculty, approximately 24 weeks of residential camping programs were completed this year at the four 4-H Centers. This represents participation by 60 of the 67 County Extension programs in Florida. These camps host over 2,500 Florida youth in five-day (typical) residential camping programs that provide training in environmental education, leadership development skills, and other outdoor/recreational skills.

"Environmental Ed-Venture Camps" A five-day session of open enrollment (i.e., open to youth from all counties) camp that provides programming in environmental education and natural resources. Three sessions were held at Camp Ocala and Cloverleaf during the summer of 2002. 4-H camp staff are responsible for the majority of programming and activities during these sessions. Additional county and agency staff are utilized for specific educational programs. Enrollment totals were 175 youth.

"Marine Science Camps" These one week residential camps are cooperatively planned and implemented with Sea Grant and county agents. Youth are involved in activities and topics on aquatic sampling, sea turtle presentations, beach erosion, snorkeling, watersheds and sport fishing. During the summer of 2002 three sessions were held at the Timpoochee 4-H Center with a total enrollment of 260 youth.

Four hundred and ten Keys youth attended one of 5 fishing skill activity days. Two were held in the Upper Keys, one in the middle keys and two in the lower keys. Youth learned tackle crafting, angling skills, fishing ethics and conservation of marine habitats and were accompanied and assisted by their parents and other volunteers

The Marine Ecology Event has been a new project for our county this year. One junior team of four youth and two senior teams of three youth each were formed to take part in this contest. Preparation learning events had been developed and implemented by the 4-H Agent for several months prior to the event. First, team meetings were held to orient the 4-H members about the expectations and the material on which they would be tested. Then a group field trip to The Florida Aquarium was taken to study the exhibits that were on the species list. Two slide presentations were given at the Extension Classroom to give further visual learning opportunities to supplement the CD materials provided by the State 4-H Office. The final educational preparation event was a trip to the beach for dip netting and a stop at the fish market for more species identification. The finale was the competition held at Camp Ocala, November 23rd, 2002.

Environmental education school enrichment programming: County faculty provided training for teachers that resulted in fifty-eight (58) learning events that enabled a total audience of one thousand one hundred and seventy-nine (1,179) elementary students in environmental education. The Agent maintained nineteen (19) thematic environmental education kits to supplement traditional classroom curricula. Each kit has its own situational statement, general information, behavioral objectives, activities, references, 4H curriculums, videos, laser discs, and correlation to other loaner kits.

County faculty conducted the 4-H Shooting Sports/Natural Resources/Sport fishing Camp held at Camp Ocala. Sixty-four 4-H'ers (10-19 years old) attended the six day camp. Youth could participate in archery, rifle, shotgun, hunting/natural resources, and sport fishing. Information was presented on the safe and responsible use of firearms, fishing equipment, outdoor ethics, ammunition and firearms nomenclature, wildlife identification, wildlife management and marksmanship.

Sea Grant participated in the Northwest Florida Community Earth Day Event sponsored by Eglin Air Force Base. The Florida Sea Grant display included touch-tanks with organisms collected from local waters and was visited by over 350 students and adults each day of the event.

The Hamilton County Day Camping Program was successfully continued with two (2) day camps during FY02 in conjunction with the Central Hamilton Elementary Summer School Enrichment Program during which displays and a video were used to teach the youth about the 3R's of solid waste (Reduce, Reuse, and Recycle).

County program continued the "9-11 Year Old Earth Connections" environmental curriculum in all 4th grade classes in the county school system. This curriculum teaches youth to understand the environmental and stewardship issues associated with soil, air and water conservation and quality.

The 43rd Annual Florida State Land Judging Contest was co-hosted by the Putnam Soil and Water Conservation District on March 22, 2002. Four 4-H and thirty FFA teams participated, having earned the right to go to the State Contest in earlier competition at the Soil and Water Conservation District level

"4-H Ecology Field Days" program involved 105 youth and 26 volunteers. County faculty coordinated and planned the involvement of 15 different Environmental Agencies to administer "hands on" activity sessions in their area of specialty with the youth. 15 4-H Ecology Day participants created posters showing what they learned during their Ecology Day experience. 55 youth wrote essays about what they learned during the 4-H Ecology Field Days

County faculty served as one of Project Learning Tree Program Facilitators in Environmental Education Training for 40 College students from Florida A&M University and 60 students from Florida State.

In two three day camps, youth learned about the importance of water, composition and properties of water, water conservation and pollution, aquatic invertebrates, watersheds and the water cycle. Field trips included several pond visits to catch and identify aquatic life and then a trip up to the University of Florida's Fish and Aquatic Sciences Department. 24 youth attended. Teaching materials were taken from Project WET and information learned at the March 2002 Environmental Education in-service training

The Youth Fishing Foundation, which is a grant funded organization held 7 marine science and deep-sea fishing/snorkeling trips during the year. Over 75 4-H members were

able to experience the learning events. Agent assisted foundation with instructing children in safety, fishing tips, proper snorkeling techniques and receiving reels and rods. Also 4 members participated in five-week marine school funded by the foundation.

Participants from the 4-H Club and Girls Scouts (#78) participated in a beach cleanup at Bear Cut Preserve. A total of 49 bags were filled removing over 700 pounds of trash from the shoreline. State Extension faculty provided information on the impacts of debris in the environment and on humans and discussed personal responsibility to help reduce marine litter. A total of 20 recycling cardboard bins have been placed at 19 different marinas and tackle shops around the county. Currently, 14 are actively participating in the program as indicated by follow-up phone survey. The materials will be shipped to Berkely for recycling and made into artificial fish habitats and other fishing products.

Summary of Impacts for Clientele:

During 2001 and early 2002 a formal research study "Assessing Environmental Literacy in a Non-formal Youth Program" was undertaken to evaluate the effectiveness of the statewide 4-H Environmental Education program against the objectives described in the SMP 714/214 description. The purpose of this project was to obtain data on the level of environmental literacy among Florida 4-H youth participating in non-formal environmental education activities. A previous study was undertaken in 1998 to examine the same variables related to the development of environmental literacy and the results of both studies were compared. On examination of data from 1998 with the 2001-02 studies, we find that the differences in scores between the treatment and control group for most of the predictors of responsible environmental behavior have improved in the 2001-02 study from those reported in the 1998 study. Therefore, it would appear that there is an improvement in the 4-H environmental education program via the curricula used or teaching methods employed from the 1998 study, with regard to the goal of environmental literacy.

This study suggests that the environmental education program used in Florida 4-H can increase the ecological knowledge of participants. The data also suggest that other variables (i.e., environmental issue awareness; knowledge and skill in the use of environmental action strategies; and evaluation of environmental issues) thought to be strong predictors of responsible citizenship behavior were not increased by a significant level but the means were orderly and consistent in the desired direction of achievement. A complete report is available from the SMP Leader.

Additional Clientele Impacts as Reported in County ROA

During an Environmental Day Camp, eight (8) youth 12-15years old with the assistance of two (2) volunteers and the 4-H Agent toured the counties natural wonders and learned about the ecology of our county. Exceptionally, 100% of the youth attending received "Wings Over Florida, Junior Birding Certificate" for correctly identifying over 15 Florida birds. And additionally, 100% of those attending promised to follow through with lessons taught during the camp such as boating safety for manatees, recycling principles, and reducing non-point source pollution in our rivers and lakes.

As a result of preparation for the Marine Ecology Event the youth from Citrus County who participated could identify the majority of specimens using the prepared slides, compared to an identification rate of 2-5% prior to training. Participants also learned teamwork and cooperation skills, as well as increased study, memorization and rationalization skills.

"Environmental Classroom" activities designed to enhance classroom curriculum for meeting Sunshine State Standards had the following results: Of the three hundred and forty-four (344) students impacted: Forty-eight percent (48%) correctly describe the habitat requirements of identified endangered species; Sixty-one percent (61%) precisely described the diversity of organisms in a pond habitat; Forty-nine (49%) correctly diagramed a complex food web of the desert. Ninety percent (90%) articulated the impact of disturbance on organisms in coastal habitats; Eighteen percent (18%) exactly described the plant communities in a given biome; Fifty percent (50%) exactly defined the difference between moths and butterflies; Ninety percent (90%) accurately identified venomous and non-venomous snakes of North Florida; Eighty percent (80%) demonstrated the skills necessary to operate a compound microscope.

Survey responses indicated that 87% of educational program participants improved their knowledge of beach habitat and how sea turtles utilize these habitats. 43% of participants indicated they would modify their behavior to protect endangered species and beach habitat during future visits to the beach. 73% of educational program participants indicated that they were very likely to pass on information to protect beach habitat and endangered species to family and friends. The remaining 27% of participants indicated that they might pass on some of the information to family and friends.

Survey of 86 4-H marine camp participants indicated: Majority learned something about watersheds, sharks, sea grass, and aquatic insects. 90% felt the camp would help them preserve the environment. 81% will share the information they learned with family and friends".

At least 10% of 100 youth that participate in the "Stash Your Trash" program report either they have participated in cleanups, made a presentation, and/or participated in other activities to reduce marine debris as indicated by a follow-up survey. About 81% of 158 youth ages K-12 grade who have participated in "Stash Your Trash" program have gained awareness about the different types, sources, and impacts of marine debris. At least 33 of those students participated in a beach cleanup as indicated by follow-up survey and/or observation several months after attending educational program. Of the nine teachers who responded to a post-workshop survey, 78% indicated that they had used at least one activity that they learned in a Sea Grant workshop in their teaching. 11% indicated that they planned to use at least one activity in the 2002-3 school year.

As a quantifiable measure of the students' ability to recognize the different taxonomic groups presented, each student had to differentiate between corals, bivalve and gastropod mollusks, and echinoderms by correctly placing each organism type in the appropriately labeled container. Approximately 70% of the students successfully recognized the types of taxonomic groups.

Environmental Home School Camp's two-day overnight session focused on forestry and aquatics. There was a 79% increase in knowledge gained about marine ecosystems and habitats. There was a 74% increase in knowledge about forestry. Through participation in this program, youth and adults developed a better understanding of their individual contributions, beneficial or harmful, to our environment.

Success Stories

The impact the Project Learning Tree sessions are having on the college education majors that attend can best be described by comments written to the agent by Dr. Mila Ignatz, who is one of the professors of the classroom of students that attend. It reads as follows: "The workshops instill in the students minds the invaluable role of trees in sustaining life

on earth, and their responsibilities as citizens towards caring of trees in order to sustain the balance of nature". "The delivery methods you use reinforce the theories and instructional techniques that they are learning in science education--the hands on/minds-on approaches and strategies to reach all students with different learning styles. The students have come away learning that science teaching and learning can be fun, interesting and relevant."

Through the environmental science school enrichment program, parents reported that their children had become educators and activists. Students are teaching adults about wildlife, local ecosystems, and stewardship.

With help through 4-H programming and education, every school in the Martin County School system has a composting program.

After developing the sea turtle tracking portion of the Escambia County Marine Extension web site in 2001, usage of the site continued to expand both locally and nationally. Science classes at Orange Middle School in New Jersey and the Pearland Library in Texas are among the national groups utilizing the tracking information at the site for educational purposes. Also, scuba divers from Orlando contacted the Escambia County marine agent via the web site to report a sighting of a tagged sea turtle on a dive so information could be relayed to researchers.

A total of sixteen teachers from the Florida School for the Deaf and Blind in St. Augustine have received training to enable them to develop field research projects with their students. The students cover all age groups (elementary through high school) and include deaf, blind and special needs (multiple disability) students. The teachers are taking students out into the coastal environment (on campus and on a pontoon boat) where they are incorporating math, English, science and social studies into field study programs. One of the elementary school teachers has used information she learned to design a six-week science program using fiddler crabs to address all of the required Sunshine State Standards.

Outreach To Minorities:

Minorities are actively recruited for the Environmental Education Day Camp. 47 scholarships to the Environmental Education Day Camp were presented to encourage minority attendance, in addition, the migrant program provided 20 scholarship to minority youth. Minorities were selected to serve as adult and teen counselors for the day camp. All educational programs were taken to the classes or children were transported, free of charge, by school bus to the program location if requested by the teacher.

The 4-H Marine Science project and curriculum was utilized for the America Reads summer program. The youth involved were enrolled as special interest 4-H members and were encouraged to participate in other 4-H activities. A Marine Science Special Interest club was also formed at the Milton Housing Project.

The 4-H Ecology Field Day included youth from an elementary school that is underserved and consists of a predominantly African American enrollment.

Transportation is provided to any 4-H member who wants to participate in the Summer Program.

Through the community-based clubs, minority communities are encouraged through the various natural resource curriculums and activities such as shooting sports and sports fishing. Through the school enrichment, working with the school district ensures coverage of all racial and ethnic groups.

The Shooting Sports Committee provided Scholarship dollars to help recruit minorities into the program. This Committee is dedicated to ensure efforts are made to include minorities in program planning and implementation.

Monthly 4-H newsletters are sent out to minority churches in Taylor County, as well as flyers on local horse shows, day camps, residential camping and special interest classes. Recruitment letters are sent out as well for both 4-H volunteers and 4-Hers. This agent and volunteers make personal phone calls, writes personal letters, uses community leaders for recruitment efforts, and uses mass media for program announcements

Source of Federal Funds: Smith-Lever

Scope: State Specific

SMP-FL215/FL715

Title: 4-H Individual and Family Resources/Health and Safety Programs for Youth
Calendar Year: 2002

Critical Needs: 19, 20, 33, 34

National Goals: 2, 3 and 5

Key Themes: Food Safety, Human Health, Human Nutrition, Child Care/Dependent Care, Children, Youth, and Families at Risk,

Conflict Management, Consumer Management, Family Resource Management, Home Safety, Parenting, Youth Development/4-H,

Youth Farm Safety

Major Program Objectives:

Youth will learn lifelong skills and adopt lifestyle behaviors that promote health, well-being of themselves and their families in future. Life skills address decision-making skills, subject matter skills, practices and behavior sets relevant to each program area. Program areas of nutrition, health and fitness; consumer education and money management; child care and development; personal and family resources relating to home, clothing and individual health and safety provide the following outcomes among youth:

- Improved eating practices; food preparation and food safety practices;
- Improved health and safety practices;
- Improved personal care, appearance, and clothing practices;
- Improved resource management practices; and
- Informed and wise consumer decisions.

Summary of County Programs for Clientele:

Overall, during FY=2002, 66 counties conducted 4-H programming targeted at improving the health and well-being of 92,588 (with some duplication in projects) of Florida=s youth by teaching life management skills.

Nutrition Education:

During FY=2002, 19,537 youth from 55 counties enrolled in 4-H project experiences where they learned to improve their daily nutrition choices; 310 youth from 14 counties learned food safety practices; 776 youth from 35 counties developed skills in food preparation.

Additionally, 5,754 youth in limited resource families, were reported in educational programs that are supported through other program initiatives by EFNEP (see FL 703 or FL 511).

Fifteen (15) counties reported conducting educational youth programs for 1371 youth focusing on selecting nutritious food choices, food preparation skills, best practices in food safety. A variety of educational methods were used including day camps which such themes as A Fun with Foods@ or ACulinary Camp for Kids@; school enrichment programs in three counties used curricula to teach youth to make healthy breakfast choices.

Personal Development, Health and Safety Education:

For FY 2002, 53 counties conducted educational programs targeted at personal development, health and safety needs for 45,474 youth.

32,991 youth from 23 counties completed the Seatbelt Safety A Buckle Up@ educational school enrichment program, improving their seatbelt use.

Two (2) counties reported an interdisciplinary programs on personal hygiene, manners, nutrition and etiquette for youth.

A Talking With TJ@ programs that develop teamwork and provide conflict resolution skills to youth, K-6, was conducted for 299 youth as reported by 2 counties.

Three (3) counties (Charlotte, Martin, Leon) reported teen at-risk youth populations targeted through special programs that focused on A Skills for life@.

Babysitting/Child Care Programs:

During FY@2002, 6,365 youth from 31 counties enrolled in 4-H Child Development projects to learn babysitting basics.

Six (6) counties (Clay, Leon, Indian River, Escambia, Nassau, and Martin) reported conducting innovative and intensive A Babysitting Basics@ Programs for FY = 2002.

Clothing Construction, Selection and Decision-making:

During FY `2002 , 3,433 youth from 57 counties developed skills in clothing construction, selection and decision-making through enrollment in 4-H Clothing project experiences.

Clothing Selection Competitions and Skill-a-thons: A new program initiative was implemented to expand the program to develop knowledge, skills and practices of youth in areas of clothing purchases/decision-making. As a result, 16 counties reported intensive program initiatives in these areas for 933 youth. Programs for clientele were provided primarily as special interest workshops, day camps or as afterschool programs. Twenty-six (26) volunteers were reported as part of the instruction teams for the special interest and day camp programs for youth.

Consumer Education and Financial Literacy Education:

During FY=2002, 18,536 youth from 41 counties learned to make wise consumer decisions, manage their financial resources through their enrollment in 4-H consumer

education project experiences. Fourteen (14) counties reported programming initiatives in areas of consumer education and financial literacy for youth during FY >2002.

A Consumer Choices@, an interactive consumer decision-making educational experience, culminating in a competition for youth, was implemented for 1759 youth (10 counties reporting) via special interest workshops, after school programs and area fair competitions. Six (6) counties reported programs to improve financial literacy of youth through the use of A Money Wise@ school enrichment programming (K-12) or the High School Financial Planning Program.

Summary of Impacts for Clientele: A sample of youth impacts for selected outcome areas are provided below.

Dixie County Special Interest Nutrition Programs: Direct Teaching - Sixty (60) hours
Total Audience - Forty-eight (48)
Learning Experiences - Twelve (12)
Summer Bread Camp students participated in five (5) thematically integrated group learning experiences with grains and bread preparation utilizing the Food Guide Pyramid to develop manipulating skills, association skills, hygiene skills and heighten sensory discrimination. Students demonstrated and or indicated the following: Seventy-seven percent (77%) indicated an improvement in their diets through decreased consumption of fast food and increased consumption of more whole grains and fresh fruits. Five (5) out of twelve (12) or forty-two percent (42%) demonstrated an increase in ability in food selection and food purchasing. Sixty-nine percent (69%) demonstrated improved food safety, production and preparation practices. Four (4) out of twelve (12) demonstrated improved food resource management skills.

Dixie County Elementary School Enrichment Programs: Direct Teaching - Two thousand four hundred and sixteen (2,416) hours
Total Audience - Sixty-eight thousand one hundred and fifty-four (68,154)
Learning Experiences - Elementary school students participated three thousand two hundred and eighty-seven (3,287) thematically integrated group learning experiences with the Food Guide Pyramid designed to develop manipulating skills, association skills, hygiene skills and heighten sensory discrimination. Ninety-seven (97) Kindergarten students constructed the Food Guide Pyramid from memory with an seventy percent (70%) accuracy. Utilizing the pyramid, seventy-five (75) fourth and fifth grade students developed a basic menu plan for one meal with a ninety percent (89.7%) correctness. Two hundred (200) first grade students demonstrated an increase in knowledge of ninety-two percent (92%) and an average accuracy rate of eighty-three percent (83%) was displayed by students when identifying the most nutritious school lunch menu choice.

Dade County=s "Leadership and Education-Pass It-On". The purpose of the grant was to teach twelve 4-H Teen Council members a modified version of the "Ag in the Classroom" curriculum. Six lessons were taught, including food safety. The teens then taught the lessons to 25 fifth grade students at an inner city elementary school. The fifth graders selected a lesson and taught the lessons at a Special Science fair to 306 kindergarten thru second grade students. The fifth graders taught the rules of food safety at a learning station, where they presented a food safety puppet show

Eighty percent (1,971) of the members were able to identify the rules of food safety. A pre- and post-test was given to a sample of 51 participants revealing that 61% (31) children had an overall improvement of knowledge in correct food storage practices on the post-test.

Holmes= County Seat Belt Safety Education pre-tests showed that 80% of all students, even those in kindergarten, knew that it was the "law" to buckle up, however the

percentages of those who actually of their parents don't buckle-up. Only 10% of the students knew that it is against the law to ride in the back of a pickup truck. 30% of the youth had either been involved in or their parents had been involved in an accident involving injuries. It was one of the student's first day in class following a serious accident with his entire family. That child indicated that his father's car did not have seatbelts because they had been removed. He made the connection that had they been wearing seatbelts the injuries probably wouldn't have been as serious. Post-tests given following the Thanksgiving holiday showed a 15% average increase in the number of K-3 students who now buckled-up. The 4th and 5th grades showed a slight 5% increase use of seatbelts. The best result was that there was a 10% increase in parent use of seatbelts for the K-2 grades. The students said the "Mommy/Daddy PLEASE buckle-up for me" really worked!

A Multi County 4-H Clothing Program: A new focus was added to the fourth Multi County Fashion Revue Program - an emphasis on family development. Emphasis on family development was something that needed to be done in order to strengthen the workshop and take it in a new direction. As a result of this focus, an adult component was added. Two adult classes of ninety minutes each were added as well as the opportunity for parents to participate in the fashion revue and share the fun competition. Adults participating were required to have a child participating as well. The Multi County 4-H Fashion Revue Program placed great emphasis on building self-esteem and encouraging the development of the entire family. Accomplishments: Thirty-seven youth and eleven parents participated. Evaluations conducted with the youth revealed the following: a. 78% of 4-H members made at least one new friend. b. 68% of 4-H members learned something they could teach others. c. 50% of 4-H members received praise from an adult. d. 38% of 4-H members learned something about themselves. e. 62% of 4-H members learned at least one new skill. f. 28% of 4-H members felt much better about themselves as a result of the workshop. g. 38% of 4-H members felt better about themselves as a result of the workshop. h. 38% of 4-H members learned some new things as a result of participating in the education classes. i. 37% of 4-H members learned a lot of new things as a result of participating in the education classes. j. 99% of 4-H members stated they planned to participate in next year's workshop. These statements were measured because they are recognized nationally as building blocks of self-esteem, one of the main purposes for the Multi County 4-H Fashion Revue Program.

Lake County Money Wise: 21 schools and 7911 students participated in the program. Increase of 40% over 2000 Results of teacher evaluation surveys were as follows: Grades Taught: 1-2 = 30% ; 3-4 = 40% ; 5-6 = 15% ; 6-8 = 5% Years of Participation: 1 = 37%; 2 = 16%; 3 = 32% ; 4 = 16% Quality of Teacher Materials: 45% Excellent; 25% Very Good; 30% Satisfactory; Quality of Student Materials: 30% Excellent; 40% Very Good; 30% Satisfactory.

Do you feel that your students have a better understanding of money and/or consumer issues as a result of their participation in Money Wise: 75% Yes; 25% Unsure

Did the Money Wise program enhance your curriculum: 85% Yes; 5% No; 10% Unsure

Do you plan to use Money Wise again in 00-01: 80% Yes; 20% No If not, why: Changing Schools, Need lower-level curriculum, prefer a different curriculum.

Duval County Consumer Choices - 87% satisfaction rating. (developmental assets, life skills demonstrated) Compared to before the activity, 1). 87% reported that they were better able to select a backpack or t-shirt to fit a specific situation. (critical thinking) 2.) 76% reported they were better able to read a nutrition label and select nutritious food.

(healthy lifestyle choices)3.) 100% reported that they were better able to determine how much water is falling on a lawn when using a sprinkler system and save resources. (wise use of resources)4). 84% correctly recalled that microwave popcorn is low in calories and high in fiber compared to other snack foods. (disease prevention)5). 76% plan to carefully read price tags to determine how much they will actually save on a sale item. (decision-making).

Success Stories

Financial Literacy of Youth

Teenagers and young adults are encountering financial difficulties due to lack of knowledge regarding credit management, spending and savings plans, goal setting, and consumer rights and responsibilities. Recent studies show that the average teenager in the United States spends approximately \$4,370 each year. Collectively, teenagers spend more than \$155 billion annually. It is imperative that teens and young adults learn the basics of money management. UF/IFAS Extension - Leon County, has developed Mall Madne\$\$: Money and More, a beginning financial literacy program that utilizes the local shopping mall as an interactive classroom. The program goals are to increase financial literacy among youth sixth grade and above; to increase awareness of career opportunities in retail marketing; and to involve youth in positive activities during out-of-school hours. This 7-hour workshop included speakers representing a variety of career opportunities and experiential activities to teach money management and consumer skills. Jabari, an eleven-year-old, listed Shopping Savvy as his favorite session because "it taught you to spend your money wisely." Workshop participants were divided into small groups for a shopping assignment using a scenario that required the group to select an outfit that would meet specific criteria and stay within their budget. Jabari said, "You should spend your money on the right type of clothes." and "When you go back to return something you have rights but you must take care of your responsibilities." Jabari's mother reported that he not only shared with her what he had learned about making good decisions when shopping for clothing but that he had also talked with his grandmother about looking for quality construction, fabric type, and garments that will be durable and easy to launder.

Positive Youth Development for At-risk Youth (including 4-H) Leon County Extension - UF/IFAS partnered with Capital Area Healthy Start Coalition, Leon County Schools, and The Ounce of Prevention Fund of Florida to develop the Teen Life Options program. Through additional financial support from the Work Force Development Board and Healthy and Safe Schools grants this successful positive youth development program has been sustained for seven years. The Ounce of Prevention Fund of Florida, the original funder for the TLO pilot program, has conducted follow-up interviews with previous program participants. Data are available for the first two classes that have now reached graduation age. The long-term program objective was for seventy-five percent of students who completed TLO in the 9th grade to receive a diploma or its equivalency in four years as documented by the Leon County Schools Student Information System (SIS). That may have been a lofty objective considering the low overall promotion rate for Florida's public high schools, however, that standard was nearly achieved. In Florida, only fifty-five percent of the students who should have graduated during the 1999-2000 school year actually received their regular high school diploma, according to a report released November 21, 2002 by the Manhattan Institute. For minority students in Florida, the graduation rate is even lower. Only 46 percent of African-American and 48 percent of Hispanic students in Florida public high schools graduated in 2000. There were 43 and 40 first and second-year TLO students respectively, who completed the program. Twenty-eight first-year students and 35 second-year students remained in the Leon School

District for each of their four high school years. The following table displays the percentage of students who graduated within four years by group for the first two TLO classes (1995/96 and 1996/97) Based upon data from SISFour-Year Graduation by Group 1995/96 and 1996/97 TLO Students - Percent of students graduating within 4 years among those remaining in district: 95/96 9th Graders 96/97 9th Graders CombinedTLO 21/28* 75.0% 22/35 62.8% 43/63 68.2%Control** 16/27 59.2% 21/34 61.8% 37/61 60.7%Comparison*** n/a 14/35 40.0% 14/35 40.0%*Two additional first-year TLO students graduated during the 1999/2000 school year, thus 23/28 (82%) of first-year TLO students have received high school diplomas in five years.** The control group was matched based on age, gender, race, and limited risk factors as indicated by the Student Mobility At-Risk Tracking System and not enrolled in an alternative education program.***The second year of the program a comparison group was identified that was also matched based on age, gender, race, and limited risk factors as indicated by the Student Mobility At-Risk Tracking System and enrolled in another year-long alternative education program. This group may provide a more accurate measure of program impact. In follow up interviews with previous program participants, those responding consistently stated that they wished TLO was offered through 12th grade. Past TLO students commented that TLO helped them adapt to the high school environment, helped them to be more structured, and more determined to do well in school. Seniors also indicated that their decisions to delay parenthood were influenced by the Teen Life Options program, which they credited with giving them an enhanced awareness of the responsibility involved with becoming a parent. As the result of the current funding situation for youth programs in Florida, this program ended when the last participants completed the program in May 2002. It is important not to lose sight of the fact that TLO was successfully sustained for seven years and was replicated at two other locations before there was a shift in funding for the Work Force Development Board. It is truly a community collaboration that has promoted positive youth development with 273 at-risk teens and their families within a comprehensive interdisciplinary program and has shown improved graduations rates compared to the general public school population.

The Hendry County 4-H Fashion Revue Program was a great success. Thirty-eight 4-H members (58 construction garments and 7 selection garments) participated in the Fashion Revue Contest. Ten black females and one black male modeled their garments they made in the 4-H Sewing Club Program.

Consumer Choices: Although post tests usually average 15% increase in knowledge over the years, kids that participate in this event DO LEARN AND RETAIN information. Our county government TV station was so impressed with the classes that this next year they want them filmed for SGTV. In the past we've made video's of each class and checked them out for clubs and individuals that missed our sessions or wanted to review information. My son has been out of the 4-H program for over 4 years but continues to bring up comparing prices while shopping, reading labels before buying or washing clothes, food safety, etc. I think this is one of the most successful and life retaining classes that 4-H offers

Dade County=s Food Safety fifth grade student teachers of the Leadership and Education - Pass It-On grant prepared and taught a lesson on food safety at a science fair learning station. As a result of this experience, these student teachers gained confidence in public speaking/teaching skills, as observed by the agent and the fifth grade teacher. A post survey was given to the students after the event, which revealed: 1)The students liked the idea of teaching the lesson to other children and wanted to participate in the type of activity again; 2) They felt that the presentation was a good way to learn about food

safety.*They learned how to prevent germs from multiplying rapidly. B) Two participants who attended the Serv Safe Training and Certification Workshops are now working in the position of Quality Assurance Managers of Miami-Dade County Senior High Schools. They have developed a series of in-service training workshops, a quality assurance newsletter, a food temperature tracking chart, and a sanitation program in order to provide safe foods for area high schools.

Okeechobee=s Teens At Promise Program The Teens at Promise was an after school program for at-risk youth in the middle school(1999-2002) developed through the Healthy Start Coalition and funded through Ounce of Prevention funds. It served 60 youth, boys and girls. Youth were helped with their homework, computer skills, money management, leadership, career education, self esteem, healthy lifestyle decisions and conflict management. This agent taught classes two hours per week. None of the participants of the program got pregnant or became fathers.

Teen Pregnancy Prevention: The teen pregnancy prevention task force has been very successful in educating the population about the epidemic of teenage pregnancy and instilling a desire to stop the epidemic. The following comments written by teens on a survey after participating in teen pregnancy prevention task force programming say it all: "My mother and sister were both teen mothers. I am going to break the mold." "I already knew I didn't want a kid at my age, but the program made me think about a lot of other things." "Every choice you make impacts your future." Money Management Classes The following comment was made after completion of a money management program. "You make it all sound so easy. I can do it!"

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. In some counties where a large number of the clientele is Hispanic, some programs and publications are done in Spanish. Agents sometimes do direct or personal contact with minority leaders, business owners, ministers, youth workers, or other individuals to promote programs. Agents report using Equal Opportunity and ADA statements on meeting announcements. Some counties report using minority newspapers when available. Meeting sites are selected where there is commonality and local support.

Escambia County=s Outreach to minority clientele will be reached through volunteer and youth recruitment and training by various methods throughout the year in 4-H traditional and EFNEP 4-H clubs. Special recruitment booths at the Pensacola Interstate Fair (Red Barn and 4-H Foundation) . School enrichment programs will also be targeted for minority and youth at risk areas in the communities of Escambia County. 4-H Advisory Committee minority members suggested that minority participation is most likely due to the narrow program base and the current stereotypical view of the 4-H image. Advisory members' suggestion were used to develop a plan to promote diversity in 4-H which included the following methods to reach minorities:*Publishing newspaper/brochure, exhibits, and presentation with pictures that include and/or feature minority participants . -Manner's matter Exhibit - Power Point Presentation - Manners Matter, Power Point Presentation - Escambia County Volunteer Leader Program.*Creating partnership with other minority youth organization/support groups. - Catholic Social Services, CDAC (Community Drug and Alcohol Commission), Camp fire Girls and Boys, Milk and

Honey Youth Programs, Longhollow Neighborhood Association.*Involvement of minority youth in the Oklahoma Leadership Exchange Program.

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL216/FL716

Title: 4-H Citizenship/ Leadership

Calendar Year: 2002

Critical Needs: 32, 33, 34

National Goals: 5

Key Themes: Character/Ethics Education, Communications Skills, Community Development, Conflict Management, Impact of Change on Rural Communities, Leadership Training and Development, Literacy, Workforce Preparation - Youth and Adult, Youth Development/4-H

Major Program Objective:

The major program objective of this program is for youth to acquire the knowledge and skills necessary to be active participants at all levels of leadership and citizenship from interpersonal to international. These skills will help youth become contributing members of society and good citizens by:

fostering moral development

increasing cultural and global awareness

developing leadership competencies

youth involvement in community/program development

increasing civic education, citizenship and community service

Summary of County Programs for Clientele:

Overall, during FY= 2002, all counties in the state of Florida implemented programs that assisted youth to acquire citizenship and leadership knowledge and skills, the cornerstone of the 4-H curriculum and program.

Moral Development and Ethical Character

During FY= 2002, 334 youth were involved in character education

A Character Counts@ Programs were implemented across the state, including in the counties of Santa Rosa, Indian River and Liberty

Multi-cultural education

Youth across the state received training on diversity and multi-culturalism through workshops, International Days and camp activities.

Youth in Escambia county learned about the Creek Indian Nation, as well as the Japanese culture by engaging in cultural programs at summer camp.

Citizenship Education and Understanding of Government

During FY >2002, 5,584 youth from 50 counties participated in citizenship projects

Four (4) counties reported involvement in Citizenship Washington Focus

The A Know Your Government A Project book was completed by over 70 youth in three (3) counties

250 youth participants from 30 counties engaged in A 4-H Day in the Legislature” for one day participating in a rally at the state capitol to announce priorities in youth development, touring government facilities, visiting state legislators and viewing the government process up close.

228 youth from 40 counties participated in Florida 4-H Legislature for one week in Tallahassee, enacting a mock legislature. They learned how government works in a hands-on way and took leadership to act out the roles of legislators, lobbyists and the press. Youth participating learned writing, public speaking and presentation, persuasion and other skills.

Community Service and Action

In FY= 2002, 1,534 youth participated in service learning throughout the state of Florida as a result of being in a 4-H club.

Additionally, 441 youth participated in community service and volunteerism.

Partnerships were formed throughout the year to foster volunteerism and service to the community. Some of these organizations include: Catholic Charities, United Way, Salvation Army and Habitat for Humanity

Youth participate in community service activities as a result of being in a 4-H club. One agent observed in her ROA that clubs typically perform three service projects per year.

Partnerships were formed throughout the year to foster volunteerism and service to the community. Some of these organizations include: Catholic Charities, United Way, Salvation Army and Habitat for Humanity.

The State 4-H Council obtained a \$1500 grant from National 4-H Council to fund the statewide “Tales From Teens: a 4-H Literacy Initiative” service project. Combined with a matching pool of funds, the Council distributed \$3,035.00 to seven counties (Broward, Clay, Holmes, Levy, Marion, Seminole, Suwannee) to conduct service learning projects to improve community literacy. The funded projects reached 196 4-H members, 50 4-H volunteers, and 970 non-4-H youth. Approximately 589,132 people read about this project or saw information about it through news media. A new grant was obtained in fall 2002 and the process is being repeated in spring 2003.

Leadership Development for Youth

Various youth opportunities exist to develop leadership skills within youth including club, county, district and state officer events. The 23,244 youth participating in 4-H clubs in F.Y. 2002, learned about leadership through their peers or taking leadership through their own initiative, how a representative democracy functions and the role of citizens within a society.

During F.Y. 2002, 1,606 youth were enrolled in leadership development projects.

The State 4-H Council organized three leadership training weekends known as State 4-H Executive Boards (March 22-24, September 13-15, December 6-8) attended by 265 youth, 50 volunteers and 16 agents. District Council officer training was held during September 2002 and included training in public speaking, effective meetings and strategic planning.

The eight state 4-H council youth officers were trained for two days (August 9-10) in strategic planning and goal setting, effective meetings, communications and leadership skills.

The State 4-H Council held eight hours of meetings during Florida 4-H Congress attended by 120 youth. Approximately 20 youth ran for State 4-H Council office, gaining valuable experience in presentation skills, public speaking, persuasive skills, campaigning and financial management. During these meetings youth heard speeches, learned about the voting and candidacy process, and participated in representative democracy.

District 4-H Councils reorganized from 10 districts to 13 districts in September 2002. County faculty input indicated an improvement in quality in district council programs, with districts decreasing in size. This eliminated travel problems and created additional opportunities for youth leadership. County agents were encouraged by state faculty to appoint one agent to serve as district 4-H council advisor. Seven advisors attended district 4-H council officer training in September 2002 and received instruction on how to work with district councils.

In Brevard County, 4-H extension faculty conducted leadership training for all 4-H club officers. This educational program reached 88 youth. Approximately 88% of the youth scored correctly on a post-test, and all increased their scores from a pre-test.

-In Citrus County, three youth leaders were trained to serve as facilitators for the County Conversation on Youth Development, which was attended by local business and youth development leaders.

-The State Conversation in Youth Development involved more than 150 youth from 32 counties in January 2002. Convened by the local 4-H program and involving community partners from outside of 4-H, county conversations were held in 38 of Florida's 67 counties between the months of October 2001 and February 2002. Counties sent delegates (typically three youth and one adult) to the State Conversation on Youth Development on January 12, 2002 in Gainesville. The top five issues for Florida were: (1) mentoring and providing role models for youth, (2) involving young people in decision-making, (3) teaching youth to value diversity and resolve conflict, (4) encouraging more positive coverage of young people in the media, and (5) providing ways for young people to make a difference and prepare for the workplace. Providing safe places for youth to gather was also an important theme that emerged from many breakout sessions. Florida sent a delegation of 40 youth and adults to Washington, DC to attend the National Conversation on Youth Development.

Summary of Impacts for Clientele

Escambia County Cultural Citizenship-Leadership Exchange Program

The Florida/Oklahoma Citizenship-Leadership Exchange Program started last summer with a visit of 16 youth and adults from Nobel County, Oklahoma to Pensacola, Florida. Nine families hosted the Oklahoma delegation with many close friendships developing. A special program was developed to introduce the Oklahoma delegation to the Florida lifestyle and diversity of the 4-H program and environment in the panhandle of Florida, which included field trips to Pensacola Beach, Camp Timpooshee, Destin, Ft. Walton Beach, Langley Bell 4-H Center, and agriculture crops in the north in of the county. It was an experience for very rural farming and ranching youth to experience our diversity and beaches in Florida.

On the return visit with Florida visiting Oklahoma, only three youth had been exposed to the farming industry and lifestyle. The other twelve members of the exchange delegation were urban or suburban youth and adults that had never experienced living on a farm and the hard work it takes to manage that farm. Three youth of the exchange delegation were inner city minority youth. The Florida/Oklahoma leadership-citizenship exchange program provided 15 youth and adults from Escambia County the opportunity to experience a new cultural environment while living with 8 host families in Oklahoma for 9 days. Three minority youth plus ten other youth from urban or suburban areas experienced their first contact of "on the farm" living. All youth were exposed to the daily lives of 4-H families involved in farming and ranching including hay production, wheat harvesting, cattle herd management including embryo transplants, seed harvesting and cleaning and a trip to oil and gas wells. It also provided the cultural experience of low-income youth placed in homes of more affluent families and higher-income youth placed in more modest homes without the comforts of their homes back in Florida.

Teen Court in Santa Rosa County

Forty-six (46) youth participated in Teen Court workshops which were designed to inform youth about the Teen Court program and to help them to become more effective volunteers. Through observation of an actual court and participation in a mock Teen Court trial the youth learned about the legal system. The Teen Court Coordinator and Adult Volunteers reported that the youth participants who participated showed improve skills as Teen Court volunteers. Pre/Post tests scores revealed an increase in knowledge gained from an average of 55% to an average of 87%. (46)

Over 100 youth defendants have been served by the Teen Court program during 2002, the rate of recidivism for defendants who participate in the Teen Court program is 8-12%.

Over 70 youth served as volunteers providing over 2000 hours of community service. 45 youth are members of the 4-H Citizenship Club.

Twenty (20) 4-H Youth were recognized as Outstanding Teen Court Volunteers

Indian River Youth Club Members Volunteer

Every 4-H member participated in at least one community service activity with encouragement from the agent.

In two different occasions two clubs worked together on their project. The clubs worked together to prepare a float and walk in the Vero Beach Christmas Parade.

The County 4-H Council collected books to give to a social service agency that deals with children as part of the statewide literacy project of the State 4-H Council.

Holmes County Youth Volunteer with Afterschool Science and Technology Program

The 4-H Science and Technology Afterschool Program provides middle school youth a safe, supportive environment which focuses on developing science and technology knowledge and skills, as well as life skills with help them become productive, contributing citizens. The program assistants, teen volunteers "homework helpers", and adult volunteers supervise, assist and teach up to 30 youth participants from low-income families. The youth were identified by school personnel as having academic or social problems were given first priority to enroll in the program. Of the 53 participants from the 2001-2002 and 2002-2003 school year 90% live at or below the state guidelines for poverty. Of the 15 homework helper teens, 74% were identified as living at or below the poverty level.

Miami-Dade County A Education and Leadership B Pass It On@

Twelve (12) youth are actively involved in a grant funded (\$1,500 from the Florida 4-H Youth Foundation) project titled "Education and Leadership - Pass-It-On." These teens received training on 6 lessons; teaching children, nutrition, food safety, plants, entomology and water conservation. This project began November 2001 and was completed in 2002 when they trained a science class of 22 African American students to conduct a 20 minute hands-on learning station. These students then held a Science Fair of seven learning stations that was attended by 306 kindergarten through second grade students. The fifth graders averaged 69% on the pre test and 83% on post test knowledge. Teacher/agent observation indicated the teens and fifth grade students gained confidence and leadership skills as they pass knowledge gained to the lower grade students. Fifty-six (56) teens received training by this agent for the purpose of conducting learning stations in plant science, entomology, water conservation and pollution and nutrition. This resulted in 733 youth reached in 38 presentations during the four field trip days at the county fair.

Success Stories

Citizenship Success Story

Zachary's dream is to attend the Naval Academy and because of his involvement in 4-H he feels that he is one step closer. He recently attended an Academy Day's program where he met with representatives from the various Academy's and his Congressman. He was told that because of his participation in and accomplishments in 4-H he is an excellent candidate. Through the past four years in 4-H Zach has developed his leadership skills and assumed leadership roles and he has been involved in many community service projects. He has developed an outstanding 4-H Portfolio and has been selected to participate in National 4-H Congress as a result of his accomplishments in the Citizenship Project. Zach and his parents credit 4-H with providing the many opportunities that have allowed him the chance to develop his potential.

Citizenship projects and participation in the Santa Rosa County Teen Court program provided opportunities for further career exploration opportunities for youth. As a result Jeffery 4-H member Alumni, who graduated in 2002 and who hopes to become a lawyer has obtained a part-time job in the State Attorney's Office. Another current 4-H Teen Volunteer has been offered the opportunity to volunteer in the State Attorney's office working with the Juvenile Justice Office.

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. In some counties where a large number of the clientele is Hispanic, some programs and publications are done in Spanish. Agents sometimes do direct or personal contact with minority leaders, business owners, ministers, youth workers, or other individuals to promote programs. Agents report using Equal Opportunity and ADA statements on meeting announcements. Some counties report using minority newspapers when available. Meeting sites are selected where there is commonality and local support.

Source of Federal Funds: Smith-Lever

Scope: multi-state, state specific

SMP-FL217/FL717

Title: 4-H Communication Arts and Sciences

Calendar Year: 2002

Critical Needs: 34

National Goals: 5

Key Themes: Communications Skills, Youth Development/4-H

Major Program Objective:

- Youth skilled in application of personal/interpersonal communication methods that support individual, family, workforce and community actions.
- Youth involvement in communication arts, leisure arts and recreation as a positive use of time.
- Youth skilled in researching and making oral presentations.
- Youth literacy relative to communication technology.

Summary of County Programs for Clientele:

Developing public speaking and presentation skills

In F.Y. 2002, approximately 94,332 youth were enrolled in public speaking, radio or television projects. The majority of youth were involved in public speaking.

The 4-H/Tropicana Public Speaking Contest is a school enrichment program that reached approximately 128,500 youth in 50 counties last year. Additionally agents in several counties (Alachua, Leon, Santa Rosa) have reached out to homeschooled youth and enabled them to participate in this program. In Bay County, the program reached 1800 youth and county faculty conducted four public speaking workshops in partnership with public schools. In Gadsden County, approximately 55% of the local schools participate in the program reaching 585 youth. Approximately 600 youth in Madison County and 45 teachers participated in the program. In Manatee County, 264 classroom teachers in 34 schools participated. County extension faculty taught two workshops on public speaking and 2,300 youth participated in the program. Teachers reported on evaluations that the program assists them in preparing youth for the FCAT and Florida Writes exams. The following was cited in a UF/IFAS news release: "Everyone can relate to that jittery moment when you first step in front of a crowd. For many young people, this contest is their first experience giving a speech," said Marilyn Norman, assistant dean for 4-H youth development programs at the University of Florida's IFAS. "Whether or not they win, writing and delivering a speech helps youth learn valuable life skills that will benefit them later in life," she said.

In Leon County, the 4-H/Tropicana Public Speaking Contest has a positive relationship with the county public schools. Approximately 6,933 youth and 300 volunteers were involved in the program in FY 2002. County extension faculty produced six publications to help teachers and youth involved in this program. A videotape of the county-wide contest remains the most-requested video within the Leon County public school system. The school superintendent attended the county contest and the program was featured in a national newspaper for kids.

In Lake County, the 4-H/Tropicana Public Speaking Contest involved 3,436 youth at 18 schools. This represented a 15% participation increase over the previous year. In a survey of classroom teachers participating in the program, 94% said that the program improved

youth writing skills and 97% said the program improved student oral communication skills. Eighty-two per cent of teachers said that materials provided in the program were excellent or very good and 94% said that they would participate in the program again.

In Okeechobee County, 100% of fourth, fifth and sixth grade youth in county public schools are involved in the 4-H/Tropicana Public Speaking Contest, which reaches 1603 youth. Participation in this program has increased by 75% since 1996 in the county. The local newspaper covers the speeches as front-page news and the program has opened doors for other extension school enrichment educational programs. Similarly, in Washington County, 100% of fourth, fifth and sixth graders in the county are involved in the 4-H/Tropicana Public Speaking Contest, with 848 youth.

In Pasco County, the 4-H/Tropicana Public Speaking Contest is so popular that the school system asked county faculty to develop and implement a public speaking program for the high school grade levels. Approximately 1,400 youth from half the high schools in the county participated in the new high school 4-H public speaking program this past year.

In Pasco County, ten 4-H project record books were scanned and placed online through the county 4-H program website. Parents and youth report that the materials are easier to access and more cost-efficient. Faculty continued to provide printed copies for families without internet access. County faculty were remarkably surprised at how popular this change was and how many families were able to access the materials.

In Polk County, county 4-H faculty taught 16 classes at Girls Inc. attended by 20 girls. The classes taught communication skills, storytelling and public speaking.

An outreach program with special needs “Exceptional Education” students in Jefferson County taught communication skills to youth with learning disabilities. County faculty taught 14 ninety-minute sessions with the youth. Many of the youth in the program have part-time jobs and needed additional assistance in acquiring communication skills to help them in the workplace and be successful employees. They also learned how to dress for a job interview and how to present themselves in an interview.

In Bay County, the Citizen Leaders Training Program taught 12 at-risk youth presentation and communications skills. Instruction emphasized experiential learning.

In Okeechobee County, county extension faculty attended 10 4-H club meetings and provided training on record book completion for 4-H club members throughout the county. County faculty reported that this educational program improved youth record keeping skills.

At the state level, state extension faculty developed communications criteria for state Future Farmers of America (FFA) CDE.

Photography and expressive arts

In F.Y. 2002, approximately 18 youth were enrolled in writing and print 4-H projects, 416 in performing arts, 21 in dance/movement, 41 in drama/theater, 20 in music/sound, 91 in visual arts, 2,000 in arts and crafts, 52 in drawing/painting/sculpting, and 303 in graphic arts/displays/exhibits.

There were 200 entries in the state 4-H photography contest and 150 in the state 4-H poster contest. Rules for the state 4-H photography contest were revised with the help of a county faculty input group, the input of judges and youth. The contest will now allow digital photos and provide for separate judging divisions and enhanced youth participation.

A four-hour workshop held during Florida 4-H Congress for 15 youth taught them photography skills. Youth participants expressed admiration at being able to interact with “real photographers.”

A four-hour workshop held during Leadership Adventure Weekend for 20 youth with a professional photographer taught them photography skills.

In Citrus County, the 4-Paws 4-H Dog Club created educational skits about what youth should do if approached by a strange dog and performed them at local elementary schools.

Photography education programs enhanced summer camping experiences for youth from Glades, Hendry, Madison and Taylor counties.

A week-long photography day camp in Madison County reached 25 youth with 18 hours of instruction.

In Miami-Dade County, approximately 35 youth participated in the talent show at the Miami-Dade Youth Fair.

In Nassau County, a two week children’s theater workshop was held in partnership with a local community theater. The program educated 40 youth.

In Levy County, a one-week theater arts day camp was conducted by county extension faculty with the assistance of four youth helpers. Approximately 50% of the 30 youth attending the day camp increased their scores on a post-test examining knowledge improvement and retention.

In St. Johns County, a new 4-H club, the “Calvin Pete Survivors” created a song and dance routine. They practiced weekly for two months and won first place during the 4-H Centennial Celebration in St. Augustine. County faculty wrote the following: “for the youth in this club, it was the first time any of them EVER set a goal, worked to achieve it, and won a competition. They were elated, and have since performed their show for the St. Johns County Commission. The club leader carried the trophy with her everywhere she went for the next two weeks! The trophy has been displayed at the 4-H’ers churches, and is visible at each meeting to inspire the members. After this success, the membership in this club soared.”

At Leadership Adventure Weekend in January 2002, 97 youth attended a one-hour workshop on skit preparation and basic drama and improvisation.

Approximately 20 youth participated in the State 4-H Share the Fun Talent Show before a live audience of 800 attendees.

At Leadership Adventure Weekend in January 2002, approximately 22 youth attended a three hour workshop on press release writing and exhibit construction and design.

Public outreach and media education

A five-day workshop in media education was held at Florida 4-H Congress and supervised by state faculty working in partnership with county extension faculty. Attended by approximately 20 youth, this workshop taught youth photography, writing, graphic design, interviewing and powerpoint presentation skills. The end result was a 12 page newspaper which was printed and distributed to 600 youth as a souvenir of the event, and a powerpoint presentation assembled by youth documenting the week.

A four-day workshop in media education was held during Florida 4-H Legislature and supervised by state faculty working in partnership with county extension faculty.

Attended by approximately 8 youth, this workshop taught youth photography, writing, interviewing and graphic design skills. The youth press team created a daily newspaper which was distributed at Florida 4-H Legislature to approximately 267 youth and adult attendees.

Leadership Adventure Weekend was organized by a 20 member youth planning committee. This educational weekend training provides instruction in communication and leadership for senior 4-H members and was attended by 130 youth in 2002 at 4-H Camp Ocala. Workshops included photography, news release writing, exhibits, posters and design concepts, public speaking, and interpersonal communications.

The State Conversation in Youth Development involved more than 150 youth from 32 counties in January 2002. Convened by the local 4-H program and involving community partners from outside of 4-H, county conversations were held in 38 of Florida's 67 counties between the months of October 2001 and February 2002. Reports filed on the National Conversations website reveal that 383 youth and 303 adults took part in the conversations at the county-level (it should be noted that several counties did not file reports but did conduct this event). Counties sent delegates (typically three youth and one adult) to the State Conversation on Youth Development on January 12, 2002 in Gainesville. The top five issues for Florida were: (1) mentoring and providing role models for youth, (2) involving young people in decision-making, (3) teaching youth to value diversity and resolve conflict, (4) encouraging more positive coverage of young people in the media, and (5) providing ways for young people to make a difference and prepare for the workplace. Providing safe places for youth to gather was also an important theme that emerged from many breakout sessions. A February 2002 rally to announce the priorities on the state capitol steps for the public and news media involved 200 youth participants, who learned how to express themselves, how the media operates, and how to communicate with government officials. Florida sent a delegation of 40 youth and adults to Washington, DC to attend the National Conversation on Youth Development.

In Flagler and Santa Rosa counties, 4-H members staffed seed planting booths for the general public on Earth Day, providing valuable exposure to the public about 4-H. Youth staffing the booths learned public presentation and demonstration skills.

In Indian River County, two 4-H clubs created a float for the Vero Beach Christmas Parade, learning how to assemble an effective presentation within guidelines and work together.

Summary of Impacts for Clientele:

Youth literacy relative to communication technology.

Youth skilled in application of personal/interpersonal communication methods that support individual, family, workforce and community actions.

Youth involvement in communication arts, leisure arts and recreation as a positive use of time.

Youth skilled in researching and making oral presentations.

Success Stories

4-H/Tropicana Public Speaking Contest participants in Leon County had the following to say: 41 schools including home school participated. Each school is given the opportunity to evaluate the entire program. Almost fifty percent of the schools returned evaluations

(20 of 41 schools). The evaluations indicated that this is an excellent program which makes a definite impact. One of the questions on the evaluation was: "If you had the opportunity to talk with Tropicana representatives about the public speaking program, what would you say?" *The program is a great self-esteem builder and it gives students an opportunity to voice their opinions. *This is a program that is wonderful for the kids. I think it fits perfectly with the process writing we teach for our standards and benchmarks.

*The students gain so many important, life-long skills through this event. It opens up a whole new world to those students who are lacking in self-confidence.

Completed questionnaires from school winners advancing to county competition were very interesting and gave great insight into the many benefits received from participating in this program. The following are a few quotes from two of the questions on the questionnaire: "Ask your teacher what he/she likes best about the public speaking education program." *I think that this program is a way students can gain valuable experience in public speaking while mastering important language arts skills. Students who have these kinds of experiences are at an advantage in later grades. *The public speaking education program is an excellent opportunity for students to showcase their creativity. What I like best was that the choice of topics were chosen by the candidates. This allows students a chance to fully and freely express themselves. Students can write and speak expressively about a topic of keen interest. *This program assists teachers with the writing and speaking Sunshine State Standards. The students are always excited and enjoy presenting their unique speeches.

"How do you think the public speaking skills you have learned will help you in the future?" *They could help me in an interview at a job. *It has built my confidence level and self-esteem. *I think the public speaking skill will help me in the future with college. *If I had to write an essay it would be easy.

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. In some counties where a large number of the clientele is Hispanic, some programs and publications are done in Spanish. Agents sometimes do direct or personal contact with minority leaders, business owners, ministers, youth workers, or other individuals to promote programs. Agents report using Equal Opportunity and ADA statements on meeting announcements. Some counties report using minority newspapers when available. Meeting sites are selected where there is commonality and local support.

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL218/FL718

Title: Organizational Development in 4-H

Calendar Year: 2002

Critical Needs: 34

National Goals: 5

Key Themes: Communications Skills, Leadership Training and Development, Youth Development/4-H

Major Program Objective:

4-H youth participants will reflect the diversity of Florida's youth population; targeted youth populations, as identified by advisory committees, will have greater access to 4-H educational opportunities

Parents of current and potential 4-H youth participants will view 4-H as an available and useful resource in providing valuable out of school experiences

Community leaders will increase understanding of their critical role in youth development; they will increase their support for youth development through participation in the 4-H program and increased commitment of public and private funds

Citizens will have access to research-based information so that informed public policy decisions can be made that will positively impact youth in their communities

Summary of County Programs for Clientele:

66 counties and the Seminole Tribe worked with 23, 244 youth and 1,307 community based 4-H Clubs. During the fiscal year 2002, 42,876 youth were engaged in short term educational programs (six hours or more) in 58 of the 68 Florida reporting units. There were 4,004 youth from 60 counties engaged in intensive week-long residential camping experiences statewide. School enrichment classroom programs were conducted by 63 counties for youth to learn skills and adopt practices in a variety of subject matter disciplines. This included 295,798 youth.

4-H Programs throughout Florida sponsored advisory committees, Expansion and Review Committees, volunteer leader training, county councils, officer training, and numerous events and activities to enhance learning for 4-H youth. The State 4-H Office conducted three major events and 35 competitive events to supplement work at the county level. At the county level, youth demonstrate leadership, management, and organizational capabilities through an organized group structure by taking an offices in clubs, presented an educational demonstration, and participation in community service projects. 4-H Leaders have delivered educational programs to youth that include leadership, management, and organizational skills taught through 4-H projects and community service projects utilizing the skills and knowledge they received in workshops and leader training. Workshops that are taught, include; steer grooming and showmanship, horsemanship, dairy, horse judging, livestock judging, steer maintenance, dog care, animal maintenance, exhibitor workshop, rabbit, poultry, meat, ethics/showing animals, leadership, officer responsibilities, nutrition, rocketry, marine science, computer technology, photography, public speaking, food preservation, letter writing, team work, record book/portfolio techniques, gardening and environmental sciences. Many counties have judging teams (senior and junior) in most large animal species of livestock that compete in the offered judging opportunities and judging workshops. . Volunteers and youth have contributed a significant number of hours of volunteer service to the program and to their community in the 4-H program. Contributions are documented through volunteer logs submitted by 4H leaders and youth leaders.

Based on the 2002 ES237 data the following information reflects participation in 4-H during 2002.

23,244 youth enrolled in organized clubs or units.

1307 organized clubs or units.

42,876 youth participated in 1,336 special interest, short term, or day camp experiences.

4004 youth participated in 156 weeks of overnight camping programs at four 4-H camps.

295,798 youth (includes duplicates) participated in 4-H school enrichment programs.

660 youth participated in 4-H individual study / family 4-H.

136 youth participated in at least 9 school-aged childcare programs.

106 youth participated in instructional TV/video programs.

The racial/ethnic background of youth in 4-H is as follows: 67% White; 21% Black/African-American; 10.5% Hispanic; 2% Asian; and .5% American Indian/Pacific Islander.

15,995 adults served as volunteers in the 4-H program.

1,365 youth were recorded as volunteers in the 4-H program.

Project enrollment in curricular areas were as follows:

Citizenship and Civic Education: 8,548

Communications & Expressive Arts: 98,535

Consumer & Family Sciences: 28,681

Environmental Education & Earth Science: 44, 288

Healthy Lifestyle Education: 634,907

Personal Development & Leadership: 13,652

Plants and Animals: 58,149

Science and Technology: 31,272

SMP Program goals

1. 4-H youth participants will reflect the diversity of Florida's youth population; targeted youth populations, as identified by advisory committees, will have greater access to 4-H educational opportunities

2. Parents of current and potential 4-H youth participants will view 4-H as an available and useful resource in providing valuable out of school experiences

3. Community leaders will increase understanding of their critical role in youth development; they will increase their support for youth development through participation in the 4-H program and increased commitment of public and private funds

4. Citizens will have access to research-based information so that informed public policy decisions can be made that will positively impact youth in their communities

Summary of Impacts for Clientele:

Levy County- Upon completion of a six week training program, three 4-H'ers demonstrated effective lobbying skills during participation in Florida 4-H Legislature. - One 4-H'er demonstrated exceptional skills in service as a 4-H Legislator at Florida 4-H Legislature.-

Seminole County: Special Interest continues to be a vehicle to promote 4-H involvement and to support 4-H club activities. Approximately 15% of all special interest programs are attended by non-4-H club members. Participants that attend workshops come away with a positive 4-H experience and have gained knowledge on a specific topic that is taught. The 4-H Tropicana Program continues to be a successful program in Seminole County. All 11 public middle schools participated in the program plus an additional 3

private schools. 42 Classroom teachers participated with 4103 6th grade youth participating, a slight decrease from the previous year. We continue to receive positive feed back from parents and teachers about the difference this program makes in the life long skill for their children.

Seminole County: In evaluation of the successful 4-H club traits, 46 % of 4-H clubs exhibited 4 or more of the desired qualities; this included new as well as existing clubs. Seven of those clubs began this past year and completed their first year of enrollment, which accounts for the reduced % meeting the criteria (-18%). Of those clubs who had been in existence 3 or more years, 58% exhibited 4 or more traits of successful clubs.

Martin County: Youth demonstrate leadership, management, and organizational capabilities through an organized group structure by taking an offices in clubs, presented an educational demonstration, and participation in community service projects. Every Martin County 4-H Club member participated in community service projects, in many instances three or four different community service projects, thus laying the foundation for active adults in their community as they mature. Volunteers and youth have contributed over 4700 hours of volunteer service to the youth and community in the 4-H program. Contributions are documented through volunteer logs submitted by 4H leaders, youth leaders, agent, parents and volunteers. As a group the 4-H club leaders were polled concerning the growth of our 400 club members. The skills nurtured and observed included: life skills -including responsibility; time management; self reliance; record keeping, determined through record books; money management- determined through record books; self discipline; leadership; social skills/team work; Community Service; improved self confidence and esteem

Okeechobee County: Youth 4-H officers are trained in their specific duties and responsibilities using the Officer Training Handbook. Council Officers are responsible for running club meetings. They consult with the club leaders and plan the agenda for each meeting. The officers participate in the development of the plan of work at the beginning of each year. The Okeechobee County Council is composed of two voting delegates from each club in the county. Delegates have an active voice in the operation of the county 4-H program. The youth council officers are involved in planning and implementing major county 4-H programs and activities. They are involved in an educational program that will increase their leadership and citizenship participation. The council has developed by-laws, taken the by-laws back to their respective clubs for input and discussion and voted on the final draft of their constitution. As a result of officer training and county council, Okeechobee youth can properly conduct a meeting, as well as perform the functions and duties of their offices. The number of youth assuming leadership positions on the local, county, district, state and national level has increased from 54 in 1995 to 131 in 2002. Okeechobee 4-Hers hold major offices in all Florida Junior Breed Associations, major offices in all school service clubs, honor society clubs, Junior Cattlemen, and FFA, as well national offices in some breed associations.

The Holmes County 4-H Afterschool Science and Technology Program (ASTP) - provides middle-school youth a safe, supportive environment which focuses on developing science and technology knowledge and skills, as well as life skills which will help them become productive, contributing citizens. Located at Bonifay Middle School, ASTP serves up to 30 youth, with youth from low-income families and youth identified by school personnel as having academic or social problems given first priority. ASTP meets Monday through Thursday, from 2:30 to 5:00, and includes homework help (assisted by teen tutors), snack, organized recreation, science and technology projects (topics include machine design, electricity, computers), community service, and personal

development (topics include conflict resolution, goal setting, and health and safety). Computer- The AST Program was selected as a test pilot site for the National 4-H Curriculum on computers called "Boot Up". Program assistants taught using the lesson plans and extra activities for investigation. Most of the students in ASTP do not have computers at home and did not select computers as their elective, so at the beginning of the program, some did not know even how to turn a computer on. Basic information on external and internal components were taught, including the difference between hardware and software, input and output devices and how the internet works. Two high school teens with specific interest in computers assisted with several of the lessons, providing individual assistance to students with learning disabilities.- A total of 50 hours of computer instruction from program assistants, agent and volunteers were provided to the ASP students. - 27 students were instructed on how to use Word to write a letter and import a graphic into the document.- 68 students were taught how to identify search engines and how to use them to conduct searches for specific information.- 15 students were taught how use Site Central a simple Web Page building program.- 38 students learned to use the Edison program to solve problems in electrical designs. - 22 students are beginning to learn how to use the LEGO CAD program for simple machine design. Electricity- One volunteer, Mr. Bailey a electronics instructor from Chipola Community College, provide 54 hours of hands-on instruction to the youth in the ASP.

Osceola County: Eight organizational leader meetings were held throughout the past year and once again this year there were over 80% of the clubs present at each meeting. The leaders evaluated the meetings and they overwhelmingly said they were better organized and felt more informed on 4-H activities and events. Leaders are taking responsibility for organizing and planning countywide activities and events. 217 4-H volunteers attended the meetings throughout the year. Experienced leaders are taking on more responsibility of identifying and developing county activities without agent supervision. As a result of leaders taking on more responsibility, Osceola County 4-H leaders took on the challenge of hosting the 2002 State 4-H Leaders Forum. 22 adult volunteers went to leaders forum this year from Osceola County. Seven volunteers taught classes at the forum. There were 47 leaders who attended a leader camp. The participants were evaluated on if they would use anything that they had learned in their club, and 100% said that they have already used at least one thing at one of their club meetings.

Pinellas County: The data from the YouthMapping surveys was analyzed by youth in four through youth forums with 172 youth and 15 adults participating overall. Through these youth forums, youth and adults worked in partnership to analyze what was lacking and what was plentiful for youth in their communities. Youth in the communities shared the information from their forum with their local government officials. The information from YouthMapping was used by youth to enact countywide initiatives such as, a teen information line, a website, a civic engagement process, and a Youth Yellow Pages. A civic engagement project has been established to create a process of youth/adult partnership training with the goal of youth being active members of community, governmental, business boards, and advisory groups. Five youth and seven adults are members of an advisory committee to establish this process.

Brevard: 88 youth completed officer training. Youth were able to identify officer roles and responsibilities, list ways to get members involved, and properly make and second a motion as a result of this training. - Pre and posttests were given. Post test scores increased by 32 points, with an average score of 88% correct. 87% of participants could make a motion. In addition, each youth identified at least one skill to implement in their 4-H club as a result of the training.

Charlotte: 52 senior 4-H members took part in ten major leadership activities. 80% of these members reported that they felt more confident in their public speaking ability and their leadership roles. 5 senior members spoke on public policy to the Board of County Commissioners.

Duval County: Using the Pilot evaluation instrument--Florida 4-H Life Skills Evaluation Instrument -- 200 Duval County members and 100 parents were surveyed and 65 youth and 30 parents responded to the survey¹. The average age of the youth – 14.2. Average years in 4-H – 5.3. 46% male; 54% female. The following ratings were given as the youth reflected on the value of 4-H program:

- *Independence - 100%
- *Enhanced self-image – 97%
- *Ability to get along with others - 97%
- *Developed a positive relationship with another adult - 93%
- *Became a youth leader - 80%
- *Used their time constructively - 74%
- *Received better grades in school - 66%².

The majority of parents agreed or strongly agreed that all 19 assets/life skills asked about were enhanced through 4-H. Highest rated life skills: *Community service, volunteering - 90% *Setting goals - 87% *Solving problems - 87% *Healthy lifestyles - 83% *Leadership - 83% *Making decisions - 83% *Planning, organizing - 80%³.

Customer satisfaction rating - parents agreed or strongly agreed that they were satisfied with:

- *Skills child is learning - 100%
- *Events child can participate in - 100%
- *Club leader's involvement with child - 97%
- *Overall 4-H program - 93%
- *Information or knowledge child gained - 93%
- *Projects available to child - 90%
- *Service projects - 86%⁴.

Youth agreed with parents that they gained ability to get along with others in a group, doing things on my own, expecting good things from myself, and having a positive relationship with another adult. They also added, "accepting another's views" as a major social/emotional skill learned. Youth also agreed with their parents on serving their community, making decisions, setting goals, healthy lifestyle, planning/organizing, and solving problems. They added using the computer or technology and getting ready for a job. Evaluation surveys subsequent to specific events and activities had these results: (developmental assets, life skills demonstrated).

Lake County: Results from a survey conducted in 2001 on the Tropicana Public Speaking Program:

Respondent years in program: 1 = 41%; 2-4 = 31%; 5-7 = 22%; 8+ = 6%

Results of teacher evaluation surveys were as follows:

Quality of Teacher Materials: 38% Excellent; 44% Very Good; 18% Satisfactory

Quality of Student Materials: 38% Excellent; 44% Very Good; 18% Satisfactory

Did the program help improve student oral communication skills: 97% Yes 3% Unsure

Were written communication skills improved? : 94% Yes; 6% Unsure or no response

At what level did you participate: 100% Classroom; 62.5% School; 44% County

Do you plan to use the Tropicana Program again in 00-01: 94% Yes; 6% changing grade level

Success Stories

DeSoto County: Over the past two years the DeSoto County 4-H Program has been able to shift from an adult development program to a youth development program. The youth are now in charge of the Officer Installation Program, Awards Ceremony, and other programs throughout the year. While it is great for adults to gain self-confidence through a program it is even better for youth to do the same thing.

Hernando, Columbia, Citrus and Alachua County 4-H agents provided three weekend training sessions to twenty-nine (29) teenaged youth who were interested in becoming camp counselors. In addition to the hours of interactive, organized teaching, additional hours were spent observing communication skills, social skills, personal care habits and responsibility taking. These sessions were intensive and exhausting (much like summer camp). Twenty-five (25) of those youth served as counselors, ten during one week of summer camp. There was a great balance of ethnic diversity within this group.

Miami Dade County: 4-H Leaders making a difference:

Miami Dade: "Teen Leaders-Leadership and Education" - Pass it-on" was a \$1500, 4-H Foundation grant funded program. Twelve teen 4-H members were trained on six lessons: teaching children, nutrition, food safety, plants, entomology and water conservation. The teens utilized the training to develop and deliver a one hour lesson to 22 African American students in a fifth grade science class. The fifth graders averaged 69% on the pre test and 83% on the posttest of 20 questions related to the lessons. The fifth graders were then trained to conduct a 20-minute hands-on learning station. The school held a Science Fair of seven learning stations that was taught by their fifth grade students, with supervision and assistance provided by the 4-H teen leaders. The students gave twelve 20-minute presentations to a total of 320 kindergarten through second grade. Their teacher stated that she observed increased confidence and teaching ability with each class presentation. Students who were once reluctant to get up in front of a group were now requesting a repeat fair for the upper grades in their school. The principal and school advisory council felt "hands-on" learning was especially valuable for the students in this "F" rated school. They felt the writing experience that followed the science fair would help increase FCAT scores. The school has also requested a repeat program for the new school year

Clay: Overcoming Handicaps In this year's quilting club there is an eleven-year-old girl who had a stroke at about age 3. The stroke left her with very little control of the left side of her body. This young lady is very determined. She attended 4-H summer camp and participated in every activity that she was able to. This fall, she is making a quilt with the help of another 4-Her. This is certainly a team effort: one pushes the pedal and the other holds the fabric. 4-H has opened doors to this young lady that may never have been opened and she is learning to overcome her handicap, persevere and work with others

Youth Ownership Proves Effective At a County Council Officer Training and Lock-in, organized by this agent, youth participants identified their lack of ownership over the 4-H County Council program as being one of their primary concerns. Youth participants identified that well-intentioned, concerned adults tried to lead youth in such a way that they felt intimidated to run the program themselves. Monthly officer meetings were instituted under the leadership of this agent and the 4-H County Council President. These meetings allow officers to form their own agenda, assign tasks, and plan educational program, with little guidance from Agent Advisor. The agent runs them through a reflection and evaluation process following each meeting to devise ways to improve upon their current abilities. Unexpectedly over 70 youth participants arrived for the October meeting (which consists of both a business meeting and a large party/ cook-out). Several of these participants came for the party, and were not motivated or especially interested in participating in the business meeting, and thus created much distraction during this meeting. The officers expressed much concern and frustration over this. Rather than solving the problem for them, this agent ran the officers through a reflection/ evaluation process and problem solving steps. Upon culmination of this, the officers determined that they did not want to discourage anyone from participating in 4-H activities regardless of their motivation. They decided for the next meeting (includes a Thanksgiving meal), the Council Recreation Leader would offer an alternate activity for those youth who were not club delegates, and were only interested in participating in the meal. The agent supported them in this decision, and again over 70 youth showed to this meeting. However, rather than chaotic and confusing, the meeting and the alternate activity went especially smoothly, and the Council Officers received numerous compliments regarding their decision.

Seminole County 4-H has always had a strong emphasis on leadership development. This past year a new county club was formed for teens to encourage service learning. The hope was that the group would draw some of those teen members who might otherwise drop out of 4-H as well as older youth who might be interested in being part of a community service group. Two youth who participated in the state Ambassador program at Congress were recruited to help with the start up and promotion of the club. We met over the summer with potentially interested youth and came up with a game plan for the club. The club entitled "Teens in Action" was launched in August 2002. We set up e-mail connection to members and meet on a monthly basis to do a service project and met a 2nd time during the month for a club meeting. National 4-H Council made grants possible for youth projects in community service. One of the requirements of grant was that the proposal had to be an adult youth partnership. This club formed a subgroup to work on the grant. In conjunction with a volunteer (parent) they cooperatively wrote the grant. It was a fantastic site to see youth and adults sharing ideas, rewriting, and finally submitting the proposal. The feeling of both the youth and the volunteer when the grant was completed was that it was a successful project - even without funding. In October we received word the \$1500 project was funded and the youth are moving forward to make the project a reality. They are meeting in committees and developing an plan to complete their project, "Packaged with Care" that is a joint project with the Longwood Rotary Club and the Seminole County Sheriff's Department.

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. In some counties where a large

number of the clientele is Hispanic, some programs and publications are done in Spanish. Agents sometimes do direct or personal contact with minority leaders, business owners, ministers, youth workers, or other individuals to promote programs. Agents report using Equal Opportunity and ADA statements on meeting announcements. Some counties report using minority newspapers when available. Meeting sites are selected where there is commonality and local support.

Seminole County: Brothern Reaching Out is a site used to reach minority youth. Once a month programs are conducted at their site in the Sanford Housing project. Special efforts were made to secure donations to sponsor 4 minority youth and 1 adult volunteer from this program to 4-H summer camp.

Hernando County: By spending time focusing on the needs of our minority members, last year, we were able to recognize a need in their community dealing with transportation issues. Successes were documented in overcoming this issue. This year, our goal was to recruit more minority members to attend leadership activities and provide assistance in recruiting members in the community. Hernando County trained twelve camp counselors for camp 2002. Six of these counselors (50%) were minorities (three African American, two Hispanic, one American Indian). Six new clubs were formed in the past twelve months. Two have minority leaders, one is a teen leader, and one club is already filled to capacity. Three of these clubs are listed as "general" meaning they do not have a specific project focus. Five of the clubs are reaching into geographic areas that are under-represented in Hernando County 4-H.

Union County: Each minority church in Union County is mailed a copy of the 4-H Harvester (Newsletter). In School Enrichment programs minorities are encouraged to participate in Union County 4-H County Events. School Enrichment Leaders encourage all youth to extend their involvement of the project by joining 4-H or participating in other related 4-H activities. Key minority leaders are personally contacted about 4-H programs and activities. Programs and meeting are scheduled at the requested time and date of the minority adult or key person. Each minority contact, personal or social includes at least one request to join, start or become involved in a 4-H or extension program. Advisory committee members are aware of the need to make sure everyone is included in all Extension program. The committee members personally encourage members of the minority committee to become involved. Every program is advertised in the local newspaper, Union County Times at least two weeks prior to the program or event.

Collier County: The Immokalee school population is primarily Hispanic and African American, with Caucasians being the minority. 4-H is now an integral part of the Kaleidoscope after-school programs at Pinecrest and Lake Trafford Elementary Schools, with Village Oaks added in 2002-2003. In collaboration with the YMCA, a training was held for six Hispanic and three African-American and three Caucasian young adult site supervisors to serve as 4H leaders at their sites at Lake Trafford, Highlands, and Shadowlawn Elementary schools. Special tours of the fair were arranged, when the fair was officially closed, to allow a total of 84 minority youth to visit 4-H Family Living and Livestock exhibits.

Santa Rosa County: Collaborative programming and networking continue to be the best way to reach minorities. The 4-H agent has met with the Mary Street Coalition, a minority community program for youth, and has presented a program on the 4-H program and volunteerism. The 4-H Agent has included on the 4-H Advisory Committee,

minorities and/or individuals who serve minority youth. Through the 4-H program Santa Rosa County will be participating in the Minority Seat Belt Education program.

Broward County: Outreach to Minorities on the adult leadership level happened within two primary communities in Broward County: African-American adult and youth involvement in 4-H in Broward County has primarily existed through the efforts of Beverley Wright of the City of Hallandale 4-H Club. The interest of African-American adults in the 4-H program is a primary means for attracting more African-American youth members, who are also an under-represented population in the Broward County 4-H program. Another traditionally under-represented population in the Broward 4-H Program is the Hispanic population. Program Assistant Erma Villazon has made large strides in reversing this through her organizing efforts, for example her coordination of five 4-H clubs' involvement in the Fifth Annual South Florida Puerto Rican Day Cultural Parade on October 11, 2002. Throughout the year, Ms. Villazon worked with Hispanic adult club leaders, often translating the spoken and written word, to facilitate their increasing involvement in the Broward County 4-H program. These primarily Hispanic clubs are continuing to spread the message of what the 4-H program can offer youth, especially to newly immigrated families whose children face both educational and cultural challenges in their new country, the United States

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL261

Title: Small Animal and Small-Scale Farm Profitability and Sustainability

Calendar Year: 2002

Critical Needs: 13

National Goals: 1

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness, Agricultural Profitability, Animal Health, Animal Production Efficiency, Diversified/Alternative Agriculture, Grazing, Innovative Farming Techniques, Niche Markets, Organic Agriculture, Range land/Pasture Management, Risk Management, Small Farm Viability

Major Program Objective:

1. Develop research-based information to assist in the improvement of livestock production systems.
2. Develop educational programs and publications for small and limited resource farmers.
3. Enhance outreach efforts by collaboration with institutions, community-based organizations, private entities and producer group organization.
4. Increase the participating of minority farmers in educational activities related to livestock production and management.

Summary of County Programs for Clientele:

1. Facilitated or conducted workshops in the following areas: nutrition management, breeding/reproduction, herd health, record keeping, and financial management, grant writing, marketing, pasture management, constructing animals shelters, production cost, bio-security on the farm and food safety for small and limited resource farmers.
2. Facilitated and provided experiential learning opportunities in the following areas: handling and moving goats, selecting and evaluating meat goats, conducting physical examinations, hoof trimming, ear tagging, age determination, accessing body condition scores, tattooing, administering injections etc.
3. Provided technical assistance in the following areas: developed facilities plans and designs for producers, provided on-farm and phone consultations, assisted producers in selected animals for their herd, assisted producers in developing grants etc.
4. Developed a five-day meat goat training course for small and limited resource producers.
5. Developed training material to be used in workshops and training sessions.
6. Assisted in training 4-H youth in handling and showing market steers.

Summary of Impacts for Clientele:

1. 22 minority farm families participated in the five-day training course on goat production.
2. 138 minority producers locally and regionally participated in educational activities related to livestock production and management.
3. 4 minority youth from Gadsden County were participants on the Market Steer Project.
4. 1 producer group was developed for marketing of meat goats.
5. 433 producers locally and regionally were trained in goat production and management.
6. 10 extension agents were trained in marketing of meat goats and 4 were trained in goat production and management.
7. 14 minority farm families adopted production practices as a result of the meat goat training course.
8. 6 minority producers were assisted in developing grants to submit to the SARE Producer grant program and the Organic Farming Research Foundation.

Success Stories

Increased participation of minority producers raising meat goats, adopting new production and management practices and actively participating in on-going training activities and educational programs developed for meat goat producers.

Four minority youth from Gadsden County participated on the 4-H Market Steer Project. One youth won second place for showmanship and another youth's steer won first place in his class division.

Outreach To Minorities:

1. Partnering with other institutions, community-based organizations and private entities to improve outreach efforts.
2. Developed training activities specifically for limited resource and minority producers to address issues concerning goat production and management.

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL262

Title: Nutrition, Diet and Health in Florida, 1890

Calendar Year: 2002

Critical Needs: 20

National Goals: 3

Key Themes: Human nutrition

Major Program Objective:

Participants will adopt behaviors that improve diets, improve use of resources and promote good health.

Summary of County Programs for Clientele:

A total of 52 nutrition education seminars were conducted by the Extension specialist and county personnel where the Food Guide Pyramid and the Dietary Guidelines were recommended as the basis for personal meal plans and healthful lifestyles. A total of 10 diabetes education seminars were also conducted. One major health fair was conducted in Gadsden County with over 600 people attending.

Summary of Impacts for Clientele: Five people with high blood sugar and related health problems attending the health fair in Gadsden were admitted to the local hospital for care. Seventy-two participants, without previous access, took the Hemoglobin A1C test for diabetics.

Success Stories Five people attending the health fair in Gadsden county were found to have high blood sugars and related health problems and were admitted to the hospital for treatment. These individuals were not aware of their blood sugar levels.

Outreach to Minorities: Underserved and underrepresented minorities and limited resource clients

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL265

Title: Improving profitability in small scale agriculture

Calendar Year: 2002

Critical Needs: 2, 14

National Goals: 1

Key Themes: Adding Value to New and Old Agricultural products, Agricultural Profitability, Biofuels, Home Lawn and Gardening, Organic Agriculture, Ornamental/Green Agriculture, Plant Health, Plant production Efficiency, Precision Agriculture, Tropical Agriculture

Major Program Objective:

To improve the profitability of small-scale farm enterprises and encourage farmers to carry out the practice of agriculture in such a manner as to protect and sustain the natural resource base.

To encourage and facilitate the adoption of alternative farming techniques by small scale farm enterprises.

To investigate and disseminate new/alternative and adoptable crops to farmers.

Summary of County Programs for Clientele:

Workshops were held in Gadsden and Jackson Counties to provide training in areas of production and marketing for farmers.

Summary of Impacts for Clientele: Florida A&M University has impacted farmers both state and nationwide. Technical assistance has been rendered via telephone support and information from research bulletins. New farmers have been enrolling on a regular basis and previously enrolled farmers now possess the necessary skills to produce and manage their own crops successfully. Over the last two years, a total of 27 small farmers and 3 cooperatives have benefited from the program. Most of the farmers enrolled with the program have reported success this year. Currently, pepper prices range between \$1.30 and \$1.50, per pound, guaranteeing hot pepper farmers returns well above those realized by farmers engaged in the production of other vegetable crops such as tomatoes.

Success Stories One hot pepper farmer engaged in containerized production (a recently introduced techniques) realized gross returns in excess of \$15,000.00 from 3600 plants after only 9 weeks of harvesting. Emphasis on alternative enterprises will continue since they show much potential for paving the roads to future success for small farmers.

Outreach To Minorities:

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL267

Title: Family Financial Decision Making in Florida, 1890

Calendar Year: 2002

Critical Needs: 33

National Goals: 5

Key Themes: Family Resource Management

Major Program Objective:

To assist Florida consumers in managing their resources in order to develop or maintain an acceptable quality of life in a rapidly changing marketplace.

Summary of County Programs for Clientele: Nine family resource management seminars were held. These seminars included credit management, general household budgeting and first-time homebuyers seminars.

Summary of Impacts for Clientele: As a result of credit management seminars, five (5) college students with excessive debt loads sought help with consumer credit counseling and were pleased with the resolution of the situations. Other students requested private

consultations regarding their rights as consumers, the meaning of credit terms, household budgeting, and other personal financial matters. Follow-up with these students revealed that they had utilized the information they learned in a manner beneficial to them.

Success Stories Fifty-one (51) individuals in the first-time homebuyers program completed credit repair work that made them eligible for a mortgage. Twenty-one (21) families purchased new homes. Others in the program are still receiving credit counseling or are paying down debt in order to qualify for a new home loan or to repair an existing one.

Outreach to Minorities: Underserved and underrepresented minorities and limited resource clients

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL269

Title: Improving profitability in small scale agriculture

Calendar Year: 2002

Critical Needs: 27

National Goals: 4

Key Themes: Global Change and Climate Change, Integrated Pest Management, Natural Resources Management, Nutrient Management, Riparian Management, Soil Erosion, Soil Quality, Water Quality

Major Program Objective:

To provide information on the problems and harmful effects of water contaminated through practices carried out in agriculture practices, use of household chemicals. Petroleum products and other anthropogenic induced activities.

To educate landowners and rural residents about practices to enhance the quality of their drinking and domestic water supply.

To provide hands-on activities which will improve the awareness of the rural populace about water quality.

Summary of County Programs for Clientele:

Over 150 attendees participated in 2 composting workshop which were held in Quincy, North Florida and Immokalee, South Central Florida.

Summary of Impacts for Clientele: The Mobile drinking water laboratory continued to serve the target group. Some 2000 residents in north Florida received 'on the spot' diagnosis, pertaining to their drinking water supply. This has brought increasing awareness from residents regarding the source of their drinking water. Workshops on composting provided training for approximately 150 persons including farmers and agency personnel.

Success Stories

Outreach To Minorities:

The program targeted limited resource and non-traditional groups

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL270

Title: Community Resource Development - 1890

Calendar Year: 2002

Critical Needs: 32, 33

National Goals: 5

Key Themes: Community Development, Home-based Business Education, Promoting Business Programs

Major Program Objective:

To provide educational opportunities for community residents to improve their economic and social well-being by utilizing existing grass-root community organizations as a mechanism for delivery and receipt of services related to community development activities. To develop and implement interdisciplinary and multi-disciplinary educational programs that will assist grass-root community organizations to help residents make economic and social transitions necessitated by changing economics.

Summary of County Programs for Clientele:

The Community Resource Development (CRD) Program has provided technical assistance to individuals in the form of developing business plans, marketing plans, financial statements, and/or loan packaging as a means of promoting economic development. The program staff has worked with individuals to develop start-up businesses and expand existing businesses in Leon and surrounding counties. The CRD Program has also developed collaborative partnership and/or working relationship with entities to address the needs of minority and underserved clientele. Partners include the FAMU Small Business Development Center, the FAMU Community Development Corporation, the Frenchtown Revitalization Council, the Mt. Olive Housing & Community Development Corporation, the Washington Improvement Group out of Gulf County, and the Jackson County Development Council, Inc., and others. The objective of these collaborations and partnerships are to assist community residents in establishing successful businesses in Leon and surrounding rural counties.

Summary of Impacts for Clientele:

One hundred and thirty-five (135) persons attended workshops or conferences where they received information concerning starting and managing a business, preparing a business plan, small business loan opportunities and/or coalition building. Twenty (20) individuals actually requested and received one-on-one assistance with developing business plans, preparing financial statements and/or preparing loan packages of which ten (10) actually submitted loan packages for funding of a new business.

Success Stories

As a result of attending the workshops or conferences on starting and managing a small business three (3) new businesses were opened in the Leon County out of which at least eleven jobs were created.

Outreach To Minorities:

Under-served and under-represented ethnic minorities and limited resource clients are targeted.

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL271

Title: Adult and Child Health and Wellness Program

Calendar Year: 2002

Critical Needs: 20

National Goals: 3

Key Themes: Human Health, Human Nutrition, Medicinal Plants

Major Program Objective:

The overall objective of the program is to creatively deliver programs that are at the cutting edge of critical issues, of health care. The program must be both interdisciplinary and multi-disciplinary in nature, with an emphasis on preventative rather than curative medical practices in order to promote a more positive approach to wellness among peoples in rural communities.

Summary of County Programs for Clientele:

As a triple-touch instructor training was provided to women at purple tea's, at seminars, and health fairs. Coordination took place with Sister's Alive on 35 purple teas. Two community health fairs, three breakfast seminars with local physicians, three panels with health care providers and two luncheons with physicians took place providing education on diabetes. A partnership was developed between community members whose hospital was troubled. Working through the community a health fair was planned and coordinate that had 500 community people attend. A health summit was developed to address major health problems in the county after the fair. In addition to these activities, five papers were prepared and presented at major national meetings on the topic of breast cancer. Presentation of papers at national meetings proved to be a way to communicate to physicians the need to understand cultural beliefs of minority populations. Health fairs also prove to be an efficacious way to provide information to a large number of individuals.

Summary of Impacts for Clientele:

As a result of the purple teas, a local church was able to obtain a grant to educate women and children about breast cancer. Advisement and support provided to Sister's Alive a group with the American Cancer Society resulted in 35 purple teas through the year. A support group, Sister Aline was established of breast cancer survivors from Sister's Alive. Health fairs are another methodology used to educate the population and improve communication between doctors and patients. Panels were held with providers from different disciplines in order to allow clientele to ask questions and have their health concerns addressed. In Gadsden County a major health fair was conducted the results was 189 free screenings, for diabetes alone, with five free admissions. Overall ratings showed 72% felt the health fair was excellent while 27% felt it was very good on a five point likert scale.

Success Stories

A partnership is developed between the Lincoln Neighborhood Center Governor's Revitalization Committee, the Diabetes and You Project, Leon County Housing

Department, Gadsden County Community Health and Bethel Missionary Baptist Church as the four major community organizations targeting outreach to minority populations. Lincoln Neighborhood Center Governor's Revitalization Project resulted in women learning to cook more nutritious meals. Working through the Diabetes and You project, Myth interpretations were instrumental in teaching physicians to consider their style of communication with patients. In another project, women were taught to openly discuss breast cancer. Through the Bethel Missionary Baptist Church women were taught to address breast cancer concerns with their children. A health fair was held with Gadsden County Community Hospital in which over 500 persons attended. A health summit was established afterward addressing major health problems in the county. Five papers were prepared and presented at major national meetings prove to be a way to communicate to physicians the need to understand cultural beliefs. Health fairs prove to be an efficacious way to provide information to a large number of women, however research shows women tend not to follow-up with preventive practices.

Outreach To Minorities:

Because of the disparity in health between African Americans and other populations, many of the programs are targeted towards minorities.

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL272

Title: Herd Health and Food Safety

Calendar Year: 2002

Critical Needs: 9, 19

National Goals: 1 and 2

Key Themes: Animal Health, Food Handling, Food Safety, Food Security, Foodborne Illness, Foodborne Pathogen Protection, HACCP

Major Program Objective:

To develop and execute a comprehensive preventive based Health and Food Safety program aimed at targeted clientele in the state of Florida. To provide education, and learning opportunities leading to the prevention and control of herd health, public health and food safety hazards.

Summary of County Programs for Clientele:

Provided three food safety and herd health workshops to county-based clientele.

Summary of Impacts for Clientele:

Fifteen processors became HACCP certified and sixteen producers implemented at least five science based herd health practices.

Success Stories:

One new small processor was able to meet HACCP requirement.

Outreach To Minorities:

Program is targeted to small and limited income producers and underrepresented and underserved population in the state.

Source of Federal Funds: Smith-Lever

Scope: integrated research and extension, state specific

SMP-FL273

Title: Small Farms (1890)

Calendar Year: 2002

Critical Needs: 2, 8, 14, 9, 20, 23, 25, 29, 33, 34

National Goals: 1, 3, 4 and 5

Key Themes: Adding Value to New and Old Agricultural Products, Agricultural Competitiveness, Agricultural Profitability,

Animal Health, Animal Production Efficiency, Diversified/Alternative Agriculture, Innovative Farming Techniques, Managing Change in Agriculture,

Niche Market, Organic Agriculture, Rangeland/Pasture Management, Small Farm Viability, Urban Gardening, Human Health, Human Nutrition,

Medicinal Plants, Integrated Pest Management, Natural Resources Management, Sustainable Agriculture, Agricultural Financial Management, Jobs/Employment, Literacy

Major Program Objective:

To assist and equip underserved farming populations and their families toward a sustainable development:

- Assist with access to knowledge and decision making tools.
- Increase role of the small farmers/participants.
- Increase options for sustainable and organic production, enterprise efficiency, marketing, and other participant-identified areas.
- Increase capacity building efforts.
- Provide education, training that address improving quality of life.
- Expand existing programs; establish new programs.
- Provide linkages with University, State and Community Collaborators.

Enhance linkages with schools/teachers/students emphasizing education and hands-on training in agriculture, engineering, etc.

Summary of County Programs for Clientele:

Participant-oriented Education and Training Workshops and Conferences (during 2001-2002 year)

Participant populations included Black, Asian, Hispanic, White, Native American, Women:

Successful Farmer tours and Farmer facilitated Workshops provided hands-on training in pruning and alternative value-added enterprises- wreathes and baskets.

Organics and Sustainable Living Workshop (June 2002) provided relevant information and hands-on training in organic vegetable and animal production and management, organic fertilizer alternatives, organic standards, composting, vermiculture, community gardens, native plants and medicinal purposes, farming and quality of life, networking opportunity, etc. Facilitators included: Dr. John Irked, University of Missouri-Columbia and participating small farmers

Farm workers meetings and workshop provided requested information and training from Statewide Liaison for Florida Immigration Advocate Center.

Healthy Living and Eating in Gadsden County provided education and hands-on training in nutrition, wholesome foods and healthy living; consumer information.

Harvest Conference provided resource, education and networking opportunities to farm workers; and linkage opportunities to government agencies and the community.

Organics and Sustainable Living Conference provided relevant information and training on developing and maintaining successful sustainable agriculture enterprises (meat and vegetable). Consumer demands and marketing strategies were addressed. Holistic veterinarian practices were also provided. Facilitators included Mr. Joel Salatin, international known farmer and speaker; Dr. A. Sagrera, Holistic Veterinarian; Mr. C. Hardin innovative organic producer, and participating small farmers.

Three Regional Workshops: USDA meat goat grades and standards, provided relevant education and training on USDA standards, ethnic impact, marketing strategies for Florida Meat Goat Association and public.

Provided assistance in developing community learning opportunities through hand-on community gardens.

Participatory-Curricula development and integration of agriculture, engineering, etc. into schools (teachers, students); providing resources, education, training, linkages with University, community, and student recruitment opportunities.

Summary of Impacts for Clientele:

More than 1,000 people actively participated in the participant-oriented sustainable development sessions held by FAMU-CESTA Small Farm Programs. The participants included: Hispanic Americans, Native Americans, Black Americans, Asian Americans, European Americans, and Women- small farmers, farm workers, and their families.

The series of participant-oriented education and hands-on training sessions focused on organic and alternative agricultural systems strategies, how-to value added (meat and plant products), environmental impacts, USDA meat goat grades and standards (three regional workshops), farm worker needs and conferences, and sustainable living and quality of life:

Success Stories

Comments about the Small Farm Programs Sustainable Development Session:

How has the session helped you, your family, your farm, etc?

“ Many tips on practical solutions to problems, Good information on marketing, production models and higher quality aspects of pastured poultry.”

“Inspired son to follow a dream”

“Helped us, because we can see that the ideas we have been trying to follow can work. It gives us a feeling that our hard work will pay off, that we are headed in the right direction”

Has the session helped your consumers? How?

“Yes, now I have better information to give them and expanded products to offer”

“My consumers will be getting a superior product from me, as compared to the commercial outlet.”

How have you put any of the information into practice?

“Improved our electric fencing”

“Got a livestock guardian dog”

“Concentrating on what we enjoy. . .”

“Made plans for the 03 season”

What do you think are the benefits?

“Skill enhancement for the farmer, also good to meet and cooperate with other farmers in the region.”

“Reduced feed costs, improved herd health, improved feed to weight ratio, translating into increased profits.”

“Met and interacted with other farmers in the area who are interested in sustainability.”

“Happier family”

“Safer farm, livestock and children”

“Renewed vigor for farm life.”

How have you benefited?

“Increased knowledge.”

“I learned how Joel markets and builds collaborative partnerships”

Outreach To Minorities:

Targets bridging and active participation of minorities, etc. in program development.

Source of Federal Funds: Smith-Lever

Scope: multi-state, state specific,

SMP-FL315

Title: Coastal and Marine Recreation and Waterway Management

Calendar Year: 2002

Critical Needs: 27, 29, 32,33

National Goals: 4 and 5

Key Themes: Endangered Species, Land Use, Natural Resources Management, Water Quality, Wetlands Restoration and Protection,

Character/Ethics Education, Community Development, Leadership Training and Development, and Promoting Business Programs, Tourism.

Major Program Objective:

To prepare educational materials and implement education programs that will help the marine recreation industries (i.e., bait & tackle, scuba, surfing, marinas, marine attractions) function in an economically and environmentally sustainable way.

To provide support to existing education programs that will improve boating safety and promote boat operation ethics on Florida waterways.

To develop and disseminate boating and bay management guidelines and educational materials which foster stewardship, nature-based tourism, and resource sustainability through user-driven, non-regulatory management of waterways and recreational anchorages.

To provide to state and local decision-makers, planning models and management methods that are based on science-based information and that will provide for the maximum use of Florida's waterways by the public while sustaining environmental resources.

Summary of County Programs for Clientele:

County Marine Extension agents collaborated with the Florida Department of Environmental Protection to increase voluntary participation in the 'Clean Marina' and 'Clean Boatyard' Programs statewide. Agents provided workshops and training to the marina industry on Best Management Practices that improve the health and cleanliness of waterways, and assisted marina operators in their efforts to comply with program guidelines. Agents also participated with representatives of the Florida Department of Environmental Protection, the Marine Industries Association, and the U.S. Coast Guard in CLEAN MARINA designation ceremonies throughout the state. Ceremonies were well-attended by the media and local dignitaries, including representation from the offices of state legislators, county commissioners, and City officials.

County Marine Extension agents initiated several projects designed to instill stewardship of marine resources. These efforts included: 1) the distribution of trash buckets to boaters, with help from volunteers. Participating boaters completed a survey to gauge their awareness of, and concern for, the marine environment. Positive feedback was received from boaters and a follow-up survey will be initiated in 2003; 2) a 'Florida Coastal Cleanup', during which over 150 volunteers filled 151 bags of trash (2265 lbs) along three miles of beach. The cleanup was sponsored by the Marine Industries Association of South Florida and the Yamaha Miami Billfish Tournament; and 3) a community effort that removed 6000 lbs of debris from Boca Grande Pass. Participants included the Florida Guides Association of Boca Grande, Millers Marina, and divers from the Mote Marine Laboratory. The effort was supported by Florida Fish and Wildlife Service Marine Enforcement, Lee County Emergency Management Services, Lee County Sheriff's Office Dive Team, Keep Lee County Beautiful, Inc., Fantasea Scuba, Sun Harvest Citrus, and the City of Sanibel.

Several County Marine Extension agents were involved in efforts to enhance and maintain public access to coastal waterways. One agent, at the direction of the Board of County Commissioners, was delegated to survey potential sites for new boat ramps. The agent met with DEP officials and other state, county, and municipal staff to discuss permitting requirements. Several potential sites were identified that have the full support of all state permitting agencies. These sites were presented to the Board and negotiations with property owners will be initiated. The Marine Industries Association requested that another Marine Extension agent help locate possible funding sources for 'Spoil Island Restoration and Enhancement Projects'. The agent is working with the Florida Inland Navigation District (FIND) to develop two proposals, one on behalf of the Marine Industries Association and the other on behalf of 4-H Marine programming and a local Boy Scout Troop.

The Florida Sea Grant Urban Boating and Bay Water Management Program completed two separate applications of the Regional Waterway Management System, which address a principal waterway management issue in Florida—balancing phenomenal growth in the

boating population with conservation and management of coastal and marine resources. The third and final phase of the Lee County Regional Waterway Management System was completed, covering the CaloosaSmith-Leverree River and adjoining canal systems and tributaries; the remaining portion of Manatee County was finished for Bishop Harbor, the tidal Braden River, and the upper Manatee River. Both counties and the West Coast Inland Navigation District were provided with GIS applications, information, tables, and maps for approximately 343 miles of navigable waterways, 15,524 boats, 31,692 moorings, 15,815 shore facilities, 3553 boating-related signs, and channel centerline depths. The Regional Waterway Management System provides the counties with a planning tool and decision options to prioritize and evaluate management alternatives on a regional scale.

A project sponsored by the NOAA Coastal Services Center to enhance and standardize field collection methods for bathymetric data was completed. This standardization will assist the coastal resource community's management of southwest Florida's waterways. Project outcomes included a CD-ROM containing geographic data sets, background imagery, metadata, and a final report. The goals of the project were to: 1) enhance and standardize the bathymetric data collection procedures used by the West Coast Inland Navigation District and Florida Sea Grant during implementations of the Florida Sea Grant Regional Waterway Management Project; 2) provide a reliable and recurring source of bathymetric data for areas not covered by NOAA surveys, while ensuring the data meet NOAA standards for inclusion on NOAA nautical charts; and 3) evaluate survey equipment and procedures for use by third-party organizations such as the Coast Guard Auxiliary or U.S. Power Supply Squadrons when collecting bathymetric data for the West Coast Inland Navigation District or Florida Sea Grant.

A Manual of Methods and Procedures for the Florida Sea Grant Regional Waterway Management System was completed and delivered to the West Coast Inland Navigation District (WCIND). The manual details the procedures that are necessary to complete a Regional Waterway Management System for Florida's coastal canals and waterways. The purpose of the Florida Sea Grant Regional Waterway Management System is to provide the WCIND and coastal counties with a scientific approach that allows for boat channel maintenance while protecting resources. The Regional Waterway Management System provides a planning tool that permits managers and policymakers to prioritize channel maintenance needs on a regional basis.

A project was initiated to determine the utility of Florida's Vessel Title Registration System (VTRS) to accurately locate vessels and characterize boat populations in Florida. A survey of over 7000 vessels inventoried as part of the Lee County Regional Waterway Management System was completed. The information collected during this resurvey will be used to: (1) update existing boat locations and characteristics, (2) add the locations and characteristics of 'new' boats or boats not present during the initial census, and (3) determine rates of change in the location and types of vessels. The resurvey was initiated as part of a research effort to determine the utility of Florida's Vessel Title Registration System to accurately locate and characterize Florida's boat and boater populations for regional waterway management applications.

Two workshops were conducted to determine existing data needs and applications for boat and boater information. The first workshop was held at the Florida Wildlife Conservation Commission Florida Marine Research Institute in St. Petersburg and the second at the International Gaming Fishing Association Hall of Fame in Dania, Florida. Attendance totaled 50 individuals representing a wide range of interests that included law enforcement, county government (natural resources, tax collectors,) inland navigation

districts, the marine industry, and private data vendors. The workshop's two main interactive sessions identified participant needs and views. The first session involved a group discussion of boat- and boater-related information needs and applications and limitations of current information sources. Four principal types of information requirements/issues were identified: vessel locations, data standards and consistency, data accessibility, and vessel ownership patterns. The second group session discussed potential strategies that could be used to acquire the types of boat- and boater-related information required to meet participant needs and applications. The results obtained from the workshops and the coalitions formed will be used to implement changes in the way that boater information is collected at the state and county level.

Published 4000 copies of *A Historical Geography of Southwest Florida Waterways, Volume 2: Placida Harbor to Marco Island*. This new book (Florida Sea Grant document SGEB56), a companion to Volume 1: *Anna Maria Sound to Lemon Bay* (SGEB47), published in 1999, extends the first volume's study area seamlessly to the south and up the CaloosaSmith-Leverree River. The emphasis is on Pine Island Sound, Charlotte Harbor, Estero Bay, Naples, Marco Island, the CaloosaSmith-Leverree River, and 17 inlets. Content includes historical development of waterways, inlet dynamics (with detailed maps and histories of the presently open passes), altering the CaloosaSmith-Leverree for land and water development, and how historic maps are used in modern computer systems. All topics are addressed in a map-based approach, supplemented by copious historic and modern photographs and accompanied by complete lists of references. Volume 2 is being distributed by the West Coast Inland Navigation District, through Florida Sea Grant Marine Extension agents, in southwest Florida. Copies are being provided to elected and appointed officials and state/county/municipal government staff in the area.

Based on findings from waterway research conducted for the publication 'A Historical Geography of Southwest Florida Waterways, Volume 2: Placida Harbor to Marco Island', a project concept was developed to improve the navigation/habitat river/waterway management system for the CaloosaSmith-Leverree River/Okeechobee Waterway. There are some 40 detached, remnant river meanders and oxbows in a state of deterioration due to poor water circulation and upland land use. The system is in a collapse mode due to low water levels in Lake Okeechobee, which have also restricted cross-Florida boat traffic. The Okeechobee is a federal project under the aegis of the U.S. Army Corps of Engineers, but there is no local sponsor. Florida Sea Grant worked with Lee County staff, and assisted in developing a resolution, which the Board of County Commissioners adopted, calling for Lee County as local sponsor, and requesting the Florida Congressional Delegation to direct the Corps of Engineers to undertake a reconnaissance survey of the waterway. The County has also requested assistance from Florida Sea Grant and the Southwest Florida Regional Planning Council in coordinating management and institutional networking elements. This effort was undertaken with the collaboration of the CaloosaSmith-Leverree River Citizens Association (River Watch) and the Southwest Florida Marine Industries Association.

The Florida Sea Grant Waterway Management specialist gave a presentation on the Florida Sea Grant Regional Waterway Management System at a workshop titled 'Dredging of Recreational Harbors and Ports' held at the University of Rhode Island Bay Campus in Narragansett, Rhode Island. The workshop is part of an effort to create a public-private initiative between the U.S. marina industry, represented by the Marina Operators Association of America, and the National Sea Grant College Program. Workshop objectives were to: (1) present recreation boating industry needs and proposed

solutions for dredging, (2) receive feedback from Sea Grant on proposed solutions, and (3) identify Sea Grant's role in developing a national dredging strategy. Florida Sea Grant will continue to play a leadership role in this ongoing effort by presenting the Florida Sea Grant Regional Waterway Management model at the Coastal Zone '03 conference in July 2003 and by hosting workshops in Florida and the Gulf region to identify regional needs for inclusion in a national strategy.

In the aftermath of hurricane Opal (1995) several beaches are still recovering and are classified as critically eroded, which means that additional storms may cause more damage than normal. To address this problem, a service-learning project was completed with two area high schools in early May. Florida Sea Grant Extension partnered with the local Tourist Development Council and the Soil and Water Conservation District to provide classroom instruction, restoration activities, and celebration of participant accomplishment. Students were introduced to the project, and to the importance and function of the coastal dune ecosystem. Students also participated in an applied math exercise to determine the number and species of plants to be restored. At the restoration site students utilized their classroom training by planting the species they had previously calculated. Students installed approximately 4000 plants at the site. In a separate event students received recognition with certificates and awards for their participation and celebrated their contribution to community stewardship.

The Tampa/Sarasota Bay area Marine Extension agent assisted in the development of "The FISH Preserve Management Plan". The Management Plan will be used in developing the Florida Institute for Saltwater Heritage (FISH) Preserve and working with state natural resource management agencies to secure additional funding. The FISH preserve is a 97 acre parcel on environmentally sensitive land immediately adjacent to the historic village of Cortez. This citizen effort to protect fisheries habitat won the 2002 Gulf Guardian Award presented by the Environmental Protection Agency.

Summary of Impacts for Clientele:

Seven marinas were designated as 'Clean Marinas' and two boatyards as 'Clean Boatyards'; Florida Sea Grant Marine Extension agents provided training at 4 'Clean Marina/Clean Boatyard' workshops held throughout Florida with representatives from 17 marinas, 2 boatyards, and several counties attending.

Florida Sea Grant Marine Extension agents organized over 150 volunteers, community groups, and local businesses in the removal of over 4 tons of trash and debris from Florida beaches and waterways.

Florida Sea Grant completed two applications of the Regional Waterway Management System covering approximately 343 miles of waterways in Lee and Manatee Counties. Detailed information (GPS location and characteristics) was collected for 15,524 boats, 31,692 moorings, 15,815 shore facilities, 3553 boating-related signs, and channel centerline depths. The Regional Waterway Management System provides the counties with a standardized, science-based planning tool, decision options, and policy recommendations with which to prioritize and evaluate management alternatives on a regional scale.

The regional waterway management protocols developed by Florida Sea Grant have been adopted by the state, have led to enactment of the Inland Waterway Management Law, and are institutionalized in a new Florida administrative code (Chapter 62-341.490).

The State's adoption of Florida Sea Grant Regional Waterway Management System methods will lead to a reduction in the regulatory costs that are associated with the

channel maintenance permitting process, as indicated by a cost-analysis conducted for two concurrent channel maintenance projects, one that required a permit and one that did not. The Non-construction costs (including regulatory) for the project requiring a permit were estimated at 47 percent of total costs; the same costs were only 17 percent of total costs for the project not requiring a State permit. The acceptance of Florida Sea Grant protocols, and the promise of the Sea Grant multi-site permitting initiative, promises to reduce future regulatory costs associated with waterway management in the State of Florida.

During 2002, the Florida Sea Grant Waterway Management Program continued to build diverse and effective partnerships with federal, state, regional, county, local, and academic entities to create self-regulatory systems and management applications that deal with Florida's congested waterways. Collaborative projects were established with the NOAA Coastal Services Center, the Florida Fish and Wildlife Conservation Commission Florida Marine Research Institute, the West Coast Inland Navigation District, Manatee County, the Marine Industry Association of South Florida, the Brunswick Corporation, and the University of Florida Center for Governmental Responsibility.

Students from two Florida high schools learned the importance and function of the coastal dune ecosystem, after which they designed a restoration plan (including species selection) and participated in the installation of approximately 4000 plants on beaches that were heavily damaged by hurricane Opal. The project was a partnership involving Florida Sea Grant Extension, a local Tourist Development Council, and the Soil and Water Conservation District.

An award winning citizen effort to protect fisheries habitat led to the development of "The FISH Preserve Management Plan" for a 97 acre parcel of environmentally sensitive land that is adjacent to a historic Florida working waterfront.

A collaborative effort was initiated to improve the navigation/habitat river/waterway management system for the CaloosaSmith-Leverree River/Okeechobee Waterway involving Lee County, Florida Sea Grant, the Southwest Florida Regional Planning Council, the CaloosaSmith-Leverree River Citizen's Association and the Southwest Florida Marine Industries Association.

Over 120 members of the legal community, governmental agencies (including Marine Extension agents), and the non-law boating community attended a day long workshop on Recreational Boating, Waterway Management and the Environment. The workshop featured 23 speakers presenting a diverse array of controversial and timely topics, including manatee litigation, dredging and protected species, waterway management, marine zoning, marina siting, and the impact that eventual opening of Cuba will have on boating in Florida.

Success Stories

The Florida Sea Grant Waterway Management Program won the Gulf of Mexico Outstanding Group Achievement Award for extension and outreach products that were developed to meet the goals and objectives of State Major Program 315: Coastal and Marine Recreation and Waterway Management.

"The FISH Preserve Management Plan", a citizen effort involving Florida Sea Grant, that is designed to protect fisheries habitat in southwest Florida, won the 2002 Gulf Guardian Award presented by the Environmental Protection Agency.

4000 copies were published of the second volume of the highly successful and award winning series: "A Historical Geography of Southwest Florida." These publications instill stewardship and environmental awareness in a broad range of Florida's citizens and leaders by providing a historical perspective on Florida's coastal waterway environment and development history.

The State of Florida added a new administrative code "Chapter 62-341.490 Noticed General Permits for Dredging by the West Coast Inland Navigation District (WCIND)." The rule applies to fifty trafficsheds (boat source areas) with high priority maintenance dredging needs as identified in four Florida Sea Grant applications of the Regional Waterway Management System: TP-83, TD-1, TD-2, and TD-2a. To qualify for the general permit, the rule explicitly states that environmental restoration or enhancement projects must comply with the science-based procedures and methods of the Florida Sea Grant Regional Waterway Management System outlined in the four Florida Sea Grant technical documents listed above. The general permit will result in savings in real dollars and staff time.

Florida Sea Grant developed a Five-Year Strategic Plan for the West Coast Inland Navigation District. The plan reflects the District's evolving role as the local sponsor of federally authorized waterway maintenance programs for a four county area. The plan presents goals and objectives, for the planning period of 2002-2006, for priority areas (Waterways and Anchorages, Inlets and Beaches, Emergency Management, Infrastructure Maintenance and Improvements, Dredge material Management, Sustaining the Environment, Permitting, and Coordination) that encompass the broad range of the District's responsibilities to the Southwest Florida community as mandated in Florida Statutes, Chapter 374 (2000) and Florida Laws 98-526 (1998).

A Florida Sea Grant sponsored workshop on Recreational Boating, Waterway Management, and the Environment received a rating of 4 out of 5 and was recognized as one of the Florida Bar's most successful workshops. More than 120 members of the legal community, governmental agencies (including Florida Sea Grant), and the non-law boating community attended the workshop, which featured 23 speakers presenting a diverse array of controversial and timely topics, including manatee litigation, dredging and protected species, waterway management, marine zoning, marina siting, and the impact that eventual opening of Cuba will have on boating in Florida.

Outreach to Minorities:

Source of Federal Funds: Smith-Lever

Scope: State specific, multi-state

SMP-FL316

Title: Florida's Coastal Environment and Water Quality

Calendar Year: 2002

Critical Needs: 27, 29

National Goals: 4

Key Themes: Recycling, Water Quality, and Wetlands Restoration and Protection

Major Program Objective:

To sustain or enhance Florida coastal and estuarine water quality, habitat quality, sustainable commercial use and sustainable recreational use by increasing knowledge of coastal ecology and by motivating citizens, professionals, and agency personnel to take actions that reduce impacts on these valuable resources.

Summary of County Programs for Clientele:

Problem

FL316 Florida's Coastal Environment and Water Quality supports conservation and sustainable use of Florida's saltwater resources. This long-term program deals with a variety of challenges facing all Floridians, residents of other states who live in watersheds that pass through Florida, and all visitors to these areas.

Many of the obvious impacts on coasts and estuaries are being managed more effectively. For example, uncontrolled destruction by dredging and reclamation has largely stopped, and point source inputs, such as sewage and industrial discharges, are being reduced or eliminated. However, many challenges remain. For example, the sheer numbers of people living in or visiting Florida and its watersheds increase potentially damaging inputs that enter coastal waters via non-point sources (e.g., runoff), and they create problems with debris that can kill or injure fish and wildlife. These diffuse inputs are harder to manage, in part, because they involve the actions of numerous, individual citizens including those that live far from the coast. In addition to reducing diffuse inputs, historical losses of 50% of the salt marsh, 60% of the seagrass and 85% of the mangroves in some of Florida's estuaries need to be repaired.

The challenges we face represent 'wicked problems', which means that improvements to the current situation require an iterative approach to problem definition and testing of potential solutions. Education and outreach play critical roles because all stakeholders must be continually involved in a meaningful fashion if any solution is to be accepted. FL316 can improve the current situation by joining with other programs to:

- 1) characterize the 'wicked' nature of the problem;
- 2) translate existing scientific findings into potential solutions for testing, with science broadly defined to include physical, chemical, biological, economic, social and political approaches;
- 3) highlight critical gaps in our knowledge and research efforts to fill them;
- 4) facilitate innovative decision-making processes; and
- 5) encourage public involvement and stewardship.

Goal 4 – Greater harmony between agriculture and the environment

Key theme – Water quality

Solution and Objective 1 – Contact governmental agencies with key responsibilities for coastal and estuarine systems, identify their key issues for use in planning future extension efforts, and assist them in implementing responsible management

Extension agents were involved in initiatives with governmental agencies in 15 counties. Their efforts addressed protection of manatees, removal of abandoned vessels, function of 3 National Estuary Programs, operation of the St Lucie County Marine Science Center, and management of stormwater, sewage contamination and red tides.

Solution and Objective 2 – Introduce 300 students and 4-H participants to issues associated with coastal waters, habitats and ecology and have 60% increase their awareness and understanding

As part of the efforts to increase awareness and understanding in the next generation of decision makers, extension agents conducted 47 educational efforts through schools,

activities or 4-H programs in 15 counties. These efforts provided information directly to over 6,000 children and adult educators.

Goal 4 – Greater harmony between agriculture and the environment

Solution and Objective 3 – Introduce 1,000 homeowners, members of citizens' groups and business people to involvement in coastal and estuarine stewardship, including coastal clean-ups, waste recycling and volunteer monitoring and have 20% participate in at least one activity

As part of the efforts to involve citizens in participative management, extension agents contacted over 50 groups or businesses and 1,200 individuals in 8 counties. They conveyed information on a range of initiatives including endangered species, reducing debris in the coastal zone, monofilament recycling and rehabilitation of coastal habitats. Two Success Stories illustrate the impacts of these efforts.

Summary of Impacts for Clientele:

Goal 4 – Greater harmony between agriculture and the environment

Key theme – Water quality

Solution and Objective 1 – Contact governmental agencies with key responsibilities for coastal and estuarine systems, identify their key issues for use in planning future extension efforts, and assist them in implementing responsible management

Among other things, efforts to liaise with key governmental agencies resulted in improved planning for FL316, implementation of management plans to protect Florida's marine resources, and garnering of over \$70,000 in funds and in-kind contributions for environmental education on topics that included marine invasive species and stormwater management. Efforts yielded increased understanding of key issues in all cases as shown by the results of surveys.

Solution and Objective 2 – Introduce 300 students and 4-H participants to issues associated with coastal waters, habitats and ecology and have 60% increase their awareness and understanding

As part of the efforts to increase awareness and understanding in the next generation of decision makers, extension agents conducted over 40 educational efforts through schools, activities or 4-H programs in 15 counties. These efforts provided information directly to over 2,100 children and adult educators. In addition, information was provided through radio interviews, newspaper articles and displays at local and regional events. Surveys revealed that participants increased their knowledge and understanding of key issues. In addition, some participants planned to alter their behavior as part of improving their stewardship of Florida's coastal resources.

Goal 4 – Greater harmony between agriculture and the environment

Key theme – Recycling

Key theme – Wetland restoration and protection

Solution and Objective 3 – Introduce 1,000 homeowners, members of citizens' groups and business people to involvement in coastal and estuarine stewardship, including coastal clean-ups, waste recycling and volunteer monitoring and have 20% participate in at least one activity

As part of the efforts to involve citizens in participative management, extension agents contacted over 50 groups or businesses and 700 individuals in 8 counties. They conveyed information on a range of initiatives including endangered species, reducing debris in the coastal zone, monofilament recycling and rehabilitation of coastal habitats. In general, participants reported a gain in understanding and an intention to alter their behavior as a way of protecting Florida's coastal environments. Visible impacts include participation of over 700 people in coastal cleanups and restoration of coastal habitats.

Success Stories

Goal 4 – Greater harmony between agriculture and the environment

Key theme – Water quality

Solution and Objective 1 – Contact governmental agencies with key responsibilities for coastal and estuarine systems, identify their key issues for use in planning future extension efforts, and assist them in implementing responsible management

A workshop on invasive species in Florida's saltwater systems drew \$18,500 in funding and in-kind contributions. The workshop attracted 75 participants that included scientists, managers, educators and outreach professionals. The group outlined key priorities for future actions and agreed to participate in efforts to coordinate the state's approach to dealing with saltwater invasive species. Overall, the workshop received a rating of 4.4 out of 5.0 = excellent.

Surveys indicated an average of 84% of all participants improved their knowledge following presentations on coastal issues.

Comments on presentations to 4-H and schoolteachers included:

“We will offer the seagrass activity to the 5th grade classrooms. I forwarded your e-mail to Kent Smith in our habitat section. He was greatly impressed and immediately sent it to FSU for the Saturday at the Seas program. I also sent it to a friend of mine in DEP and she has forwarded it to a few contacts as well. It is a great hands-on activity that gives students an idea of habitat and impacts. On behalf of everyone who teaches with it, our hearty thanks for your idea! Great web pages, too!”

“Fun informative tour. Enjoyed the trip and the information.”

“Excellent presentation. Good worthwhile program.”

“Very enjoyable and informative, I'll spread the word.”

Goal 4 – Greater harmony between agriculture and the environment

Solution and Objective 3 – Introduce 1,000 homeowners, members of citizens' groups and business people to involvement in coastal and estuarine stewardship, including coastal clean-ups, waste recycling and volunteer monitoring and have 20% participate in at least one activity

Key theme – Recycling

Over 400 volunteers recruited by agents associated with FL316 joined forces with others to clean up coastal habitats. In total, the volunteers collected over 13,000 pounds of trash. The success of ongoing efforts is illustrated by the addition of new sites and recruitment of more than twice as many volunteers.

Key theme – Wetland restoration and protection

Volunteers planted more than \$60,000 of mangroves, seagrasses and dune plants. Evidence of success is clearly visible where the mangroves have been planted because juvenile fish and other animals and plants are recruiting to this newly restored habitat, and cultivation and planting of sea oats will be scaled up to test its viability as a solution to loss of beach sand.

Outreach To Minorities:

Activities are widely advertised in a manner that reaches minorities. School and 4-H programs reach minority audiences. Some progress has been made on translating materials into Spanish to better reach Florida's Hispanic community.

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL317

Title: Sustainable Marine Fisheries in Florida

Calendar Year: 2002

Critical Needs: 11, 29, 32

National Goals: 1, 4, 5

Key Themes: natural resources management

Major Program Objective:

To increase commercial and recreational user group awareness, understanding, and utilization of marine fisheries resource conservation and management principles and processes.

To increase user group participation and involvement in the formulation and development of effective marine fisheries management policies within the state and federal management process.

To increase state and federal regulatory agency awareness of the role of economics in the effective management of marine fishery resources.

Summary of County Programs for Clientele:

- Assistance was provided to a group of commercial stone crab and spiny lobster fishermen in Monroe County who had an interest in starting a marketing cooperative. These individuals were provided with the basic information on the benefits and costs associated with cooperative development. Also, representatives from the Florida USDA office who are specialists in cooperative development were invited to meet with the fishermen to discuss the issue further. This provided the fishermen with the information they need to decide whether to pursue the cooperative option or not.

- A formal presentation was given to the members of the Southeastern Fisheries Association concerning the economics issues confronting the domestic shrimp industry. In particular, they were provided with information that describes the economic impact that the bottom trawling industry has on the economy of Florida. This information was useful to the industry in formulating effective strategies of dealing with a myriad of market and management issues confronting the industry.

- The Florida Sea Grant Shark Conference was held in Tampa. This conference brought shark experts from around the nation to discuss key issues related to public awareness, shark biology, shark management, etc. This conference was a major stepping stone for

the regional media to become better informed of the issues surrounding much publicized shark “attacks”.

- A series of workshops were held to solicit input from commercial blue crabbers as to the future of blue crab management in Florida. The workshops were intended to solicit the perceptions, opinions, and viewpoints of commercial crabbers concerning the most appropriate management strategies for blue crab in the future. Sixteen workshops were held that attracted approximately 300 persons. This information will be provided to the state management agencies for future management decisions.

- Gulf and Caribbean Fisheries Institute (GCFI) - Is the largest and oldest organization dedicated to the sustainable use and conservation of marine resources in the Gulf of Mexico and throughout the Caribbean region. Florida Sea Grant St. Lucie County agent serves as Executive Secretary to the GCFI and in that capacity facilitates exchange of information between fisheries researchers, governmental and NGO decision-makers, fishermen, and the recreational angling community. The agent served as Conference Chairman and Program Chairman for the 55th annual GCFI and was responsible for allocating manuscript submissions to oral and poster sessions, and served as editor and publisher of the 54th Proceedings of the Gulf and Caribbean Fisheries Institute. Presented "Opening Remarks and State of the Institute" at the 55th Gulf and Caribbean Fisheries Institute in Xel-Ha, Mexico, November 11, 2002.

- Numerous recreational fishing tournaments were assisted by Sea Grant agents. These tournaments provide an ideal opportunity for educating recreational fishers and the general public regarding fishery management and catch/release techniques. Tournaments that were assisted included the Fishing Frenzy \$10,000 Dolphin Tournament, Sebastian Inlet Blue Water Open \$10,000 Recreational Fishing Tournament, Micco Tournament, Charlotte County Kids Fishing Day, St. Petersburg Kids Fishing Tournament, Yamaha Miami Billfish Tournament, SW Florida RedSnook tournament, Fishing the Islands, DeSoto Fishing Tournament, and other local fishing tournaments.

- The design team has two members who reside on advisory committees of both the Gulf of Mexico and South Atlantic Regional Fishery Management Councils. These two individuals provide assistance in the fields of fishery biology and economics to the Scientific and Statistical Committees of both Councils.

The increased use of gas venting tools for recreational caught reef fish brought up from depth will help decrease release mortality of these fish. The increased numbers of recreational fishers and the increasing minimum size limits have added to the problem. In addition, the use of circle hooks and other less harmful release handling techniques could also help reduce release mortality of these valuable under-sized fish. The design team has spent considerable time developing a venting tool, educational materials, and other materials related to reducing release mortality.

- The design held the annual two day artificial reef coordinators workshop/field exercise for Florida west coast artificial reef program coordinators, providing technical assistance to reef coordinators on a regional basis (Florida west coast). Organized annual west Florida Artificial Reef Coordinators. Technical training included: update on state artificial reef program; presentation on Mote Marine Lab red snapper stock enhancement program; and evaluation of different reef materials on Pinellas Co. reefs. All counties presented update on projects and issues of the past year. Program content included Army Corps of Engineers and Florida Fish and Wildlife Conservation Commission staff reviewed new reef permitting procedures; evaluation of military tanks for artificial reef construction; proper use of venting tools; and tour of Pinellas County solid waste disposal

facility. The second day was dedicated to a field exercise that was conducted to evaluate several types of reef construction materials (barge, rock rubble, concrete culvert, and three types of prefabricated concrete modules. Design team member conduct numerous other programs related to artificial reef placement, technology, monitoring and evaluation. Numerous funding proposals for local reef placement are submitted. For example, one agents presented 10 programs on artificial reefs to groups in the Charlotte County area. More than 1000 fishermen, boaters and divers received information on reef development, locations, proper etiquette when using an artificial reef and marine conservation.

- The design team focuses annually on assessing the sponge biomass of the Florida Bay region. Design team members conducting transect sampling of the sponge population in the region, creating a data set that included 15 years of data. Obtained funding, conducted field work, and completed 2002 sponge survey contract final report to Fish and Wildlife Commission. Presented talk "The Long-Term Recovery Of sponge Populations in Florida Keys, USA Following A Widespread Sponge Mortality" and presented poster exhibit "Sponge Biomass Estimates In The Upper And Middle Florida Keys, USA at the 2002 International Sponge Biology Conference in Genoa, Italy. Also presented poster on sponge recovery at the annual Florida Bay Conference.

Summary of Impacts for Clientele:

- More than 5000 venting tools and brochures have been distributed and the project has received regional, national and international recognition (as a result of articles in national publications), venting tools have been distributed to anglers in at least 17 states and 12 countries. A data base of 1,127 people who have received training, the tool and the brochure has been compiled. The Sustainable Marine Fisheries Team conducted an evaluation of the program based on this contact information and other contact. Articles in national fishing magazines resulted in 250,000 media hits. Stories in State (Miami Herald) local media resulted in 200,000 hits.

- More than 50 reef monitoring dives have been performed by design team- trained CMRT volunteers. The group has surveyed bottom for permits, collected more than 20 hours of video to record invertebrate growth, surveyed fish numbers and species on the reef sites, assisted State researchers and set benchmarks on new reefs. Baseline data collected on the reefs is supplied to REEF and the FWC to provide background information for future reef development and fisheries management. In an informal survey of participants of the Florida West Coast Artificial Reef Coordinators workshops it was determined that they have adopted from 1 to 5 reef construction or monitoring practices based on information provided at the workshops. Reef program coordinators participating in these workshops expend approximately \$1,500,000 annually on reef construction.

- Twenty-five (25) spiny lobster and stone crab fishermen are now more familiar with the benefits of cooperative organization

- Fifty (50) members of the commercial fishing industry are now aware of the economic impacts associated with the bottom trawling sector of the commercial fishing industry in Florida. - Forty (40) international scientists are now aware of the impact of renewed spiny lobster tail imports (during the closed season in Florida) on dockside price.

- Three hundred (300) Florida commercial blue crabbers are now familiar with the FWC interest in blue crab fishery management options for Florida.

- Sponge Resource Extension Program Impacts

FL317 Past accomplishment reports and Success Stories have documented the impact of this Extension program. The results of the program have and continue to be used to manage the commercial sponge fishery, and evaluate the alteration of the Florida Bay/Florida Keys ecosystems due to widespread sponge mortalities (pers. comm., Fish and Wildlife Commission Executive Director; Florida Keys National Marine Sanctuary Program Executive Director). During the past ten years the value of the sponge fishery has ranged from \$1,100,000 to \$4,000,000 dollars and has provided employment for 150-200 harvesters, many of which are Hispanic with few opportunities for alternative employment in the fisheries industry. Without sound technical information to base decisions on, it is highly likely that this traditional fishery would have been eliminated based on false perceptions. In recognition of the value of the information provided by the design team, continued funding of the project is being provided by the Fish and Wildlife Commission. The Cantonis Marine Science Endowment, established in recognition of the Marine Extension Program's contribution to managing the sponge fishery, continues to generate \$1,500 annually to support Marine Extension. A number of additional accomplishments have been realized in 2002. As a result of presentations made at the 2002 International Sponge Biology Conference, the results have been communicated to over 220 scientists from 31 countries. In addition to the resource management applications for sponge fisheries in the Caribbean and Mediterranean, the results have substantially added to the body of knowledge concerning sponge community structure.

- Six hundred seventy three (673) surveys were mailed to anglers who received a venting tool. About 300 surveys were returned. The results indicated about 68.2% of the anglers were pleased with using the tool and found it a valuable item to have with them. * Post-survey indicates 68% of anglers are pleased with using the venting tool and 87% would purchase another fish venting tool in the future.2. At least 10% of 100 anglers that receive circle hook brochures will gain knowledge on the use of this tool and will report future intentions to use this tool on future fishing trips as measured by follow-up surveys. Approximately 1,000 brochures in English and Spanish have been distributed to anglers by attending boat shows, fishing shows, fishing workshops, and presentations. In addition, through these combined efforts approximately 1,500 anglers have increased their knowledge about the benefits of using circle hooks. Over 1,000 circle hook brochures were distributed to anglers and one article titled "Circle hooks...they work!" was written for a local community newspaper (Circulation 15,000).

- At least 20% of 75 youth that attend a fishing ethics presentation gained knowledge on fishing conservation and gained a better appreciation of the marine environment as measured by post-post surveys. Youth who participated in a fishing clinic took post-post survey on fisheries management/conservation which showed 81% of youth gained knowledge on the species identification of fish, awareness of the food web, and learned the importance of protecting the marine environment. About 81% of 22 youth gained knowledge on fisheries conservation practices after having participated in a fishing clinic as measured by post-post surveys.

- The design team conducted a study, at the request of the Monroe County marine agent, to evaluate the impact of lobster imports on dockside price of lobsters produced in Monroe County. This was needed to evaluate the potential impact of a measure being considered by FWC to allow greater amount of imports during the Florida closed fishing season. Result: Imports have little effect on dockside prices, primarily because of market differentiation between local whole lobsters and imported lobster tails.

- This year local radio was used to teach area residents about artificial reefs. One radio station utilized has an approximate audience of 12,000 listeners. A second radio program,

May 2002, featuring information regarding Sharks and Shark Attacks. Additional information was provided regarding white marlin and a proposed endanger species act. Approximately 25,000 listeners received this information.

- A highly successful Kid's Fishing Tournament was held at the St. Petersburg Pier. This was the 14th Annual tournament. The tournament is for kids 12 years of age and younger and is designed to teach them, at an early age, the fun of fishing and the importance of fishery management, rules and regulations. A parent or adult sponsor is required to attend with the child. Over 35 volunteers assisted with registration and fishing "expertise." Members of various fishing clubs assist the kids throughout the tournament. Graduate Marine Science students from the University of South Florida's College of Marine Science provide identification and life history information on the fishes which are caught. Two hundred sixty five (265) youth participated. Donations funding the tournament (prizes, trophies & ribbons, bait, tackle, lunch and drinks) by local businesses were approximately \$6,500.

- Over 200 participants attended the 55th Gulf and Caribbean Fisheries Institute, representing academic institutions, governmental agencies and NGO's, and commercial fishing communities throughout the Caribbean and Gulf of Mexico. This was a 35% increase in attendance from the previous institute (2001). A questionnaire provided at the end of the conference indicated that attendees were provided useful knowledge relevant to their occupation in fisheries science, and they planned to continue participation the annual GCFI conference in the future. A majority of attendees also stated that they found the Book of Abstracts and the GCFI Proceedings to be a useful resource and that they would continue to maintain their subscription to the GCFI proceedings.

Success Stories

- A quarter million juvenile scallops were released into natural areas surrounding the work sites near Gomez Rocks (Crystal River) and the Homosassa Bird Rack. These restoration efforts over the past 4 years have been successful, resulting in reopening a recreational divers season this past year by the Florida Wildlife Commission (FWC). This news was gladly received by the Citrus County Tourist Development Council and all the businesses (motels, restaurants, boat/dive rentals) which previously depended on scallop season tourist trade for a good part of their annual incomes. Prior to the closure of the recreational scallop season in 1995, the total economic benefit to the communities of Crystal River and Homosassa was estimated at between \$3 -5 million annually. A design team member assisted the Citrus County Tourist Development Council in the design of a survey instrument which would help determine the economic impact of the newly opened recreational scallop season to Citrus County businesses. This survey, which went to over 600 hotels, motels, restaurants, dive centers, communication) indicated that equipment sales and 78 scallop collecting boat rentals brought in increased profits for the community. The industry expects an even bigger impact next year as word spreads regarding the newly open season. - The Keys National Marine Sanctuary Program urgently requested that the Florida Sea Grant Marine Extension Program and design team present all relevant available information on the sponge fishery and results of past work so that the Sanctuary Program could make recommendations based on sound, unbiased technical information. As a result of information provided to the Sanctuary Program, the Sanctuary Program recommended the following management measures to the Florida Wildlife Commission: 1) establish restricted species endorsement for sponge harvesters, and 2) modify the definition of minimum legal size. During the past year the Florida Wildlife Commission accepted our management measures, presented to them by the Sanctuary Program: 1) FWC established a restricted species endorsement for sponge

harvesters and, 2) set a 5" size limit for sponges-measured cross wise across the top of the sponge. During the past ten years the value of the sponge fishery has ranged from \$1,000,000 to \$4,000,000 dollars and has provided employment for 150-200 harvesters, many of which are Hispanic with few opportunities for alternative employment in the fisheries industry. Without sound technical information to have decisions on, it is highly likely that this traditional fishery would have been eliminated based on false perceptions. The 2002 data indicates that sponge population recovery is continuing to occur. Based on the usefulness of the data, the FWC will fund additional work in 2003.

- Design team members and volunteers have provided fish venting training and venting tools to approximately 1,050 offshore anglers in the Tampa/Sarasota Bay area. An additional 1,000 venting tool have been distributed to Marine Extension Agents, Mote Marine Laboratory staff, local bait and tackle stores, FWC outreach staff. It is estimated that fish venting articles in national, state, and local magazines and newspapers have resulted in at least 700,000 media hits. Results of a formal evaluation have documented that the program has been successful in achieving behavioral change (adoption of proper venting practices). A total of 673 evaluation surveys were mailed and 335 (51%) surveys were returned. Sixty eight percent responded that they had adopted the practice of fish venting. These results are even more impressive given that 20% of the respondents indicated that the reason they had not adopted the practice was because they had not gone fished offshore since receiving the venting tools. Only 8% indicated they had not adopted the practice due to lack of information and training. The mean number of fishing trips in waters deeper than 30 feet (74.4% provided an answer to this question) was 25, indicating the program had been highly successful in targeting dedicated offshore anglers. Another key finding of the evaluation is that there appears to be latent commercial market for the venting tool. All respondents that had adopted fish venting indicated they were willing to purchase a fish venting tool in the future. Sixty seven percent indicated they would be willing to pay \$5.00 or less, 31% were willing to pay \$6.00 - 10.00, only 2% were willing to pay more \$10.00.

- Due to increasing recreational fishing effort in rapidly urbanizing areas, and the documented economic impact of artificial reefs (for example a recent study in Palm Beach Co.) estimated an economic impact of \$12,000,000). Artificial reef programs along Florida's west coast have grown significantly during the past decade. Artificial reefs provide increased fishing opportunities and, to at least some extent, enhance fishery stocks. Consequently, artificial program coordinators are constantly seeking technical information from the Marine Extension program and design team members in order to construct reefs in the most cost effective manner, increase reef productivity, and to wisely manage and evaluate reef programs. The Manatee Co. Marine Extension Advisory Committee specifically identified enhancement of the Manatee Co. Artificial program as a top priority of the Marine Extension program. As a result of technical training provided by the Annual Florida West Coast Artificial Reef Coordinator's Workshop, reef program coordinators from 15 counties reported adoption of either new reef construction or monitoring practices based on information provided at the workshop over the past five years. Reef program coordinators participating in these workshops expend approximately \$1,700,000 annually on reef construction. All workshop participants reported that information gained during the workshops was useful in a variety of professional roles.

- Florida Sea Grant and the design team have been educating the public about pelicans and large fish bones. Pelicans cannot digest large bones from big fish. They can only digest the small soft bones from small fish. The bones will poke holes in their stomach and will cause injury and pain resulting in death. In 2000, 250 pelican signs "Don't Kill

Pelicans With Kindness" were distributed to marinas around the county in English and Spanish. As of 2002, however, most of those signs had been lost, destroyed, or faded from being exposed to the outside environment. Therefore, funding was awarded from the Yamaha Miami Billfish Tournament to print an additional 600 signs (500 English, 100 Spanish) using a different color (blue) to replace the missing, destroyed and faded signs. With help from volunteers from all over the state of Florida, pelican signs have been distributed and posted on fishing piers and bridges. As a result, an article was printed in the Indian River Lagoon Newspaper commenting on the problem pelicans have if feed big fish. Widespread coverage on this issue is now taking place all over the state of Florida due to volunteers helping to post pelican signs in needed areas.

- The artificial reef project that placed Reef Balls under private docks in Punta Gorda Isles and under three public piers in Charlotte County has been used as a model for reef deployment in other parts of the country. They have been very affective in juvenile stock recruitment. The design team has received requests for information from at least three states and even an email from the Persian Gulf requesting information.

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. Outreach to minorities, particularly to the hispanic fishermen which are the primary minority group in the local fisheries, included visits to hispanic docks for individual contact, meeting notices placed at the docks, use of intermediaries (such as bilingual fishermen and fish house employees), newspaper articles, and radio presentations. The frequency of attendance at workshops and public hearings is an indication that information is getting to the hispanic fishermen, but they are still not participating in the fishery management process as openly as do other fishermen. The Florida Bay Outreach program printed Spanish versions of the project profile "Sponge Populations in Florida Bay. Using interpreter provided by Keys National Marine Sanctuary Program, provided Hispanic sponge fishermen with a verbal summary of presentation to the Sanctuary Advisory. Circle hook brochures were printed English and Spanish and were distributed to female anglers and minorities at boating shows, fishing tournament, and workshops. Parity has been reached by advertising programs through mass media to reach potential minority recipients.

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL411

Title: Florida Water Conservation

Calendar Year: 2002

Critical Needs: 2, 7, 14, 27, 29

National Goals: 1 and 4

Key Themes: Agricultural Profitability, Home Lawn and Gardening, Innovative Farming Techniques, Ornamental/Green Agriculture, Tropical Agriculture, Natural Resource Management, Drought Prevention and Mitigation, Water quality

Major Program Objective:

To increase water use efficiency and reduce water consumption while maintaining adequate and sustainable water supplies for urban and agricultural users in Florida. The emphasis of this major program is on promoting the most efficient water use in agriculture, landscape, and urban settings. The program is directed towards urban and agricultural audiences. The rationale is that efficient water use in one sector may increase water availability for other sectors without increasing the total amounts presently used.

Summary of County Programs for Clientele:

The First South Florida Drip Irrigation School organized by this agent was a great success. 74 people (growers and industry) participated in this all day educational session including classroom presentations on nutrient and water management, plant sap testing, irrigation system design and maintenance and troubleshooting and field hands-on activities including: water and chemicals movement in the soil shown with blue die, chlorination and injection of methyl bromide alternatives through the irrigation system and field determination of irrigation uniformity. Most of the participants graded this program as excellent and requested a similar program next year. Examples of comments from the evaluation of the program: " Class was very well done and has helped me a lot; Good training, congratulations. When will be the next; Truly excellent program; Very useful and knowledgeable; Excellent job, timely information; good program, thank you".

A Watershed Approach to Management: IST 22028 attracted agents from 6 diverse areas within extension. It increased participant's knowledge by an average of 25%, and provided useful information to 100% of participants (on average participants ranked the amount of useful information conveyed as 4.4 out of 5.0 = a lot). The information will be used to create educational programs (88.5%), conduct demonstrations (23.5%) and assist clients with decisions (17.5%). Participants agreed that further ISTs are needed to cover specific topics in more depth. Further ISTs and other materials are being planned.

A series of water conservation programs in the form of rain barrel and micro-irrigation workshops was conducted in Pinellas County. In the rain barrel workshop, participants build their own rain barrel for use at their homes. The two-hour micro-irrigation workshops use a PowerPoint program, a demonstration of different irrigation components, a video provided by MisterLandscaper, and hands-on instruction on assembling irrigation components. Each attendee was given a notebook containing the FY&N Workbook and 10 IFAS Fact Sheets related to irrigation. Pre- and post-surveys were administered to evaluate results. Micro-irrigation starter kits from MisterLandscaper are made available for purchase at a discounted price. Both workshops present information on water conservation in the landscape and Florida friendly landscape principles. A total of 288 participants attended these workshops with 122 rain barrels constructed and 103 micro-irrigation starter kits purchased service. As a result we have a staff of seven professional horticulturists, a senior training specialist, a FY&N coordinator, and a senior office specialist, all in addition to the urban extension agent. Because of this support from the county, we were able to prepare and present and/or participate in 329 educational activities for the citizens of Pinellas County.

In Henry County, of the 25 people who attended the seminar on irrigation management for SW Florida citrus, 70% stated that they would change or improve their management practices and that the change or improvement of their management practices due to the gained information will have a good social/environmental impact in the area and a positive financial impact on their businesses. They estimated their average savings and/or their efficiency through the use of the gained information to be at 7.5%. The average acreage per attendee was 4,050 acres. The average yearly cost of an irrigation program in

commercial citrus groves in southwest Florida is around \$150/acre. Seventy percent (70%) of 25 is equal to about 18. The average acreage of 4,050 multiplied by 18 multiplied by 7.5% multiplied by \$150/acre is equal to over \$820 thousand savings.

On-Farm Irrigation Scheduling Demonstrations Drip irrigation adoption in the Suwannee Valley area was a program emphasis of this program in 2002. As in recent years growers adopted the practice of using drip irrigation, the program emphasis has shifted to teaching growers methods to improve efficiency and management. One critical management decision for growers to make is scheduling the irrigation events. Efficient timing can conserve water and reduce nutrient losses, both important concerns to growers in the region. To help growers learn ways to determine irrigation schedules a program of on-farm demonstrations to teach growers appropriate methods was planned and implemented. The program involved county agents throughout the region and identified nine cooperating farms and one site at the NFREC-SV. Each farmer received pairs of Watermark granular matrix sensors and a reader to measure soil moisture in selected fields. Each farmer was provided a data log sheet to record moisture readings. This timely information was used to guide scheduling decisions. The Watermark sensors provide the same information as tensiometers but are much easier to maintain. Similar tensiometer demonstrations in the past have resulted in a 10-20% adoption rate due to the difficulty in maintaining the tensiometers. This project resulted in very positive feedback from growers. A survey of growers at the end of the season indicated all growers used the sensors to make changes in their irrigation program. All growers indicated they plan to adopt using the sensors as a scheduling aid in the future. As a result of this program, the cooperating farmers indicated again they reduced water usage early in the season by an estimated 50%. This early season reduction in over watering is especially important because nutrient leaching losses are most likely during this period. Future program efforts and research need to determine impact of efficient water scheduling on nutrient losses.

In the workshop series "Micro-Irrigation for Home Landscapes-Just the Basics", 97.8%% of the 105 attendees indicated they would make changes in their lawns based upon what they learned in order to improve water efficiency. The level of knowledge among the county employees attending the lunch and learn class "Low Volume Irrigation" increased 98%.

Lychee and longan acreage in Florida has more than doubled in the last 8 years. As a result of workshops on lychee and longan production, producers have responded that the information provided has increased fruit production (96%) and increased the use of irrigation by 33%.

Success Stories

In Volusia County continued and renewed interest in using fully enclosed subirrigation and microirrigation as alternatives to seepage irrigation practices (additional 400 acres were installed in Flatford Swamp Watershed) was reported. In addition, improvements recommended in water table monitoring on commercial subirrigated turf production have resulted in reduction in volumes applied while attaining more uniform applications.

The extension partnered with the Volusian Water Alliance and the St. Johns River Water Management District, in delivery of twenty (20) programs on Rain Sensors and Home Irrigation. Each of the one thousand two hundred forty three (1,243) people who attended the workshops received a free mini click rain sensor valued at \$20.00. Estimated 40% savings of water per household as a result of installing rain sensors on the automatic irrigation systems. The program received the Florida Society of the American Water

Works Association Water Conservation Excellence Award 2002 for outstanding water conservation programs.

The adoption of tensiometers and other soil moisture sensing devices in South Florida is becoming popular and has been on the increase. There are now 203 acres where these devices are used and 30 to 50% reduction in irrigation volume are being experienced by growers. This results in economic savings and in a reduction of nutrient leaching. Improvements in tropical fruit crop cultural practice management have resulted in \$4.7 million extra profits. The weather monitoring service for farmers in the agricultural area is worth \$138,000. By knowing Spanish, the agent has been able to reach and help the large population of his Spanish speaking clientele. Growers saved \$57,020 by getting a problem diagnosed without going through a clinic, laboratory or private consultant.

As a direct result of extension programs, the biggest packer/shipper of tropical fruits in South Florida, who is also tropical fruit grower with several hundred acres under production of tropical fruits, installed tensiometers and changed irrigation practices for 70 acres of avocado grove. (20 acres of mature grove and 50 acres of recently planted avocado trees). Young trees were showing numerous nutritional problems and declining of some trees as result of over-irrigation. A few weeks after installation of the instruments and changing the irrigation schedule trees were much healthier. An avocado grower using tensiometers since February 2002 reduced water use by 50% and harvested this season 30,000 lbs (545 bushels) more fruit from 9 acre grove and increased the income this year by \$ 13,600. One of vegetable growers purchased a portable TDR (Time Domain Reflectometry) instrument and is using it on about 200 acres farm to measure direct water content in the soil before making decision about starting irrigation. The agent provided training and hands-on demonstration how to use TDR for this grower. This grower is also using tensiometers in some of the fields and is able adjust the irrigation to the plant needs. About 20 of the growers using tensiometers are involved in the USDA EQUIP program, which promotes sustainable farm management practices. By improving their irrigation practices these growers may receive the reimbursement up to 75% of their investment in installation.

Demonstration of soil moisture measurement devices to the growers during the vegetable field day resulted in acceptance of this device by a grower who agreed to purchase the device (\$6000). Furthermore, the Southwest Florida Vegetable Grower Association selected a proposal for funding the demonstration of similar devices in two vegetable farms in Southwest Florida. This effort is expected to provide the first-ever continuous soil moisture data for vegetable fields in South Florida. Growers who attended the seminar on "Fundamentals of Irrigation" said that they are interested in using soil moisture measurement devices and weather station in scheduling irrigation. A number of progressive farmers have purchased and installed different soil moisture sensors on vegetable fields and groves. Word of-mouth is bringing interest on their use as water conservation practices. Water conservation survey had excellent response, close to 40%, from two commodity groups (Tropical Fruits and Ornamentals). There is interest in the community on results from the survey (phone calls, open comments to the survey, one-to-one at meetings).

Knowledge and background about hydrological issues and limitations surrounding the agricultural area in the South of the Everglades is increasing. Consultations on current hydrological issues in the area were requested by farmer groups (Farm Bureau) and local/regional institutions.

Production of 1-gallon plants in multipot box with a water reservoir substantially reduced the requirement for supplemental irrigation. The quantity of irrigation water applied to the multipot box system was about 84% less than that applied using the common practice of irrigating with overhead sprinklers delivering (0.5 in) per day. Water from overhead irrigation and from rainfall, that normally is lost between the pots, was collected in the reservoir of each box and later supplied to plants by subirrigation. Prototype multipot boxes used in this experiment contained nine plants and were constructed of fiberglass painted black for UV protection. The first experiment was conducted during months of relatively low rainfall in North Florida. The water savings can be only greater during other months when the rainfalls are more frequent. The experiment was repeated during the rainy season when only the two water applications were needed, one to initially fill the box container and one more during a short period of dry weather. The efficiency of water use was over 90%. As a result, a large demonstration of multipot boxes in a commercial nursery was funded by the Florida DEP.

Through improvement in irrigation management, the nurseries represented in the "Effective Irrigation Management" classes made changes that saved 1,800,000 gallons of water annually in Manatee County.

Outreach to minorities:

Various methods of reaching minority audience were reported in 2002:

Every effort is made to reach minorities, including: utilizing mass media (newspapers, radio, TV), visiting and displaying promotional materials at various associations (homeowners, homebuilders, etc.), holding activities at convenient and accessible facilities, utilizing all county channels (cable access, media contact, reader board, etc.), contacting all DBPR licensees with literature through a mass mailing (program specific), displaying brochures at other activities and events (i.e. meet your county day at the mall), and offering training on-site (i.e. not required to be held on county property).

Press releases sent out to media outlets that target minority groups for their audience, nondiscriminatory statement listed on all publications, programs offered at facilities that are ADA compliant, and programs advertised on county employee email which reaches a diverse group of county employees.

Notification of programs and meetings in local newspapers, newsletters, mailings, personal web page, and periodically by phone recording was reported. Holding programs in different geographic locations and at sites accessible by all people was implemented.

Newsletters and program announcements are provided to people involved in nursery or sod growing businesses. All programs are open to any employee, manager, or owner.

Minority audiences receive announcements of meetings and other educational opportunities and they attend and participate. They also receive the vegetable newsletter and other publications.

Efforts were made to have displays featured in locations around the county to make information accessible to all people.

Some specific examples:

In Miami-Dade County a large number of the clientele are minorities: 821 white, 661 women, 834 Hispanic, 237 black and 146 Asians attended programs. Several meeting announcements were also done in Spanish. The agent appeared twice in a two hour Spanish radio and once on a TV program discussing and answering questions (60,000

audience). About 35% of new tensiometer users in this county are minorities. The minority clientele attended educational workshops and received information and instructions in Spanish. Mail surveys to approximately 2,800 farmers and agribusiness firms included cover letters that were written in Spanish and English to ensure a high degree of Hispanic participation. "Pink Hibiscus Mealybug" alert and pre- and post-surveys for our "Maintaining Your South 'Florida Yard'" presentation are available in Spanish.

In Palm Beach County, outreach to minorities has been accomplished by a variety of methods, including partner advertising. A specific partner, Florida A&M University, has taken a special focus on minority participation through their Center for Environmental Justice. In March, extension agent was appointed to the Outreach, Environmental and Economic Equity Coordination Team, a subgroup of the South Florida Ecosystem Restoration Task Force. OEEECT focuses on outreach to minorities and works with FEF in developing minority outreach techniques.

In Henry County, specific activities used to reach minority clientele: Mailings for notification of commercial citrus educational activities are updated continuously to include all interested persons without regard to race, color, sex, age, handicap or national origin. Notices of activities are published monthly in the Flatwoods Citrus newsletter. Announcements are also published in the major trade magazines (Citrus Industry, Citrus & Vegetable, and Florida Grower), Florida Citrus Mutual's Triangle, The Peace River Farmer & Rancher, electronic newsletters, and local newspapers.

In Pinellas County, The Florida Botanical Gardens is located centrally in the county. The facilities are open to the general public. All facilities are handicapped accessible. Notices for events and regular activities are widely distributed including publications with high minority readership. Special outreach efforts have been made to local community minority groups. Specific outreach to schools and groups with significant minority population was made. Of major concern is involvement of African American youth from the community immediately surrounding the Botanical Gardens.

Field visits were made to Seminole Indian vegetable farms in Southwest Florida and to minority owned to discuss the water management issues.

Source of Federal Funds: Smith-Lever

Scope: State specific, integrated research and extension

SMP-FL416

Title: Management and Ecology of Aquatic, Wetland, and Invasive Exotic Plants in Florida

Calendar Year: 2002

Critical Needs: 11, 17,

National Goals: 1 and 4

Key Themes: Biological Control, Pesticide Application, Integrated Pest Management

Major Program Objective:

Maintain public awareness of aquatic, wetland, and invasive exotic plant management practices and problems caused by unmanaged vegetation in aquatic, wetland, and natural areas. Provide source for factual information on relationships between aquatic, wetland, and invasive exotic plants, their management, and the environment. Ensure availability of state-of-the-art vegetation management and aquascaping technology. Maintain professionalism of vegetation managers.

Summary of County Programs for Clientele:

1. Sixteen invasive plant education and pesticide training meetings held.

Developed, published and distributed plant ID murals and supporting materials for teachers and management agencies.

Wrote, published and distributed □Teaching Points About Invasive Plants□, a question/answer teaching tool for science classes and plant management training sessions. Written in collaboration with 13 science teachers, the Teaching Points are to be used by teachers to develop 45-minute classroom presentations about invasive plants.

Expanded and enhanced the Aquatic and Invasive Plants web site (<http://plants.ifas.ufl.edu>), including developing a new, comprehensive web site about aquatic plant management.

Expanded and enhanced the APIRS database and collection of scientific plant literature, and enlarge the online database. Expand collection of photographic slides and line drawings of Florida plants, including aquatic, wetland and invasive plants. Center-produced plant photographs and plant line drawings were used by 143 requesting agencies and institutions worldwide.

Wrote, published and distributed two issues of AQUAPHYTE, a newsletter that is distributed to users in 70 countries.

Approximately 600 web-based e-mail questions were answered regarding invasive and aquatic plants.

Summary of Impacts for Clientele:

Thirty seven program participants in St Lucie County could describe an integrated control program for melaleuca using *Oxyops vitiosa*.

Fifty seven St Lucie program participants in two meetings could describe herbicide control strategies for invasive plant species including *Schinus teribinthefolius*.

Two hundred eight individuals received new restricted use aquatic pesticide applicator licenses (141 commercial, 67 public).

One hundred forty-eight applicators have been licensed in the new natural area weed management restricted use pesticide category.

Ninety-one percent of participants who were surveyed at three multi-county training workshops for certification of restricted use pesticide applicators in Category 21, "Natural Area Weed Management", reported that information presented in the training was helpful for answering questions on the certification exam. Ninety-eight percent reported that information in the training would improve their understanding and skills for performing the duties of their natural area weed management profession.

Water conservation educators from utilities and Watershed Action Volunteer Coordinators increase knowledge of invasive plant species by 41%.

Thirty one attendees at Levy County pond management workshop acquired information, which they will use to improve management of aquatic vegetation in their ponds.

Of 164 attendees at an Environmental Landscaping Workshop, 80% increased knowledge by greater than 50%, 97% will remove invasive plant species from their private property, 98% will share information with others, and 98% will be more critical when invasive plant species when purchasing landscape materials.

More than 1,500 copies of the Teaching Points (described above) have been delivered to requesting teachers and management agency trainers.

The Center for Aquatic and Invasive Plants web site, since August, 2002, received more than one million hits/month; the web site now has more than 7,000 pages.

Success Stories

The training and testing program for "Natural Area Weed Management" is the first of its kind. Since its implementation this year one hundred forty-eight applicators have been licensed as restricted use pesticide applicators in this category. Ninety-one percent of participants who were surveyed at three multi-county training workshops for certification of restricted use pesticide applicators in "Natural Area Weed Management" reported that information presented in the training was helpful for answering questions on the certification exam. Ninety-eight percent reported that information in the training would improve their understanding and skills for performing the duties of their natural area weed management profession.

Martin County, in 1996, included the entire Florida Exotic Pest Plant Council (FLEPPC) List of Invasive Species in their landscape ordinance as prohibited from sale or propagation in the county. When it was proposed to add additional species to the list, it became evident that growers and landscaper were unaware of the list of prohibited plants and were adamantly opposed to addition of species or retention of the FLEPPC list. IFAS mediated between county staff and local growers and landscapers, whereby a compromise list of prohibited species was agreed upon that will protect local natural areas from these invasive species and not have an economic impact on business.

More than 1,400 □teachers□ packages□ of two color laminated photo-murals and other education materials about plants were sent to K-12 science teachers who specifically wrote request letters to this office asking for them. If the average science class has 25 students in them, this is a direct impact of 35,000 students and teachers per year.

More than 3,000 scientific publications were identified, collected and added to the APIRS database; the database has grown to more than 58,500 items; 149 in-office printed literature bibliographies were produced for requestors; the online database receives more than 2,200 hits per month. The database is the largest such database in the world.

Outreach To Minorities:

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL420

Title: Conservation of Natural Resources

Calendar Year: 2002

Critical Needs: 29

National Goals: 4

Key Themes: Biodiversity, Biological Control, Endangered Species, Energy Conservation, Forest Crops, Forest Resource Management, Integrated Pest Management, Land Use, Natural Resources Management, Sustainable Agriculture, Water Quality, Wetlands Restoration and Protection, Wildfire Science and Management, Wildlife Management

Major Program Objective:

To increase knowledge and appreciation of natural resource values and conservation concepts related to the Florida environment

To maintain environmentally-sensitive approaches to recreational and commercial uses of natural resources

To decrease environmentally-insensitive practices as they pertain to the use of natural resources including water, energy, and the application of pesticides and fertilizers

To increase participation in natural resources education and conservation activities.

To develop and facilitate partnerships with other Design Teams within the University of Florida IFAS, and with other universities and external organizations as appropriate to achieve objectives 1 - 4

Summary of County Programs for Clientele:

Source of Federal Funds: Smith-Lever

Scope: state specific

SMP-FL510

Title: Housing and Built Environment in Florida

Calendar Year: 2002

Critical Needs: 32, 33

National Goals: 5

Key Themes: Home Safety, Promoting Housing Programs

Major Program Objective:

To identify statewide housing needs and conduct in-service training providing educational programs that help Floridians to:

- secure housing satisfaction
- reduce loan delinquencies of first time homeowners
- improve potential for home ownership
- equip residents to protect their housing investments
- address concerns such as home environmental hazards, and housing for the elderly

Summary of County Programs for Clientele:

Florida's housing program is broad in scope. It consists of 5 subdivisions.

The affordable housing program is a home purchasing program. It provides educational experiences for potential homeowners. Fifteen counties provide cooperative programs with agencies that award some financial assistance for low to moderate income families to buy homes. These include SHIP and Habitat For Humanity programs. Agents teach the financial component of home ownership. They also cover the care of the home.

Build Green and Profit, a program sponsored by the Extension Energy Service. This program targets professionals in the building industry more than it does consumer audiences. It teaches energy efficiency and water conservation through the selection and use of construction materials and environmental landscaping. Agents teach energy conservation, labeling and financial benefits.

Healthy Homes programs, including indoor air quality, pollutants and respiratory problems. With the increasing concern over respiratory problems this program has strong appeal for both young people and the elderly.

Safe and Secure Homes. This program area addresses home safety (falls, home up-keep, landlord and tenant programs, and home furnishings, etc.)

Summary of Impacts for Clientele:

The affordable housing program is a very successful and beneficial program. Fifteen counties report programs dealing with home ownership. The down payment subsidy awarded qualified homebuyers is provided by non-extension agencies. Extension teaches the financial component dealing with purchasing and owning a home. It also addresses the responsibilities of home ownership. Extension does not teach all affordable housing programs in the state. Over a 10 year period there has been less than one-percent repossession rate for homeowners taught by extension. It is over 5 percent for groups taught by other organizations. In most counties where extension teaches these groups, agents continue to teach and teach the new homeowners. They know getting a home is important. Keeping the home is equally important. Also, many of the families who go through the home ownership training and do not qualify for a loan or decide not to buy a home report they “clean up” their credit and have learned management skills that will benefit them for life.

Not only has the home ownership program helped families get a home, it has other important benefits. It increases employment in the community and adds to the tax base. For example, the Lake County buying 204 new homes brought \$1,006,760 into the county taxes. The repair of 51 run-down houses generated \$200,610 in revenue and rehabilitated a neighborhood.

The Renter Power Program has benefited both tenants and landlords. In three counties where it has been pilot tested subsidized housing units are requiring new tenants to participate in the program.

Success Stories

In Washington-Holmes County a SHIP Homebuyer Education Program participant wrote on his evaluation form, “I have made some changes. Some of the things that I want and don’t need, I don’t buy anymore. I have started paying off bills so that if I get a chance to buy a home, I will have more of my bills paid. I am now starting to put money in the bank so I can have money to rely on if I get behind with payments.

Lake County: “Thanks for the home buyer classes,” said the voice mail message. “My wife and I want to say how much we learned at the classes. I figure the classes were worth about \$1,000 per hour to us since they qualified us for the down payment assistance.”

Jackson County: A battered woman was in a shelter. With the agents encouragement she received training as a corrections officer. Hearing about the SHIP program, she participated in the program, was approved for a loan and is now in a new three-bedroom home.

Orange County: At the request of the Orlando Neighborhood Improvement Corporation Extension agreed to provide a series of housekeeping workshops for residents of a rental complex. The purpose was to equip the primarily Haitian population with knowledge, information, and skills needed to effectively enhance their housing satisfaction while also preserving the property. The management is concerned about the general condition of the

property and use of the appliances. Residents spoke Creole and could not read. The city provided a translator. Monthly meetings trained 98 attendees. Progress is being made and additional life skills will be taught.

Outreach To Minorities:

A wide variety of methods were used to reach and recruit minority audiences. These include:

Extensive media coverage including articles and announcements in minority newspapers and Spanish language papers; inserts in employee envelopes; notes on employee email; announcements in minority church bulletins; meetings at minority churches and other public areas in minority neighborhoods; work with minority clergy, leaders and employees and obtaining their support in recruitments; information and programs at work places; programs at public housing authorities; bilingual coordinators; classes taught in Spanish; minority advisory board memberships; and some programs attract minorities such as the SHIP Programs and others targeting lower income participants.

Source of Federal Funds: Smith-Lever

Scope: state specific, multi-state

SMP-FL511

Title: Food, Nutrition and Health in Florida

Calendar Year: 2002

Critical Needs: 20

National Goals: 3

Key Themes: Birth Weight, Human Health, Human Nutrition, Infant Mortality, Nutraceuticals

Major Program Objective:

At least **50%** of program participants will adopt a healthier lifestyle or reduce a specific risk behavior. Examples of behavior changes include: a) decrease dietary fat; b) increase consumption of whole grain foods; c) increase fruit and/or vegetable consumption; d) adopt or improve a personal exercise program; e) practice breast or testicular self-examinations as recommended; f) have blood pressure checked if necessary; g) have blood cholesterol checked if necessary. At least 25% of participants with hypertension will reduce their blood pressure, and at least 25% of participants with hypercholesterolemia will reduce their blood cholesterol. Limited resource clientele will adopt healthier food choice behaviors (as above) and improve food resource management practices.

Summary of County Programs for Clientele:

Thirty-six counties reported outcomes of programs in food, nutrition and health in 2002, including chronic disease risk reduction programs, lifecycle nutrition programs, and programs specifically targeting limited resource clientele including the Expanded Food and Nutrition Education (EFNEP) program and the Family Nutrition Program (FNP). Programs ranged from basic nutrition and health such as the Food Guide Pyramid, managing food resources, label reading, lifecycle nutrition programs, and the Dietary Guidelines for Americans, among others, to educational programs focused on reducing risk for, or complications from, specific health conditions such as obesity, hypertension, hypercholesterolemia, and diabetes. Programs conducted included the statewide heart

health programs Keeping the Pressure Down and Cholesterol Control as well as heart health programs adapted for individual counties using statewide materials, county developed materials, and other research-based educational materials. Other in-depth programs used by county faculty include Toward Permanent Weight Management, Take Control to Reduce Your Cancer Risk, and the Elder Nutrition and Food Safety (ENAFS) program. Additional programs implemented in 2002, include the CHOICES: Charting a Positive Future for Teen Parents program and the Folic Acid Every Day program, which is targeted to Hispanic women of child-bearing age. This year the new EFNEP/FNP curriculum, Nutrition Essentials, was introduced. Several counties also implemented diabetes education programs targeted to persons with type 2 diabetes. Three counties currently are pilot testing a statewide diabetes educational program, Take Charge of Your Diabetes, with grant support from the Agricultural Experiment Station.

Thirty counties (in four districts) conducted in-depth programming in food, nutrition and health (not including EFNEP or FNP) and reported outcome data. In these 30 counties, 18,324 persons participated in educational programs designed to promote healthy lifestyles, reduce disease risk, and/or reduce health complications of chronic diseases. In addition, during fiscal year 2001-2002, the Expanded Food and Nutrition Education Program reached a total of 12,864 youths and adults, and the Family Nutrition Program made a total of 530,892 direct contacts. An additional 739,100 indirect contacts were generated through articles in newsletters/newspapers and exhibits/displays at local fairs, Food Stamp offices, health departments, libraries, and schools.

Summary of Impacts for Clientele:

Thirty counties (in four districts) conducted in-depth programming in food, nutrition and health (not including EFNEP or FNP). Of the 18,324 persons participating in these educational programs, the following outcomes were reported:

Increased knowledge: 7,360 out of 7,567 evaluated (97%)

Changed behavior: 4,281 out of 5,256 evaluated (81%)

Plan to change: 720 out of 979 evaluated (74%)

In addition, in three counties, 231 people out of 356 evaluated decreased their blood pressure and in one county, 44 persons out of 73 evaluated decreased their blood cholesterol. One county conducted an intensive diabetes education program and eight of 12 participants showed a decreased in their hemoglobin A1c level (a measure of blood glucose control over several months).

During fiscal year 2001-2002, the EFNEP program reached 7,111 participants through in-depth programs. Participants were evaluated on practices related to food resource management, nutrition, and food safety, using food recalls and behavior checklists. Only 3% (193 participants) demonstrated acceptable practices in all three areas at program entry. At exit, this number increased to 43% (2,943 participants), an increase of 1,425%. Stated another way, of the 7,111 participants, 2,750 (39%) improved food-related behaviors so that they practiced acceptable behaviors in all three areas at program exit.

During fiscal year 2001-2002, FNP counties made a total of 530,892 direct contacts. An additional 739,100 indirect contacts were generated through articles in newsletters/newspapers and exhibits/displays at local fairs, Food Stamp offices, health departments, libraries, and schools. In the Family Nutrition Program, 20,552 participants enrolled in in-depth nutrition programs. Evaluation data were obtained from selected participants to measure behavior change and knowledge gain. Evaluation tools included

pre- and post-tests, teacher surveys, parent surveys, entry and exit food recalls, behavior checklists, and verbal questioning. Following is a summary of the outcome data collected:

7,266 (81%) of 8,943 participants reported making improvements in their diets by putting into practice dietary recommendations such as eating more whole grains, fruits, vegetables, or calcium sources or reducing fat, sugar, or sodium intake.

4,899 (86%) of 5,715 participants demonstrated increased knowledge, such as correctly identifying the food groups in the Food Guide Pyramid or accurately mentioning the number of servings recommended for each food group.

978 (63%) of 1,542 participants showed an increase in food selection practices such as using a shopping list, reading food labels, or planning meals.

849 (59%) of 1,443 participants showed an increase in food budgeting practices such as planning low cost meals, accessing community resources, and limiting food waste.

4,227 (87%) 4,854 participants showed improved food safety skills, especially hand washing practices.

The potential for health care savings to the state related to the reported behavior changes by Extension Food, Nutrition and Health program clientele is substantial. When people make lifestyle changes, they can potentially prevent the need for expensive treatment. The American Dietetic Association (ADA) has projected cost savings for a variety of conditions that can be affected by individual nutrition counseling. Several of these are relevant to Extension education programs designed to reduce risk for chronic health problems. For example, ADA estimates that for every person at high risk for heart disease who reduces his/her need for drugs and other artery-clearing procedures, or surgery, an estimated \$10,930 is saved. If even a very small percent of people who report behavior changes following participation in one of the Extension heart health programs being conducted in Florida reduce their need for such procedures, there is the potential to save hundreds of thousands of dollars in health care costs annually in Florida. Additional savings in health care costs can occur as a result of behavior changes made by participants in other Extension Food, Nutrition and Health education programs.

Success Stories

Leon County: After participating in the Cholesterol Control series presented at the Florida Department of Education, one participant reported that she has been observing her plate for portions of animal to plant products and is focusing on filling her plate with three-fourths plant products. She has also begun reading food labels and using low fat cheese. Finally, this participant has learned the value of exercise and made more time for exercise on a daily basis, including involving her family on nightly walks. After participating in the first session of the Keeping the Pressure Down series, a participant commented that she had never before known the importance of the actual numbers in a blood pressure reading. She always relied on the nurse to tell her whether or not her blood pressure was good, and now, she actually understands what the numbers mean.

A Leon County EFNEP participant was featured in the June/July 2002 issue of the CommuniGator (statewide newsletter for EFNEP/FNP). Her EFNEP classes were conducted as a part of the collaboration between EFNEP and WAGES. This participant explained that prior to her participation in EFNEP she "ate lots of unhealthy snacks; always drank plenty of sodas and never exercised" and she had gained lots of unnecessary pounds. After completing the EFNEP series of classes she reported that she

"is more responsible and writes a grocery list before shopping, compares prices and reads the Nutrition Facts labels to see which items have less fat and calories." She also prepares a menu everyday to help meals remain nutritious regardless of sudden changes that happen to her family. She also reports "I am so proud that I have taken this class because my appetite has completely changed. I no longer drink sodas and I try my best to drink water more than 8 times a day. I also try to go walking daily and exercise in the morning."

In DeSoto County, following an eight-session healthy living class attended by 15 persons, participants reported significant healthful lifestyle changes. For example, one participant quit smoking after a 24-year habit and also eats less fried food and lost weight; the husband of one participant lost 20 pounds and decreased his blood pressure after they changed their eating habits following the program; a participant who started exercising has asked the county Extension agent to begin a wellness program for county employees so that she can attend additional classes; and another participant, who was diagnosed with diabetes after attending the healthy living class, feels that she learned many skills, such as label reading and recipe modification, that will help her manage her disease.

M was a pregnant participant in the EFNEP program taught by an EFNEP Program Assistant at a teen parent program in Hillsborough County. She was present at every class and listened attentively as she was very concerned about being healthy and having a healthy baby. She stated, "I will always remember how to use labels to compare foods ..." and said that she will remember how to thaw foods the safe way and how to feed her baby properly to avoid contaminating the food. M also stated "I will eat foods from all parts of the Food Guide Pyramid and try to eat the right serving amounts." She now has a baby boy and she stated that she is putting into practice what she has learned from the EFNEP program. M is looking forward to being a participant during the next school year so that she can learn from the new Nutrition Essentials curriculum.

Outreach To Minorities: Educational programs developed by state specialists and used by county faculty are designed to appeal to a wide variety of audiences, and can be adapted for use with persons of different ethnic backgrounds. Many educational materials are provided to county faculty in Spanish and some are available in other languages such as Haitian Creole and Vietnamese. ENAFS educational materials are designed for use at congregate nutrition sites and for home-delivered meal recipients throughout the state of Florida. These Older Americans Act programs are available to all older persons, but are targeted to limited resource clientele. Ethnic minorities make up a significant proportion of the clientele at many congregate nutrition sites. The ENAFS Daily Food Guide Pyramid for Elders was designed to appeal to ethnic minorities through the use of a variety of ethnic foods in the various food groups.

As appropriate, county faculty target certain educational programs to ethnic minorities and advertise their programs in ways that will reach the targeted group.

Source of Federal Funds: Smith-Lever

Scope: state specific, integrated research and extension

SMP-FL512

Title: Family Economic Stability in Florida

Calendar Year: 2002

Critical Needs: 33, 34

National Goals: 5

Key Themes: Consumer management/education, Estate Planning, Family Resource Management, Retirement Planning, Youth Development/4 H,

Supplemental Income Strategies

Major Program Objective:

To identify statewide needs and assist in the development of educational materials and in-service training for county faculty enabling them to provide Floridians with the knowledge needed to:

manage available resources efficiently enough to maintain an acceptable quality of life

function efficiently in the selection of goods and services within an increasingly sophisticated and changing marketplace

plan for financially secure retirement

Summary of County Programs for Clientele:

In 2002 Family Economic Stability programs in Florida consisted of three programs for youth: Money Wise, Consumer Choices and the High School Financial Planning Program.

Programs for adults included: Consumer Education, Telemarketing Fraud, Family Financial Management, Seat Belt Education, and SHIP.

Summary of Impacts for Clientele:

In 2002 county faculty conducted 1,172 learning events addressing topics of FL 512 Family Economic Stability in Florida. These programs reached 33,882 individuals. County faculty responded to 6,272 telephone calls and made 2,309 visits related to FL 512. Over 10,000 letters were mailed, over 100,000 other pieces of mail provided information about Family Economic Stability. One hundred and thirty eight news articles reached 3,805,130 Floridians and web sites in eight counties received approximately 30,000 hits.

Youth Programs:

Money Wise Program

County faculty used school enrichment programs to reach and teach large numbers of students. Classroom teachers sometimes assisted by the Extension agent provided the instruction within the school. Each participating teacher used an age-specific workbook provided by the agent. Thirty counties used over 40,000 Money Wise workbooks to teach money and consumer skills to school age youth.

Consumer Choices Program

Consumer Choices program materials were used by 25 counties. Extension agents taught classes for 4-H'ers and other young people within their counties. Judging events were held at 11 county and regional fairs. Most of the participation numbers were reported under FL 715(4-H) although program materials were developed and distributed by program area FL 512.

High School Financial Planning Program

The High School Financial Planning Program co-sponsored with the National Endowment for Financial Education and Cooperative Extension Service provides educational materials free to each teacher and each student enrolled. In 2002 five counties reported reaching 3,191 young people with this program. Extension provides teacher education and support for the six-unit course. High School students may compete in a national competition for scholarships and cash in one of four categories that show mastery of financial information. Florida had two of 12 national winners in 2002. These young people learned to set financial goals, manage debt, and develop a spending and savings plans. In one county 25% of the participants started a savings account and over half of the participants developed financial goals.

Adult Programs:

Forty-four counties reported programs in Family Economic Stability. Six counties reached 622 individuals with structured programs in Consumer Education teaching consumers how to comparison-shop, to protect themselves from identity theft and about consumer protection laws. Ten counties participated in a program designed to educate consumers about telemarketing fraud and to provide consumers with strategies for dealing with telemarketers. Pre and posttest showed that learning had occurred and follow-up evaluation showed behavior change.

Twenty-four counties reached 8,495 individuals with Family Financial Management Programs that consisted of six or more hours of instruction. Evaluation of these programs showed that as a result of participating in these programs:

34 participants found jobs

10 participants are no longer on public assistance

participants developed a spending plan

participants reduced impulse spending

participants prepared or revised their will

58 participants prepared a durable power of attorney

participants wrote a living will

participants reviewed their insurance policies for adequacy

participants developed a record keeping system and completed one or more of the following records: household inventory, net worth statement, location of records and important papers.

participants set financial goals

participants received information on savings and investments

53 established an IRA

848 began a savings program. The amount saved ranged from \$10 per week to more than \$50 per week.

participants in the debt management program

changed the way they used credit, this includes paying bills on time to avoid late fees, paying debts off early, cutting up credit cards, and moving to cheaper housing in order to get out of debt sooner

The Seat Belt Safety Program

The Seat Belt Safety Program includes educational programs for young people as well as checking booster seats for correct installation.

2523 Children participated in a poster contest on seat belt safety.

1527 Booster seats were checked for correct installation

SHIP Program

In 14 counties, county faculty reported reaching 5509 potential homeowners with an educational program designed to help them repair credit and save money in order to qualify for the special funds to purchase a home. Of that number 523 (9%) participants actually were able to meet the criteria to get into a home in 2002. This program had an economic impact of an average of \$1.7 million dollars per participating county. Other impacts of this program are reported under FL 510.

Telemarketing Fraud

The University of Florida, University of Tennessee and Auburn University developed and pilot tested a consumer education program that taught older citizens to take charge of their lives and not be victims of financial fraud or abuse. Ten counties and over 1100 people participated in the first phase of the program. Pre and posttest showed a 19% increase in learning. Six weeks after the event a researcher posing as a telemarketer called selected participants. Data collected from telephone calls showed that the behavior of person called was in line with “guidelines for dealing with telemarketers” presented in the educational program

Success Stories

Maria took the “Building Financially Strong Families” course to improve her English skills as well as to learn how to stretch her limited income. As a result of the course, Maria learned some money management skills, to speak better English and she was able to become employed. She is now a teacher’s assistant in an elementary school and she and her husband are saving money toward a down payment on a house.

Teri a fire fighter completed her certification as an instructor in child passenger safety training (in 2001) for Seat Belt Safety. She recruited several of her fellow fire fighters. In 2002 Teri’s fire station had a certified technician on each shift. Parents can now stop by at any time to have child seats checked for correct installation. If Florida complied with seat belt law equal to the national average (73% compliance), 83 lives could be saved, 1,740 injuries prevented, and \$146,446,380 could be saved each year.

Lisa teaches a program “Dealing with Dollars” to young people who are incarcerated. In her class this year two students opened a bank account, two began a savings account depositing \$10 per month and one is putting \$100 per month into savings.

A county agent worked with a married couple to develop a 5-year debt repayment plan for \$17,400 of debt. The couple stuck with the plan, repaid the debt in 2002 and has \$1400 in savings.

A county agent has developed a network for the America Saves program. She enrolled community leaders to participate on the board. She has obtained buy in from the financial institutions and has 70 new savers enrolled in the program.

Outreach to Minorities:

In order to ensure that minorities are reached, educational events are advertised in all local newspapers, direct mailing, churches, grocery stores, work sites and local agencies.

Class sessions are held in clients' location. County faculty makes use of bilingual volunteer counselors to work with non-English speaking clients.

Source of Federal Funds: Smith-Lever

Scope: multi-state, state specific

SMP-FL513

Title: Community Development

Calendar Year: 2002

Critical Needs: 32, 33

National Goals: 5

Key Themes: Communications Skills, Community Development, Conflict Management, Home-based Business Education, Impact of Change on Rural Communities, Jobs/Employment, Leadership Training and Development, Promoting Business Programs, Supplemental Income Strategies, Tourism, and Workforce Preparation

Major Program Objective:

To improve the well-being of Floridians by: (1) enhancing community economic vitality through developing a cadre of local leaders who will focus on community uniqueness, resources and potential; (2) analyzing demographic, social and economic attributes of communities to help leaders and residents better understand their strengths and weaknesses and opportunities for economic development; (3) building human capacity of urban and rural residents for participation in labor force and entrepreneurial activities; and (4) improving the ability of local leaders to conduct the process of establishing informed public policy through issues education.

Summary of County Programs for Clientele:

Number of counties reporting: 22 (Broward, Calhoun, Collier, Duval, Franklin, Gadsden, Highlands, Hillsborough, Holmes, Jefferson, Manatee, Nassau, Orange, Palm Beach, Pasco, Pinellas, Polk, Putnam, Suwannee, Taylor, Volusia, and Wakulla)

Counties reporting information relevant to the community development state major program: Broward, Calhoun, Collier, Franklin, Gadsden, Hillsborough, Jefferson, Orange, Pinellas, and Taylor

Summary of Educational Activities for Clientele:

Programmatic efforts were focused on five content areas: 1) Business retention and expansion, 2) New business development, 3) Workforce development, 4) Leadership development, and 5) Economic impact analysis. The first two contribute directly to development of the local economy, while the fourth content area helps community leaders make more informed decisions on locally-relevant issues. In each content area, only a few counties participated and the impact of these efforts is described elsewhere in this report. Community development activities also included ones that were unique to a county, such as enterprise zone designation, clam farming leases and business recruitment.

Summary of Impacts for Clientele

Business Retention and Expansion

Studies have shown that 40 to 90 percent of new job growth comes from existing businesses. Enterprise Florida says that 80 % of in-state job growth comes from existing

businesses. Recognizing this, Business Retention & Expansion (BR&E) programs seek to promote a healthy local economy by focusing on existing businesses. The program promotes job growth by helping communities identify concerns and barriers to the survival and growth of local businesses. The Cooperative Extension BR&E program is designed to provide specific technical assistance to a local community. State specialists, certified in the BR&E process, assist a community with all aspects of a BR&E program including survey design, data analysis, report writing and preparation of recommendations to support existing business development.

County Extension Directors in District 1 were trained on opportunities for BRE and Community Economic Development programs. Team member Hank Cothran was approved as an instructor in the Business Retention and Expansion Certification Curriculum and he taught the BRE Consultant Certification class in Halifax, Nova Scotia, Memphis, Tennessee, New Orleans, LA and Biloxi, MS. A total of 73 people were certified as BRE consultants as a result of the training. Hank Cothran also was elected to the Board of Directors for BRE International.

Initiated a BRE program in Citrus County. This program is currently in the recommendation implementation phase. As a part of this program, a local leadership team (5 people) and task force (30 people) as well as 50 individuals who served as volunteer visitors to local businesses were trained. Together these people visited 104 businesses in Citrus County. Based on the business visitations, a final report with 25 recommendations was prepared. Community leaders adopted all the recommendations and are implementing the recommendations in a priority order.

Initiated a BRE program in Sumter County. Trained a local leadership team and task force in their responsibilities in carrying out a BRE Visitation program. Trained local volunteers to conduct business visits. Business visits began in late 2002.

BR&E programs were initiated in Collier, Hendry, Glades, Bradford and Madison Counties in 2001. Data analysis and reports were completed for Collier, Hendry, Glades, and Bradford Counties and work to implement recommendations continued through 2002. In Collier County, 15 BRE visitation task force members worked with 13 board and staff members of ECEZ Alliance, 7 Harvest for Humanity, and 5 Immokalee Foundation Beneficiary Committee members (total of 40 community leaders) on the three community issues in Immokalee. For example, the ECEZ Alliance has enhanced grassroots leadership through election of board members and expansion of community partners, and use of BREV task forces to 1) job training: Presented vocational education needs to school board and then helped add ten new programs and increased enrollment by 46%. 2) Housing: funded homeownership counseling conducted Housing Fair and began infrastructure on 26 homes in Eagle Ridge Community.

As a result of completed BR&E visitation programs in 2001-2002, over 100 persons completed training for the local leadership team (Table 1). Many also were trained to conduct face-to-face interviews of firm owners or managers and they collected information from over 400 businesses employing 17,000 workers.

Table 1. Business Retention & Expansion Program Outcomes, 2001-2002.

County	Number trained for BR&E leadership team	Number trained for business visitation	Number of businesses visited	Number of employees at visited firms	Number of issues for follow-up
Collier	25	30	99	2,700	5
Bradford	16	25	66	4,800	6

Glades	15	0	72	550	6
Hendry	20	30	75	1,752	6
2001 Total	76	85	312	7,802	23
Citrus	5	50	104	9,000	25
Sumter	5	45	--	--	--
2002 Total	10	95	104	9,000	25

New Business Development (Fast Track)

Much of economic growth in Florida is based on small business start-ups or expansion. Many small business enterprises are started each year but only about 40 percent are still in operation after five years. As a significant and growing part of the economy, many small business owners need technical assistance and training. Extension can provide appropriate training to help potential business owners understand the steps in starting and maintaining a business. The objective of the entrepreneurship education program is to increase the number and success rate of present and potential owners of small business enterprises. The FastTrac curriculum, developed by the Kauffman Center for Entrepreneurial Education, is used in programs in Broward, Collier, and Marion Counties. FastTrac data indicate that 74 percent of its program graduates are still operating profitably after six years. For current business operators seeking to sustain, expand, or improve their business operation, FastTrac Planning is used. The emphasis is on developing a business plan unique to their particular business operation. For persons who are not currently engaged in a small business but want to start one, there is FastTrac New Venture. The emphasis here is on developing a feasibility study.

In Collier County, four FastTrac Planning and one FastTrac New Venture recognition programs for 147 included previous graduates, volunteer presenters and sponsors. The agent also initiated cooperative agreement with Florida Gulf Coast University's (FGCU) Small Business Development (SBDC) to mutually market and increase classes. Along with the FastTrac courses, the agent also conducted one-on-one consultations with 48 graduating businesses and four graduation recognitions (with a required 30 second description of the essentials of their business plan). A contracted FastTrac certified national trainer provided no cost training to certify five South Florida area facilitators including a new Broward County Agent using state SBDC funding. This increased the number of certified facilitators from one to six.

A number of individuals participated in FastTrac Planning or New Venture programs (Table 1). Because program participants usually invest in a substantial registration fee, graduation rates are very high. These graduates left the program with a strong business plan, a clear understanding of risk management and business continuation, which assist them with the dynamics of the business environment, competition and changing customer needs.

County	Program Type	Number enrolled	No. of business starts or expansions*	No. of new jobs created*	Increase in revenue*
Collier	FastTrac Planning/ New Venture	35	8	37	\$3,498,000

*Based on responses from 16 firms

Contact: Elizabeth Bolton, Department of Family, Youth and Community Sciences
Workforce Development

Presently Pinellas County Extension has partnered with the Pinellas County Sheriff's Office and also the Florida Department of Corrections. Many offenders have difficulty finding permanent, unsubsidized, well-paid employment after release. This is partly because they lack job seeking experience, a work history and occupational skills; furthermore many employers refuse to hire individuals with criminal records. These circumstances seriously affect an ex-offender's stability because unemployment is consistently associated with high recidivism rates. Also, it costs \$23,000 per year per inmate in the county. If through appropriate education, recidivism is lessened, the potential savings to the taxpayer could be in the hundreds of thousands of dollars. JobStart is a series of 8 workshops designed to provide participants with a portfolio of skills related to seeking and retaining a job. A total of 1263 incarcerated participants were involved within the Jobstart program in Pinellas County. Of the 1263 participants, only 23 individuals were tracked through the social service department. This tracking is only done for those inmates who have court ordered parole and are followed by case managers. Nineteen of the 23 participants found employment and the hourly wage ranged from \$7 to \$22. Another three were enrolled in school.

Contact: Gary Pleiss, Pinellas County Cooperative Extension Service

Leadership Development & Public Issues Education

Local leaders need skills to work with boards, commissions, government agencies and community organizations. Currently in Florida, leadership skills are lacking among staff in some local government offices and among members in civic and community organizations. Officers and members of community organizations frequently do not have the basic leadership skills that are needed to work with others in pursuit of group goals. Organizations and boards frequently cannot find officers and committee members to provide continuity for the group. The result is the interests of a prominent few dominate the interests of the community. Citizens become disenfranchised and critical of local government and organizations that should serve the overall needs of the community. There is a need to expand the pool of qualified leaders and to enhance the leadership skills of organization officeholders and local government.

Extension faculty in Collier conducted a structured leadership program in 2002. The program graduated 36 community members and county employees identified as emerging leaders in a fall, nine session, two-hour course covering personal leadership style, team building, communication skills, conflict resolution strategies, and problem solving analysis. These skills were then practically applied by five team projects and, upon completion, were presented to county leaders: 1) Home Ownership, 2) Teen Alcohol Abuse, 3) New Community Bus, 4) FCAT's effect on Education and, 5) Public Health Education. The new county commissioner elected in November, Frank Halas, participated in graduation recognition and commended the program as something similar to a leadership course he took as a Ford Motor Company Executive. Of thirty-six Learn to Lead graduates, four were black, nineteen were Hispanic, and thirteen were white, which is a good reflection of predominantly minority community.

As a result of Learn to Lead, Collier County participants reported the following skills to be improved:

Used communication skills such as: writing letters: 33%; making contacts with other departments or organizations: 56%; speaking on behalf of a program, project, cause: 56%; listening for understanding: 78%; and, giving and receiving critical feedback: 89%.

Used group skills such as: conducting business or other organizational meetings: 89%; working with others on projects or programs: 89%; managing conflict creatively: 33%; involving others who were not previously involved: 89% ;delegating: 78%; and, understanding your leadership style: 67%.

Used goal setting skills such as: setting specific goals for self, organization, or project: 33%; identifying or assembling resources to reach a goal: 56%; attaining set goals or evaluating results: 33%, and exploring various alternatives for solving problems 89%.

Estimate of number of hours spent in leadership activities: Number of hours spent in leadership activities over the last year: 1433; number of other people you have recruited to become involved: 172; and, number of hours these other people contributed: 2887.

In addition, a multi-county project, Leadership Rural North Florida, was initiated in Fall, 2002 by North Florida Community College (NFCC) to provide leadership education for a targeted group of persons in the six counties served by the College. IFAS faculty were invited to participate in planning the leadership development program and they collaborated with NFCC to identify topics and personnel for the program. It is anticipated that the program will last at least 3 to 4 months given the program outline being considered.

Contact: Elizabeth Bolton, Department of Family, Youth and Community Sciences

Economic Impact Analysis

The project began in 2000 as a special Florida First Initiative to assess the economic role of Florida's agricultural and natural resource industries. It was started with special funding from the UF/IFAS Office of Vice President. A statewide publication was completed and presentations made to Governor's Budget Staff, the Florida Agricultural Council and to staff members of the Florida Congressional Delegation. Team members developed and maintained an Economic Impact Website to serve as a contact point and to provide for electronic distribution of economic impact data, publications, related information, and links to other sites. In addition to publications the website contains information on current projects, faculty contacts, agricultural census data for all Florida counties and economic and demographic profiles for Florida counties.

A number of short-term economic impact efforts were completed at the request of county extension faculty or other clientele groups. Projects are listed below:

Economic Impact of Agriculture in the C-139 Basin in Hendry County, Florida

The Potential Economic Impact of Citrus Canker in Florida

Impact of 4-H Centers in Selected Florida Counties

Multipliers for Greenhouse and Nursery Production in Jefferson County, Florida.

Economic Impact of locating a candy manufacturing plant in Madison County, Florida.

Estimated Economic Impact of Closing the Tyson Foods Poultry Processing Facility in Northeast Florida (requested by M. Roberts, Florida Dept. of Agriculture & Consumer Services)

Assist County Extension Office with information on the economic impact of agriculture in Manatee County, Florida.

Team members also wrote a number of technical papers and popular articles on economic impacts of various agricultural industries, activities and natural resources used in Florida.

As a result of these analyses, clients are better informed about the structure of the Florida economy, the role of agricultural and natural resource-based industries, and the impacts of specific activities and events. For example, the study of the impact of agriculture in the C-139 basin in Hendry County involved a team of county, center and campus-based faculty. The team worked with local officials and landowners to collect and analyze the data. Extension faculty estimated the agricultural impact in the 5-county area at \$286.8 million in 2000. This data provided officials of the South Florida Water Management District and U.S. Army Corps of Engineers, as well as local landowners with a greater understanding and appreciation of the economic importance of the agricultural industry in the C-139 Basin.

Contacts: David Mulkey and Alan Hodges, Department of Food and Resource Economics

Success Stories

In Bradford County, local leaders wanted to find ways to help the local economy grow and to provide jobs for residents. In response, a team of local leaders, the County Extension Director (CED), and UF/IFAS Extension specialists organized and conducted a Business Retention and Expansion program in 2001. Extension faculty trained 25 individuals how to visit local businesses and a total of 66 business owners/managers, representing 4,800 employees, were interviewed. Based on the analysis of the interview data, six issues were identified for follow-up action. During 2002, the CED continued work with local leaders on priority community development projects as part of the Business Retention and Expansion effort. As a result, progress is being made on the following projects:

After conducting an "Internet Needs Survey For Local Businesses" and meeting with several high speed internet providing companies to discuss options, a High Speed Wireless Internet Proposal forming a partnership between the Bradford County Development Authority and the County Commission was agreed upon. This has resulted in the Development Authority also partnering with a private provider and high-speed wireless internet service is now available at a reasonable cost to local government, businesses and individuals.

An Agri-Tourism Promotional Video was completed and has been reviewed by local tourism development boards. Discussions are ongoing between the local tourist development council and a private consulting firm regarding conducting a natural resources inventory and economic analysis for Bradford County.

Discussions are ongoing between the Development Authority and University of Florida Extension Specialists regarding a Targeted Industry Study.

Members of the BRE Traffic/Transportation Committee developed and presented a proposal to improve traffic flow and increase parking in the downtown business section in Starke.

Contacts: David Dinkins, Bradford County Cooperative Extension Service

Taylor County along with several others in the immediate area are among the most economically depressed counties in Florida. Lack of resources (human, financial, educational, etc.), low literacy rate, recent political events (net ban), have left residents with few options for improving this situation. Residents have below average incomes and above average poverty rates when compared with statewide averages. The County Extension Director conducted an enterprise zone incentive educational program to teach residents about the eligibility and application process, as well as what incentives are

available to businesses located in the Taylor County enterprise zone. Forty-seven business's located in the Taylor County Enterprise Zone received one-on-one education regarding eligibility requirements, incentives available, and the application process for tax refunds or credits. Twenty-six actually submitted and received incentives totaling \$195,000 in 2002. This includes credits taken against Florida Corporate Tax and actual refunds of tax paid on building materials and business equipment. Of the "net ban" enterprise zones designated in 1997 in North Florida's Big Bend, and as reported by the Office of Program Policy Analysis and Government Accountability, report no. 99-43, (March 2000), Taylor County's zone is the only one generating significant refunds to Taylor County zone residents.

Contact: Clay Olson, Taylor County Cooperative Extension Service

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities and encourage participation. Extension Educational programs also are advertised to the public through local media, posters and flyers are placed in community centers, and targeted letters are sent to agency and recognized minority community leaders. For example, the Hispanic Chamber of Commerce and the NAACP are informed of all FastTrac offerings in Collier County.

In addition, advisory committees have minority representation and each assists with community outreach efforts. Extension agents sometimes work closely with minority communities to plan, explore, develop programs, and initiate opportunities for improvements within the minority communities. Programs are conducted at locations in minority communities to increase access for their residents. Some Extension agents also provide transportation and written literature for meeting and functions within the minority communities.

Source of Federal Funds: Smith-Lever

Scope: State specific

SMP-FL515

Title: Successful Parenting and Family Development

Calendar Year: 2002

Critical Needs: 32, 33

National Goals: 5

Key Themes: Aging, Character/Ethics Education, Child Care, Children, Youth, and Families at Risk, Communications Skills, Community Development, Conflict Management, Consumer Management

Major Program Objective:

To improve parents' and other family members' coping skills and facilitate their ability to create a positive home environment which nurtures children's growth and development.

To increase parents' knowledge about child development principles, child rearing practices and the importance of school involvement.

To help improve coping skills of newer working families who previously received welfare and increase their knowledge of how to achieve and maintain self-sufficiency.

To provide childcare providers training in cultivating supportive learning environments, utilizing developmentally appropriate practices, and developing high quality childcare.

Summary of County Programs for Clientele:

With support from the design team, in 2002, thirty-nine counties have consistently conducted programs under the state major program FL_515, County faculty report having reached 37,713 participants conducting 5,300 learning events. They have offered a number of parenting programs targeted to different audiences, including single parents, teen parents, working parents, grandparents, divorced parents, incarcerated parents, and parents court_ ordered to attend because of child abuse and neglect.

Parent education programs have been offered at different sites such as community centers, public schools, Head start sites, child care centers, places of worship, health department sites, juvenile detention centers, and prisons. Outreach has been furthered enhanced with the assistance of trained volunteers and through media such as newsletters and articles in local newspapers.

Most often, programs have been delivered face_to_face in a series of workshops ranging from three to twelve lessons. Though adapted to the needs of the different audiences, every program helped parents develop skills to better care for and guide their children. Participants learned how to enhance their relationships and improve their communication skills with their families. They also acquired knowledge about child and teen development. In addition, they were taught how to determine age-appropriate expectations, to manage their children's behavior, to enhance their children's self-esteem, and to control their anger and manage stress.

Summary of Impacts for Clientele:

To measure program objectives, Design team FL515 will report on the following impacts:

Increase in use of positive stress management techniques by parents.

Increase in parents' and caregivers' knowledge of their child's behavior and age appropriate expectations.

Increase in use of communication techniques with all family members.

Improvement in the quality of child_care and after_school programs.

County faculty utilized various evaluation instruments consisting of pre/post evaluations, post/pre evaluations, observations, and 3 to 6 month follow-up evaluations. In addition, design team FL515 developed a series of evaluation tools based on the National Extension Parent Education Model, Alabama Children's Trust Fund Evaluation Manual, and the Parenting Evaluation Decisions Framework (on the Children, Youth, and Families At Risk website). For example, 17 counties reporting under FL-515 (FAS system, statistical section) report 3, 522 participants increased knowledge(ranges reported fluctuate from 75% to 95%) while 3,363 participants in 14 (ranges reported fluctuate from 70% to 93%) counties reported behavior change in relation to family communication, reducing stress, managing their anger, understanding age-appropriate expectations for their children's behavior, alternatives to discipline, and doing better in building their children's self-esteem. In addition, various County faculty reported program impact for their parent education programs utilizing the various statewide evaluation tools developed by this design team. A total of twelve counties reported results utilizing one or more of the following tools:

- Parenting Survey
- Success and the Single Parent Survey
- Child Care Questionnaire
- Train the Trainer Evaluation
- Before You Tie the Knot Survey
- Grandparents Raising Grandchildren Survey

Parenting Survey_ In the parenting survey, scores ranged from 4.41 _ 3.92 under the different domains of stress management , age appropriate behavior, discipline, communication, self esteem and anger management. A five point likert scale was used (5 = much better, 1 = much worse) using the following question, " Compared to before you started this parenting class, how are you doing at? " The number of participants answering the questions ranged from 882 to 113 depending on the specific questions they were answering from the different domains.

Examples of additional comments reported in the parenting survey follows:

- _ Learn to talk to my kids and not yell at them.
- _ Be more positive in setting rules, will try to allow my kids to set rules.
- _ I learned how to work out my stress.
- _ Get involve in my children's life and have family nights together.
- _ Listen more carefully and try not to be as harsh when angry.

Success and the Single Parent: In the Success and the Single Parent Survey, scores ranged from 4.31 _ 3.78 (n= 19) under the different domains of money crunch, a flash of time, communication, understanding children's behavior and taking care of self. A five point likert scale was used (5 = much better, 1 = much worse) using the following question, "Compared to before you started this parenting class, how are you doing at? "

Child Care Questionnaire: Scores ranged from 4.73 _ 4.23, 5 point likert scale, (n = 30) under the different domains of safe healthy learning environment, physical and intellectual development, social and emotional development, relationships with families, program management, professionalism and child observation.

Examples of additional comments reported in the child care survey follows:

- _ I learned more about how to keep my environment safe i.e. using correct toys.
- _ I have started doing more activities that require movement of small and large muscles.
- _ more music for dancing and movement, water play and painting.
- _ let the children make choices.
- _ help them get along by problem solving.
- _ no put_downs
- _ I feel I know more about teaching young children.

Before You Tie The Knot _ Marriage Preparation: This past year over 100 engaged couples completed the class and became eligible to receive a discount of \$32.50 when applying for the marriage license. On the evaluation survey, 96% of the couples indicated

that they are doing better or plan to do better in relationship skills. All of the couples signed a commitment statement to each other to use specific skills taught in the classes.

Train the Trainer Survey: A total of 67 professionals participated in train the trainer trainings in relation to time and anger management . One training was conducted in brain development. As a result of the trainings participants strongly agreed or agreed (90%) that they were more knowledgeable and more confident in teaching the information to others.

Success Stories

In Baker County, after teaching a series of parenting classes to 14 court mandated parents, a total of 5 parents were granted parental custody and their children returned to them. In Lafayette County, the after school enrichment program sponsored by a USDA State Strengthening grant has had great success. For example, a quote from a 5th grader "For the first time in my life, I have finally made the B honor roll, and this nine weeks I'm trying to make the A honor roll."Quote from parent: "The afterschool program has been a tremendous program for my child. Her self-esteem has been better, along with her grades and homework." In Liberty County, when the Child Development Associate (CDA) class began, one of the students who did not have her GED was very concerned how she would earn both certificates. She was encouraged to work with the local library for tutoring classes in order to help her with the GED. She did that and with much encouragement she completed both programs. She now has the necessary credentials in order to remain employed in a child care center. In Nassau county, from "Building Family Strengths" evaluations, several families stated that the program helped them realize both the strengths and weaknesses in their families, and that they plan to spend more time together in order to make their family stronger. Also, they expressed a commitment to "listen" to their children without criticism and to develop more family routines. In Palm Beach County, one grandparent reported that as a result of what she learned in the class, she applied for and received financial assistance for her four grandchildren. Half way through attending the "Teening-Up with Your Teen" classes, one parent said her teen told her the classes were really helping him. He told her that based on what he had learned in the classes, he made the decision not to go with his friends to the movies since he did not have her permission and it would not be right. The teen confirmed the conversation. In St. John's County, the parenting program for incarcerated women had a positive impact on many of them. Participants indicated on their evaluations that the class has helped them make a plan for when they are reunited with their children. In St Lucie County, the self care program developed for children who go home to an empty house or who might find themselves alone or lost, was developed about fourteen years ago. Year after year teachers continue to request this program. This year 1,592 children were taught self care with 82% of the students being able to describe approachable and unapproachable strangers. The PA has been stopped by both parents and older students commenting how positive the class was for their life.

Outreach To Minorities:

Educational programs are conducted in accordance with the University of Florida's policy of equal opportunity/affirmative action. Efforts are undertaken to inform minority clientele about educational opportunities through the use of mass media. Minorities are encouraged to participate in all extension programs. In some counties where a large number of families are Hispanic, programs are conducted in Spanish and publications are also distributed in Spanish. In many cases an interpreter is used to assist with the program. Agents report using Equal Opportunity and ADA statements on meeting

announcements. Some counties report using minority newspapers to advertise their programs when they are available. Meeting sites are varied. Many programs are held at Head Start centers, juvenile centers, health department sites, community-based centers, day care centers and schools.

Source of Federal Funds: Smith-Lever

Scope: state specific

VI ~ STAKEHOLDER INPUT PROCESS FOR FLORIDA IFAS

Florida's Plan for Stakeholder Input Requirements for Recipients of Agricultural Research, Education, and Extension Formula Funds

Stakeholders Guidelines For The University of Florida and Florida A&M University

Actions taken to encourage stakeholder input:

The University of Florida and Florida A&M University have established a process for “receiving input from persons who conduct or use agriculture research, extension, or education.” These stakeholder processes include, but are not limited to, the following:

- Florida FIRST (Focusing IFAS Resources on Solutions for Tomorrow) Conference and follow-up scheduled for Summer 2001.
- Florida Citizens' Viewpoint 1999 Survey
- Florida County Extension Advisory Committees
- Florida Ag Council, Inc.
- Departmental Advisory Committee and the Research and Education Center Advisory Committee
- Commodity Advisory Committees

Brief description and process used to identify individuals and collect input

Florida FIRST is a strategic, long range planning process for UF/IFAS to evaluate, review and determine future direction to better carry out its mission in support of Florida food, agricultural, natural and human resources. This initial process was accomplished through the invitation and input of over 263 Florida individuals, organizations and agencies at the Florida FIRST conference and a series of 18 area meetings throughout the state that were attended by 350 additional participants. Scientists and experts at UF/IFAS researched trends and major determinants of change in Florida's agricultural, human and natural resource subsectors. These findings were compiled into what are termed Base Papers for each subsector. Three weeks before the Florida FIRST Conference (held May 20-21, 1999 in Safety Harbor), participants received a copy of the Base Paper related to their subsector or area of expertise (see Appendix G-- for list of names of attendees and subsectors). They also received an executive summary of all Base Papers. Participants were asked to review the papers prior to the conference and to offer feedback as well as additional needs and concerns. Following the conference, the information there gained was used:

- As a resource for determining UF/IFAS research and extension imperatives for the future including immediate, short-term, and long term critical need areas,
- To complete an overall strategic plan, and
- To help identify the future direction of UF/IFAS programs

Based on stakeholder input from this conference and area meetings, eight imperatives and four special initiatives were identified and announced by IFAS Vice-President, Dr. Michael Martin. The imperatives are:

1. Water Management, Quality, and Allocations
2. Plant, Animal and Human Protection from Pests
3. Managing Urban, Rural, and Human Impacts on Natural and Coastal Ecosystems and resources
4. Global Competitiveness of Current and Emerging Agricultural and Natural Resource Products
5. Food Technologies: Safety, Nutrition, and Product Development
6. Human Resource Development: Families, Children, and Communities
7. Producing Society Ready College Graduates in the Agricultural and Life Sciences, and Natural and Renewable Resources
8. Public Policy Issues

The special initiatives are:

1. Economic Impact Analysis
2. Assessment of State Work Situation and Outlook
3. Institutional Marketing Initiative
4. Internal Organizational Shifts

A follow-up of Florida FIRST is scheduled for the summer of 2001. Stakeholders will have the opportunity to review the direction Florida IFAS is taking and make additional recommendations.

For additional information and to view REAL™ video of Dr. Martin's speeches on Florida FIRST go to: <http://floridafirst.ufl.edu>

Florida Citizen's Viewpoint 1999 Survey was a random survey of all Florida Citizens and not targeted to Extension Clientele. This Survey was developed for use as a state level telephone survey to assess citizens' perceptions of the importance of selected issues and educational needs as related to their community. The information that was gathered was generalized to the state population and to a more limited extent to the Extension districts. The issues and educational needs covered a fairly broad spectrum; however, a conscious attempt was made to keep the lists as brief and focused as possible. The total sample size was 466 and the precision level plus or minus 5%. (Appendix --Preliminary Results of the Florida Citizens' Viewpoint 1999 Survey)

The Florida County Extension Advisory Committees provides direction for Extension education programs for both the University of Florida and Florida A & M University on a continual basis. Active advisory committees exist in all of Florida's 67 counties, usually at both the overall and program area levels. The committees serve as a vehicle for local citizens to participate in, influence and provide support to the planning, implementation and evaluation of Extension education programs, and the accountability for those programs. The composition of the committees consists primarily of positional and reputational leaders representing the areas of agriculture, agribusiness, natural resources, family and consumer sciences, 4-H youth, and community development. Special attention is given to the representatives of the target populations, including race and socio-economic level. Extension advisory committees are strongly believed to result in increased accuracy in identification of clientele-perceived needs, more effective decisions on program priorities and methods, and more rapid and accurate communication of program efforts and clientele feedback on both program impact and need for education and research. This committee format serves as a vehicle for local residents to participate in, influence and provide support to the planning and implementation of the Extension Education Programs.

Departmental Advisory Committee and the Research and Education Center Advisory Committee are developed in the same manner and have the same function as the county Extension Advisory committees.

Florida Ag Council, Inc. is a self-nominating body comprised of over 100 organizations. A 12-member board directs it. Its purpose is to increase the accuracy in the identification of clientele-perceived needs and to assist in the decision making process relating to research, teaching and Extension priorities.

Commodity Advisory Committees are various advisory groups with special emphasis on important program areas such as Florida A&M Universities program FL 261 Small Animal and Small-scale Farm Profitability and Sustainability in Florida- 1890. Of primary importance in identifying critical need areas is their Goat Program Advisory Council. Although commodity oriented, this type of advisory committee is still developed and functions using the same standards as the county advisory committees.

The 34 Florida Critical Need Areas identified under the five National Goals in the AREERA Plan of Work and Report of Accomplishment have been developed based on the state critical need areas identified by sources listed above.

VII ~ SCIENTIFIC PEER AND MERIT REVIEW GUIDELINES

Merit Review and Scientific Peer Review for Extension and Research Project Proposals
Performance Standards
And
Operational Guidelines
For
The University Of Florida and Florida A&M University

Intention: This document sets out performance standards and operational guidelines for the Florida Land Grant Universities. The intention of the document is to facilitate both Universities and all integrated, multi-institutional, and multi-state activities in complying with the provisions of the federal Agricultural Research, Extension, and Education Reform Act of 1998. Adoption of these standards and guidelines will be primarily accomplished by adoption-by-reference in the Florida Plan of Work.

Definitions: Scientific Peer Review of an individual research is defined as the evaluation of the conceptual and technical soundness of the intended activity by individuals qualified by their status in the same discipline, or closely related field to judge the worthiness of the proposal. Peer reviewers (internal and/or external of the SMP) will be asked to assess Extension programs through a Merit Review process whereby the quality and relevance to program goals can be analyzed for its likeliness to achieve the intended objectives and the anticipated outcomes.

Scope: The topics covered by this document pertain to research and extension proposals, projects and programs that are to be sanctioned and funded as part of the federal-state partnership in agriculture research and extension. These standards and guidelines do not apply to proposed research and extension that are subject to peer review by competitive grant agencies, peer review of extension and research publications. Thus, all research and extension projects sponsored by Florida Land Grant Colleges will have been formally merit and peer reviewed, before the expenditure of any federal funds.

Process: Prior to the initiation of any research or extension project or program that will be wholly, or in part, funded by federal formula funding, the designated review coordinator (or, in the case of some multi-institutional, regional or multi-state projects, the administrative advisor) will call for a peer review of the proposed research or extension project. A minimum of three peer scientists (i.e., individuals qualified by their status in the same discipline, or a closely related field of science) will be selected to read and provide written comments on the proposed project.

Terms of Reference: The terms of reference for the reviewers will focus their attention on questions of the quality of the proposed science, technical feasibility of the research or extension program, the validity of the approach, and the likelihood for completing the stated objectives. Other equally important comments will include relevance to the state's priorities, the degree of integration between extension and research (as appropriate), responsiveness to stakeholders identified critical need areas, and the accuracy of any claims for multi-disciplinary, multi-institutional and multi-state collaboration.

Responsibility: All Peer and Merit review activities for proposed extension programs will be the responsibility of the individual extension program leaders. All Peer and Merit review activities for proposed research are the responsibility of the Program Dean for Research. The above designated coordinators or an administrative advisor and/or committee will be responsible for a proposed multi-state project. However, this responsibility for either research or extension may be delegated to others if deemed suitable.

Appointment of Reviewers: Peer and Merit reviewers may be selected from the same campus or from another institution or organization at the discretion of the program leader, chairman or by the delegated authority. Consideration will be given to the expenses associated with the reviewing individual proposals in the selection of peer reviewers. Additional consideration will be given to appointing reviewers who are without any apparent conflicts of interest and who are without personal or professional bias. Consideration may also be given in selecting reviewers that can protect confidential business information. The anonymity of the reviewers will not be preserved except in very special circumstances.

Documentation: Reviewers will be asked to present their finding in writing, and records of the reviewers' comments will be preserved for the life of the project, or for a period of three years in the event that a project is not initiated. Document storage will, for the most part, be electronic.

Research and Extension Projects, Events and Activities not Covered: Projects funded by competitively awarded grants, federal contract research projects, and federal cooperative agreements are not subject to these provisions, as they would be peer reviewed under other authorities.

Performance Standards: Peer or Merit review of proposed projects, events and activities is expected to provide the following performance outcomes:

Research

- increase the quality of science funded by the federal-state partnership
- better assure relevance to institutional priorities and mission
- provide more responsiveness to stakeholder needs including the underserved and under-represented populations, and
- identify more opportunities to partner with other states, regions, federal research agencies, and Extension counterparts.

Extension

- Provide more responsiveness to stakeholder (including the underserved and under-represented) identified critical need issues
- Better assure relevance to institutional priorities and mission
- Increase the quality of programs, events and activities funded by the federal-state partnership, and
- Identify more opportunities to partner with other institutions, regions, states, and research counterparts

Performance outcomes from peer reviews will be monitored by the responsible extension program leader, chair or advisor through the annual process of reporting results and impacts, which is in turn part of the Plan of Work reporting requirements. Adjustments to this merit and scientific peer review process will be made as needed.

Revised June 1, 1999

Design Team Self-Review Reports for 2002

The following State Major Programs (SMP) have gone through a formal self-review during 2002. This is a first step in reviewing the way extension is functioning as part of the extension external review done in February, 2003, and 2004-2008 long range planning process which began in November 2002 and will be completed in the fall of 2003. Following the findings of the external review and based on recommendations from the planning process, changes are expected to be made in the present SMP process. At that time Florida will implement a peer review process. Included in this document is the self-review for SMP FL511. The other reports have been filed for audit.

FL107	Vegetable Production, Harvesting and Handling Efficiencies in Florida
FL108	Citrus Management in Florida
FL111	Tropical Fruit Crops Management in Florida
FL112	Ornamental Plant Production and Integrated Pest Management in Florida
FL119	Business Management for Horticultural Enterprises in Florida
FL121	Small Farm Sustainable Agriculture Alternative Opportunities and Crops in Florida
FL124	Florida's Farm and Home Safety and Disaster Preparedness and Recovery
FL129	Profitable and Sustainable Sugarcane Production in Florida
FL131	Quality and Management of Florida State Diagnostic Services
FL135	Food Safety, Quality, and Technology in Florida
FL317	Florida's Sustainable Marine Fisheries
FL411	Florida Water Conservation
FL510	Housing and Built Environment in Florida
FL511	Food, Nutrition, and Health in Florida
FL512	Family Economic Stability in Florida
FL513	Community Development
FL515	Successful Parenting/Family Development in Florida
FL713	Science and Technology

Example Merit Review of SMP-FL511

Extension Merit Review of State Major Programs

SMP Number: FL 511

SMP Title: Food, Nutrition and Health in Florida

Design Team Leader(s): Linda Bobroff and Glenda Warren

Design Team Members and Specialty Area/Expertise: _____
 (See attached)

Reviewer(s): _____

I. Rationale

Does the Program:	Yes	No	N/A
1. Clearly articulate the importance (critical need) of the issue to agriculture, natural resources, and urban or rural life in the state or region.	3		1
2. Provide the source(s) of issue identification.	3		
3. Relate to current priorities as identified by Florida stakeholders (e.g., Florida FIRST, advisory councils/committees, surveys, county faculty FAS reports).	4		
4. State the current situation adequately.	4		
5. Outline the preferred situation and the potential impacts of this program.	4		
6. Explain the benefits of a multi-state, multi-institution approach (if appropriate).	2		2
7. Demonstrate the need for integration with research (and instruction if appropriate).	2		2
8. Explain how it relates to past work in this (these) critical needs areas stated in the preferred situation.	3		
9. Complement existing programs (state or multi-state) (if appropriate)	3		1

II. Objectives

Does the Program:	Yes	No	N/A
1) State clear, concise, measurable and focused clientele objectives	4		
2) Relate objectives to expressed preferred situation	4		

III. Audience

Does the Program:	Yes	No	N/A
1) Clearly identify the population segment(s) that needs to be targeted.	4		
2) Include underserved and underrepresented individuals, groups.	4		

IV. Educational Activities and Impacts

Does the Program:	Yes	No	N/A
1) Explain educational programs and activities for each objective.	4		
2) Describe the methods adequately to reasonably expect attainment of the objectives.	4		
3) Describe potential impacts for each objective.	4		
4) Clearly state the responsibilities and work assignments of each design team member.	4		
5) State how the results of the design team members' activities will be reported in FAS to facilitate producing reports.	4		
6) Include in-service training activities.	4		
7) Include the development of educational products that facilitate delivery of programs by county faculty.	4		

V. Evaluation

Does the Program:	Yes	No	N/A
1) Include planned evaluations of the program to determine if each objective is achieved.	4		
2) Clearly state the tools and approaches to be used (e.g., pre- and post-tests, survey 10% of audience, etc.) and the expected results (e.g., increased knowledge, modified behavior, impact, etc.).	4		

3) Include the best accountability indicators (e.g., percent of people promising to use knowledge, percent of people modifying behavior, etc.).	4		
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VI. Comments and Recommendations

"This is one of the best functioning design teams. Everyone in the team is involved with the design team activities."
 "Everything is covered!"
 "State and county faculty work together to plan program focuses and in-service training. We are working on improving communication among design team members and to coordinate development of consumer education materials. We also are working on a 'universal' evaluation instrument to help county faculty evaluate a variety of educational programs in food, nutrition and health."

 Program Leaders
Linda B. Babroff

 Design Team Leaders

 Date
11/1/02

 Date

Design Team Self-Evaluation Questions FL511 – Food, Nutrition and Health in Florida

1. What are the team's needs to more effectively deliver programs, materials, curricula, etc.?

FL511 needs additional state specialist support for critical areas in food, nutrition, and health, including a Health Specialist, Maternal and Child Health Specialist, and Gerontological Nutritionist.

The Department of FYCS needs a full-time graphics artists to provide support for the hundreds of consumer publications produced for a variety of target audiences.

Design teams and county faculty would be more likely to use the services of ICS if their rates were more competitive. Many county and state faculty resort to using private vendors because they are less expensive for the same quality.

It would be helpful to have more support for getting curricula into IFAS "for sale" system. ICS needs additional editors and graphics support for this task. These positions would pay for themselves if we can get more publications sold.

2. What can be done to provide more incentive for collaboration within and between Design Teams?

FL511 is a collaborative team made up of faculty with expertise in food safety/microbiology, nutritional sciences, family and consumer sciences, and dietetics. We have collaborated within the design team on a number of projects, including projects between only two or three faculty (e.g., Nutrition Newsletter and the National Food Safety Data Base), and others involving five or more faculty (e.g., Nutrient-specific Fact Sheets). The opportunities for collaborations would be enhanced by the addition of the state specialists mentioned above who would bring additional diversity to the team and its programs.

If design teams are truly issues-based and multi-disciplinary, then are inter-design team collaborations really needed? We encourage discussion about this to determine if there is a need for inter-design team collaboration, and if so, is it because the design teams are not truly issues-based.

Including in the ROA a specific item on inter-design team collaborations would likely encourage design teams to seek out these opportunities.

Providing release time to work on a collaborative activity (not just attending design team meetings) would be an incentive to participate in these types of activities. Otherwise, they add to an already full plate.

Submitted by Linda B. Bobroff, design team co-leader, November 1, 2002.

FL511 - Food, Nutrition and Health in Florida

Design team members (2002):

Tina L. Allen, M.S., Extension Agent II, FCS, Columbia County Extension

Linda Bobroff, Ph.D., RD (co-leader), Associate Professor, Extension Nutrition Specialist (95%)

Brenda C. Holloway, M.S., Extension Agent II, FCS, Acting CED, Putnam County Extension

Dianna Edlow, Ph.D., Extension Family Resource Management Specialist, FAMU (100%)

Jennifer Hillan, M.S.H., RD, Curriculum Coordinator, Family Nutrition Program

Joy Jordan, Ph.D., Associate Professor, Extension Youth Specialist (100%)

Anne Kendall, Ph.D., Lecturer in Dietetics

Linda Nolte, M.S., RD, Courtesy Extension Agent I, FCS-Nutrition, Palm Beach County Extension

Jo Shuford-Law, M.S., Extension Agent IV, FCS/EFNEP, Leon County Extension

Amy Simonne, Ph.D., Assistant Professor, Extension Food Safety and Quality Specialist (70%)

R. Elaine Turner, Ph.D., RD, Associate Professor, Nutrition Specialist (30%)

Glenda Warren, M.S., RD, (co-leader), Associate Professor, EFNEP Nutritionist (100%)

Carolyn Wyatt, M.S., Extension Agent III, FCS/4-H, Hardee County Extension

The FL511-Food, Nutrition and Health in Florida design team provides leadership to Extension education programs that address critical nutrition and health issues facing individuals, families, and communities in Florida.

Situation

Nutrition plays a significant role at all stages of the life cycle. Appropriate food and nutrient intake is especially critical during pregnancy, for young children who are developing physically and socially, and for elders who are at high risk for poor nutritional status. Chronic diseases such as cardiovascular diseases, cancer, and diabetes are related to lifestyle choices including diet and physical activity. Although genetics plays a role in the etiology of all of the major chronic diseases, when people change their behaviors toward a healthier lifestyle, they can reduce their health risks. Persons with limited resources are especially vulnerable to poor nutritional and health status. One in ten Floridians participates in the Food Stamp Program, and food stamp users typically exhaust their food resources five to ten days before the end of the month. Adults in low income families report that they often cut the size of their family's meals or skip meals completely at the end of the month, when they run out of food resources.

Overall Program Goals

FL511 Extension education programs are designed to help program participants make behavioral changes as necessary to promote positive nutritional status and reduce health risks. These changes may include improving dietary behaviors such as increasing consumption of fruits, vegetables, dairy foods, whole grains, and fluids, modifying food-related behaviors such as meal planning, reading nutrition labels, and food budgeting, increasing physical activity, and engaging in health screenings as recommended. The goal of programs targeted to limited resource individuals is to educate them in how to meet the nutritional needs of the family by preparing healthy, low-cost meals and managing their limited food resources. Learning about low-cost, nutritious foods can help participants stretch their food dollars to last the entire month while providing nutritious foods to the family.

Target Groups

Persons at high risk for poor nutritional status or chronic health conditions related to lifestyle are primary target groups for FL511 programs. County Extension faculty work with middle-aged adults, older persons, pregnant teens, limited resource adults and children, and other specific groups identified in their communities. The Expanded Food and Nutrition Education Program (EFNEP) and the Family Nutrition Program (FNP), target limited resource families with children, youth, and senior citizens.

Significance

Floridians who adopt healthful lifestyle behaviors as a result of participating in Extension food, nutrition, and health programs will improve their nutritional status and overall health, which can enhance their quality of life while helping to modulate skyrocketing health care costs in Florida. Enhanced nutritional status in children promotes healthy growth and physical development and can improve cognitive development and school performance. Improving the nutritional status of limited income families can lead to improved health, lower incidence of illness, and reduced health care costs.

Educational Programs

Health promotion/chronic disease risk reduction: Members of the design team have developed a series of curricula designed to promote healthy lifestyle behaviors and reduce long-term health risks. They were developed using appropriate theoretical models and include background information for the county faculty, lesson plans, consumer handouts, teaching materials, and evaluation instruments. Curricula, which contain between six and fifteen lessons, are peer reviewed and pilot tested by county Extension faculty prior to distribution statewide.

Nutrition in the Life Cycle: CHOICES: Charting a Positive Future for Teen Parents. In response to a need expressed in county Plans of Work in 1992, a team of state specialists over a period of three years developed an educational program that addressed the needs of pregnant and parenting teens. Prior to beginning the program, Dr. Bobroff supervised a graduate student who conducted a study with pregnant teens to determine appropriate teaching methods for working with this group.

Elder Nutrition and Food Safety (ENAFS). The purpose of ENAFS is to promote the nutritional and overall health of elder Floridians. The program was funded for two years by the Florida Department of Elder Affairs, and provided educational curricula and training for Extension agents and dietitians who work in the aging network in Florida. ENAFS currently includes 19 lessons divided into five educational modules.

USDA-Funded Programs: *Expanded Food and Nutrition Education Program (EFNEP)* and the *Family Nutrition Program (FNP)* are federally-funded programs targeted to limited resources families. These programs target limited resource families with children, youth, and senior citizens. The goal is to educate limited resource individuals in how to meet the nutritional needs of the family by preparing healthy, low-cost meals and managing their limited food resources. Design team members recently developed *Nutrition Essentials*, a curriculum for limited resource audiences.

Consumer Education Materials

Design team members have authored or co-authored over 175 Extension fact sheets (reviewed by peers) and more than 50 additional other publications, including newsletters, all of which support one or more FL511 programs.

Annual In-service Training

The highly rated FL511 in-service training annually provides updates for 45 to 55 county Extension faculty on subject matter, program evaluation, educational materials, multi-agency collaborations, county successes, and others. Due to budget cuts, we are planning our February 2003 training using an alternate format.

Special Project: “Facts About [Nutrients]” Fact Sheets.

In 2000, the FL511 design team initiated an effort to develop a series of consumer fact sheets on individual nutrients. We received funding from the Dean for Extension to support this project. Five design team faculty prepared the first set of 13 fact sheets which were distributed to all county Extension offices in Florida and to Extension nutrition specialists in every state. They also are available on the EDIS Website. An additional set of 13 fact sheets is in the review process, and the fourth and final set of 14 fact sheets will be prepared in late in 2002. These fact sheets are being

reviewed by state specialists in four states, in addition to internal peer review. Pending additional funding, we plan to translate the fact sheets into Spanish.

Funding Support for FL511 Programs

In addition to EFNEP and FNP, FL511 faculty have generated over \$400,000 in grants to support nutrition and health programming. Dr. Bobroff has been PI for \$384,000 in grants and co-PI for an additional \$24,950 in grants that contributed to the development of educational curricula, consumer materials, EDIS publications, videos, and training.

Program Outcomes

Health Promotion/Chronic Disease Risk Reduction Curricula. Each year, county faculty in 20 to 40 counties conduct health promotion/chronic disease risk reduction programs. They usually combine evaluation data from individual curricula and report them as one data set. Reports from county faculty who implemented one or more programs designed to reduce chronic disease risk during the period covered by this packet indicate the following impacts:

Number of participants in educational programs:	174,568
Number (%) of program participants evaluated:	34,368 (20% of program participants)
Number (%) reporting one or more behavior change:	23,147 (67% of those evaluated)

NOTE: If those persons evaluated are representative of all participants, then over 117,000 people changed their behaviors toward a healthier lifestyle and reduced their health risks after participating in Extension education programs. Even if the program participants were half as likely to change behavior as the evaluated sample, there would still be a significant impact on health risks and, potentially, on health care costs to the state.

Pregnant and Parenting Teens. Several counties have reported positive results from teaching CHOICES: Charting a Positive Future for Teen Parents program at Teenage Parent (TAP) programs in schools, and other community programs such as Even Start and WIC. One of the goals is for the young mothers to have babies that weigh over 5.5 pounds. In Putnam County, 21 of 24 babies born to young mothers in the program weighed over 5.5 pounds. During one program year, nine counties used the curriculum reaching a total of 875 pregnant teens. Three counties reported that of 42 babies born, 40 were healthy, weighing at least 5.5 pounds. In one county, four of 16 teens in the program chose to breast feed their babies which is another program goal. In 1995 alone, 57 copies of CHOICES manuals were sold to out-of-state agencies.

Elder Nutrition and Food Safety (ENAFS). The ENAFS educational modules have been rated highly by county Extension faculty, dietitians, congregate nutrition site managers, Area Agency on Aging staff, and program participants. A recent study examined the effectiveness of the collaboration among five agencies, and the effectiveness of a five-lesson ENAFS educational module in enhancing knowledge and motivating behavior change among congregate nutrition site participants in a rural county in Florida. Results indicate that ENAFS was an effective vehicle for bringing together multiple agencies to promote healthy eating behaviors in older adults. Results of the study were recently presented at the Society for Nutrition Education, and two papers have been submitted for publication.

Family Nutrition Program. In FY2001, thirty-three (33) counties participated in the Family Nutrition Program. Five thousand, five hundred and ninety-seven (5,597) participants were enrolled in in-depth nutrition programs in six counties. Five thousand, two hundred and seventy-nine (5,279) participants were evaluated.

- ◆ 4,172 of 5,279 (79%) participants reported making improvements in their diets by putting into practice dietary recommendations such as eating more whole grain foods, fruits, vegetables, calcium-rich sources, and low-fat, low-calorie foods.
- ◆ 650 of 840 (77%) demonstrated increase in knowledge by correctly identifying the food groups in the Food Guide Pyramid and accurately mentioning the number of servings recommended of each food group.
- ◆ 4,147 of 5,279 (79%) showed an increase in positive food selection practices such as using a shopping list and planning meals.
- ◆ 265 of 340 (77%) showed an increase in food budgeting practices such as planning low-cost meals, accessing community resources, and limiting food waste.
- ◆ 4,345 of 5,279 (82%) showed an increase in food safety knowledge and skills, especially in hand washing practices.

Expanded Food and Nutrition Education Program (EFNEP). In FY 2001, nine EFNEP units in eight counties provided nutrition education to limited income families and youth. Six thousand and fifty one (6,051) people participated in the program. Five thousand, eight hundred and ninety (5,890) participants graduated from the EFNEP adult program. Participants reported practice improvements in three areas: food resource management, nutrition, and food safety.

- ◆ 3,749 of 5,890 (64%) participants reported improvements in food resource management practices such as meal planning, comparison shopping, and not running out of food .
- ◆ 2,920 of 5,890 (50%) participants reported improvements in nutrition practices such as meal planning, making healthy food choices, preparing food without adding salt, and reading labels.
- ◆ 5,203 of 5,890 (88%) participants reported improvements in the food safety practices such as thawing and storing foods properly.
- ◆ 2,337 of 5,890 (40%) participants achieved acceptable scores in all three categories listed above: food resource management, nutrition practices and food safety.

State and National Visibility of FL511 Programs

FL511 programs have received state, national, and international visibility through poster and paper presentations at state and national conferences such as the Florida Dietetic Association, Florida Association of Family and Consumer Sciences, Society for Nutrition Education, American Dietetic Association, and the Priester National Extension Health Conference. Members of the

design team have presented or co-authored over 50 poster or oral presentations related to FL511 programs. More than 30 individuals in 21 states and Canada, representing Cooperative Extension, health departments, a medical school, college/university, and other organizations have requested the Take Control to Reduce Your Cancer Risk program, and there has been similar interest in the Elder Nutrition and Food Safety program which is currently being packaged as a for-sale curriculum.

Communication with County Extension Faculty

Nutrition is an exciting and constantly changing field. Consumers are constantly bombarded with nutrition information and misinformation which county Extension faculty often are asked to interpret. One of our responsibilities as a design team is to keep county faculty updated in current research in nutrition and health, and to make them aware of reliable resources to support their educational programs. County faculty who do not conduct nutrition and health programs also need to be prepared to field consumer questions since county Extension offices receive thousands of inquiries annually concerning food, nutrition, and health issues.

The primary ways in which we communicate with county faculty are in-person and telephone consultations, the Nutrition Newsletter which Dr. Bobroff has prepared on a regular basis since 1986, (with Dr. Tamplin and Dr. Simonne as co-writers and editors over the years), and email communication.

Graduate Student Contributions to FL511

Members of the FL511 design team have chaired 12 graduate committees for Masters students in Food Science and Human Nutrition who made contributions to the Extension nutrition education program through their research projects.

External Publications Related to FL511 Programs

Bobroff LB, Christian LL*, Lieberman LS, Guyer LK, and Frazee C. Encouraging elementary school children to eat breakfast. *J Nutr Ed.* 28(5):293B, 1996.

Smith MF and Bobroff LB. Study of the effectiveness of a health risk reduction program. *Eval. Health Professions.* 1991; 14:88-99.

Bobroff LB and Martin LB. Nutrition Education for Florida's Elders. Gerontological Nutritionists a Dietetic Practice Group of The American Dietetic Association, Spring Newsletter.

Recognition and Awards

Program of Excellence Team Award, Epsilon Sigma Phi, for the "Choices: Charting a Positive Future for Teen Parents" curriculum, Choices Multidisciplinary Team, 1995
Program of Excellence Team Award, Florida Association of Extension Home Economics, for the "Building Better Breakfasts" curriculum, Linda Bobroff and Nancy Gal, 1993

VIII ~ EVALUATION OF THE SUCCESS OF MULTI-STATE AND INTEGRATED ACTIVITIES

Even with severe, state cut backs and a sluggish economy over the past two years, IFAS Extension and Research have worked hard to increase both multi-state and integrated activities that reflect the use of Smith-Lever and Hatch funds. Florida has historically had a close working relationship between Research and Extension—many faculty have joint research/extension appointments that insure this process—but until 2000 no statistics had been required to reflect these two types of activities.

Improvements have occurred. This year, research had 22% (\$745,358) of Hatch money reportable as integrated activities. Although there is a much higher percentage of integration between research and extension, Florida is still working on better ways to report this information. (A waiver for Research is included in this report). Research continues to be more easily accountable as Hatch funding is tied to projects rather than directly to salaries.

Extension multi-state activities increased this year to 19% (\$689,428). This again does not reflect so much the amount of multi-state activity we have as it does our ability to better capture these numbers. Florida has not historically collected this information and is improving reporting procedures in order to capture all Smith-Lever funds used for multi-state activities in an auditable form.

Extension integrated activities are still being under-reported at 12% (\$438,507), again hampered partially by a fiscal system that does not easily reflect extension funds to the specificity of multi-state and integrated levels. Prior to 2000, Florida had not captured fiscal information specifically related to this level. Smith-Lever funds tied to salary instead of programs has also made reporting of time expended difficult and has required changes within the fiscal and faculty accountability process to capture this information (a waiver request for Extension integrated and multi-state is included in this report). Some changes are occurring at this time that will enable us to more clearly account for multi-state and integrated activities in the near future:

- In 2000 an online accountability system complete with database was first implemented for use by all IFAS faculty. A final web-based phase of this system to help us better capture extension activities will be completed in the next 18 months. (This enhancement was delayed because of budget reductions over the past two years.) The Faculty Accomplishment System (FAS) was originally developed primarily to capture individual teaching, research and extension activities for individual evaluations but is now being modified to meet growing demands for organizational accountability. Enhancements will also tie the system closer to fiscal accountability. The new enhancements will be completed by the fall of 2004.
- The Florida public university system has just been privatized through legislation. A new fiscal system is being implemented by the university in July 2004. This system will allow a better accountability of Smith-Lever funds tied to multi-state and integrated activities. The present system makes it difficult to reach the level of specificity now required for extension audit purposes.
- Long range planning for 2004-2008 is presently ongoing for Florida extension. This will be completed in the fall of 2003. An extension external review was held in February 2003 as part of the process. Suggestions relating to structure and process made through the review that will improve accountability are presently being implemented. These changes will significantly improve the reporting process for AREERA which will be reflected in the 2004 AREERA Plan of Work.

- Part of the Extension Long Range Planning Process includes county and regional (state-wide) listening sessions with Florida stakeholders which will provide extension with additional suggestions to improve the reporting of multi-state and integrated activities.

In summary: Florida Extension and Research continues to examine ways that will allow us to more clearly report multi-state and integrated activities. We believe we have strong multi-state and integrated projects/programs at this time, however, our ability to report them in a manner that is clearly auditable must be improved to show these activities to full advantage. IFAS is committed to reaching this goal. Each year we move closer to the targeted 25% reported requirement.

Title: 4-H Interantional Day Camp
Extension Personnel: Allen, Pamela
Department: Escambia
SMPs: FL703
Percent Extension Time: 5
Extension Activities

Planned and conducted a five day 4-H camp at the Langley Bell 4-H Center along with Kay Brown, 4-H Program Leader Escambia County, Dorothy Lee, FCS Agent Escambia County, Beth Bolles Horticulture Agent Escambia County and Sonya Wood-Mahler, Environmental

Multi-State Partners:

Organization	State
Baldwin County Extension Service,	Alabama
Extension	Alabama

Title: Management considerations to optimize cattle productivity and well-being in a sub- tropical environment
Extension Personnel: Arthington, John
Department: Range Cattle REC-Ona
SMPs: FL102
Percent Extension Time: 10
Extension Activities

A multistate effort has been established to compliment the existing program JDA-RCREC-01. Expertise in animal behavior and well-being as well as applied technologies in bovine reproduction have been incorporated from USDA-ARS (Purdue University) and the

Multi-State Partners:

Organization	State
Kansas State University	Kansas
University of Minnesota	Minnesota
USDA-ARS	Indiana

Title: Peanut Production Meeting
Extension Personnel: Atkins, John
Department: Santa Rosa
SMPs: FL101
Percent Extension Time: 1
Extension Activities

To provide area producers with updates in peanut production.

Multi-State Partners:

Organization	State
Alabama Cooperative Extension	Alabama
Florida Cooperative Extension	Florida
USDA Farm Service Agency	Florida



Title: Deep South Weed Tour
Extension Personnel: Atkins, John
Department: Santa Rosa
SMPs: FL102
Percent Extension Time: 1
Extension Activities

Participated with Alabama and Georgia to present a Deep South Weed Tour at West Florida Research and Education Center.

Multi-State Partners:

Organization	State
Alabama Cooperative Extension	Alabama
Auburn Cooperative Extension	Alabama
Delta Pine	Alabama
Florida Cooperative Extension	Florida
Hendrix Tractor Company	Alabama
Minnesota Cooperative Extension	Minnesota
Reit-Way Equipment Company	Alabama
Smith Tractor Company	Florida



Title: National 4-H Shooting Sports Program Committee: Southern Region 4-H Shooting Sports Leader Training
Extension Personnel: Bennett, Dale
Department: Wakulla
SMPs: FL113
Percent Extension Time: 5
Extension Activities

Each year the National 4-H Shooting Sports Program Committee conducts a Regional 4-H Shooting Sports Leader Training Workshop in either the north, south, central, east, or west portion of the country. Approximately 15-20 states may enroll two individuals

Multi-State Partners:

Organization	State
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Title: Agriculture, Livestock & Forages in the Tri-State
Extension Personnel: Bennett, Dale
Department: Wakulla
SMPs: FL114
Percent Extension Time: 5
Extension Activities

To coordinate Extension programming in agriculture, livestock, forages, forestry/wildlife and vegetables to the mutual benefit of agents, specialists, and the clientele we serve in each state. Specifically, establish a multi-state clearinghouse for infor

Multi-State Partners:

Organization	State
Extension	Florida



Title: Rural Wildlife in the Tri-State
Extension Personnel: Bennett, Dale
Department: Wakulla
SMPs: FL513
Percent Extension Time: 2
Extension Activities

To increase knowledge and expertise in wildlife management. Specifically, to receive 2-3 day inservice training to cover: habitat management, wildlife management, and food plot management; and to conduct clientele field days on demonstration food plots a

Multi-State Partners:

Organization	State
Extension	Florida



Title: Legal Checkup Program
Extension Personnel: Bennett, Jan
Department: Collier
SMPs: FL512
Percent Extension Time: 6
Extension Activities

Legal Checkup Program (under Personal Money Management, Program Number 7, SMP FL 512) -- This was the first CES/AARP collaboration of this particular program in the entire nation. Based on this fact, the Agent was contacted by USDA-CSREES to work with th

Multi-State Partners:

Organization	State
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AARP Legal Services Network

Pennsylvania

USDA-CSREES

District of Columbia

Title: Multi-state in-service forage training
Extension Personnel: Blount, Ann
Department: North Florida REC-Marianna
SMPs: FL101
Percent Extension Time: 5
Extension Activities

Development of a multi-state in-service training , alternating between Auburn, University of Georgia and University of Florida as annual meeting locations. It is designed to train tri-state county faculty on current topics in forage research and extension

Multi-State Partners:

Organization	State
Auburn University	AL
University of Florida	FL
University of Georgia	GA
USDA-ARS	GA

Title: 2002 Green Industry Updates for Nursery, Greenhouse, and Landscape Organizations
Extension Personnel: Bolques, Alejandro
Department: Gadsden
SMPs: FL105
Percent Extension Time: 5
Extension Activities

I performed section moderator duties for the Landscape Installation and Maintenance Update, November 5, 2002 and the Landscape and Grower Update, November 6, 2002. Together with Keith Mickler, University of Georgia- Extension, we presented information on

Multi-State Partners:

Organization	State
Univeristy of Georgia	Gerorgia
University of Florida	Florida
University of Georgia	Georgia

Title: Strengthening Extension Advisory Leaders: Effective Meetings
Extension Personnel: Bolton, Elizabeth

Department: Family Youth and Community Science
SMPs: FL513
Percent Extension Time: 2
Extension Activities

Curriculum development of a module for leadership education for extension education in specific topics. This curriculum development effort was done jointly with Lisa Guion who was the first author.

Multi-State Partners:

Organization	State
A&T State University	North Carolina
Alabama A&M Univ.	Alabama
Clemson	South Carolina
Kentucky Coop. Ext.	Kentucky
Mississippi State Univ.	Mississippi
NC State University	North Carolina
Orange County	North Carolina
University of Florida	Florida
University of Georgia	Georgia
University of Kentucky	Kentucky
Virginia Tech	Virginia
Wake County	North Carolina



Title: Panhandle and Tri-State Watermelon/Cucurbit Workshop
Extension Personnel: Brasher, Charles
Department: Jackson
SMPs: FL107
Percent Extension Time: 20
Extension Activities

Conducted Watermelon/ cucurbit planning meeting, then coordinated with the neighboring Alabama and Georgia Extension Agents to help publicize the workshop. Workshop was conducted on January 22d, 2002. Topics covered were representative of the problems enc

Multi-State Partners:

Organization	State
Clay County Extension Office	Georgia
Coffee County Extension Office	Alabama
Decatur County Extension Office	Georgia
Geneva County Extension	Alabama
Grady County Extension	Georgia

Houston County Extension Office Alabama
Seminole County Extension Georgia

Title: Progressive Farmer Farm Safety Day Camp
Extension Personnel: Brasher, Charles
Department: Jackson
SMPs: FL124
Percent Extension Time: 10
Extension Activities

Multi-state Activities of the Progressive Farmer Farm Safety Day Camp included the following: The Farm Safety Day Camp training in Orlando in 2001 for the 2002 Camps. Twelve states were represented there, and 36 attended. Gave the opening presentation at

Multi-State Partners:

Organization	State
Farm Safety Day Camps Contractor	Iowa
Nebraska Rural Health and Safety Coalition	Nebraska
Progressive Farmer	Alabama
University of Alabama	Alabama
West Texas University	Texas

Title: ATV Safety
Extension Personnel: Brinkley, Monica
Department: Liberty
SMPs: NONE
Percent Extension Time: 5
Extension Activities

Attended training on a national level. Each state will conduct ATV safety programs that are aimed to reduce the number of injuries from ATV accidents.

Multi-State Partners:

Organization	State
Utah State University	Utah
Washington State Extension	Washington

Title: Volunteer Leader Training

Extension Personnel: Brown, Kay
Department: Escambia
SMPs: FL718
Percent Extension Time: 1

Extension Activities

Joint volunteer leader training with Baldwin County, Alabama

Multi-State Partners:

Organization	State
Alabama Extension Service	Alabama

+

Title: Summer Camp and Day Camps
Extension Personnel: Brown, Kay
Department: Escambia
SMPs: FL714
Percent Extension Time: 2

Extension Activities

Multi-state summer camping and International "Around the World" Day Camp programs with Environmental Agent form Baldwin County, Alabama

Multi-State Partners:

Organization	State
Alabama Extension Service	Alabama

+

Title: Florida/Oklahoma Leadership/Citizenship 4-H Exchange Program
Extension Personnel: Brown, Kay
Department: Escambia
SMPs: FL715
Percent Extension Time: 5

Extension Activities

4-H State Leadership/Citizenship Exchange Program with Nobel County in Oklahoma with 19 families and 42 youth invoved in learning new life skills.

Multi-State Partners:

Organization	State
Oklahoma Extension Service	Oklahoma

+

Title: Land Judging
Extension Personnel: Brown, Randall
Department: Soil and Water Science
SMPs: FL214

Percent Extension Time: 5

Extension Activities

Land Judging is a national program. Each year Florida sends its state winning 4-H and FFA teams to the National Contest, hosted by numerous organizations in Oklahoma.

Multi-State Partners:

Organization	State
OSU	Oklahoma

+

Title: Forage Production 2001

Extension Personnel: Chambliss, Carrol

Department: Agronomy

SMPs: FL101

Percent Extension Time: 2

Extension Activities

In-Service Training for County Faculty

Multi-State Partners:

Organization	State
Auburn Univ	Al.
USDA, Univ. of Ga.	Ga.

+

Title: National Urban Task Force

Extension Personnel: Chernesky, Mary

Department: Hillsborough

SMPs: FL513

Percent Extension Time: 2

Extension Activities

This agent represent Florida on the National Urban Task Force and serves on the Marketing and Promotion Committee and Secretary of the overall group. This is a sub-committee of ECOP and representatives from 24 states are appointed. The focus is to gain

Multi-State Partners:

Organization	State
Extension Service	Kentucky

+

Title: Tri-State Senior Adult Consumer Fraud Prevention Education Program

Extension Personnel: Corbus, Judith

Department: Washington

SMPs: FL510

Percent Extension Time: 7

Extension Activities

Agent met to plan a tri-state senior adult consumer fraud prevention education program. The program, Catch the Spirit! Be Wise, focused on identity theft, telemarketing fraud, and funeral planning. The program was part of the Financial Security in Later

Multi-State Partners:

Organization	State
Alabama Cooperative Extension System	Alabama
University of Florida Extension	Florida
University of Georgia Cooperative Extension	Georgia



Title: Tri State Conference
Extension Personnel: Courtney, Elaine
Department: Okaloosa
SMPs: FL510
Percent Extension Time: 1

Extension Activities

Plans are being made for the second tri state Family & Consumer Sciences multi state conference to be held April 29-30 in Thomasville, GA

Multi-State Partners:

Organization	State
UF/Extension-Okaloosa County	FL
University of Georgia	GA



Title: AL/FL Baby Boomers in Changing Time
Extension Personnel: Courtney, Elaine
Department: Okaloosa
SMPs: FL109
Percent Extension Time: 2

Extension Activities

Agents from Escambia, Santa Rosa, Okaloosa and Walton counties in Florida and Baldwin, Mobile, and Escambia counties in Alabama have worked during the year on developing a curriculum for a multi-disciplinary curriculum, "Baby Boomers in Changing Times." T

Multi-State Partners:

Organization	State
Baldwin Co. Extension	AL
Escambia Co. Extension	AL

Mobile Co. Extension	AL
Okaloosa Co. Extension	FL
Santa Rosa Co. Extension	FL



Title: IR-4 Minor Use Pesticide Registration Project
Extension Personnel: Crane, Jonathan
Department: Tropical REC-Homestead
SMPs: FL111
Percent Extension Time: 15

Extension Activities

1. Execution of pesticide residue field trials under Good Laboratory Practices and Standard Operating Procedures. 2. Identical trials on the pesticide/pest combination are conducted in Hawaii, Puerto Rico, and

Multi-State Partners:

Organization	State
USDA	NJ
USDA, State Universities	Numersous



Title: Dairy Business Analysis Program
Extension Personnel: de Vries, Albert
Department: Animal Sciences
SMPs: FL128
Percent Extension Time: 20

Extension Activities

DBAP collects dairy farm financial data through annual surveys in Florida and Georgia. Individual participating dairies receive a report with the financial strengths and weaknesses based on a comparison of their data and financial benchmarks calculated fr

Multi-State Partners:

Organization	State
Southeast Milk, Inc.	Florida
University of Florida	Florida
University of Georgia	Georgia



Title: Cotton Production Seminar
Extension Personnel: Donahoe, Michael
Department: Santa Rosa
SMPs: FL101
Percent Extension Time: 1

Extension Activities

A regional cotton production seminar was conducted to provide growers the latest production and pest management information. Dr. Bob Kemerait, Extension Pathologist, University of Georgia, assisted with the seminar by teaching a session on disease managem

Multi-State Partners:

Organization	State
Alabama Cooperative Extension	Alabama
Florida Cooperative Extension	Florida
Georgia Cooperative Extension	Georgia



Title: FL-GA FCS Program Development
Extension Personnel: Dorschel, Duska
Department: Duval
SMPs: FL513
Percent Extension Time: 1
Extension Activities

The agent attend a district meeting of FCS agents in Glynn County, Ga to talk about successful programming efforts in North Florida and explore ways that each state could benefit from program sharing.

Multi-State Partners:

Organization	State
Camden and Brantleu Counties Extension	Georgia



Title: Introduction to Florida Yards and Neighborhoods
Extension Personnel: Dunning, Sheila
Department: Okaloosa
SMPs: FL114
Percent Extension Time: 100
Extension Activities

Set up display board, distribute informational flyers and verbally communicate the objectives of the program.

Multi-State Partners:

Organization	State
Responsible Industry for a Sound Environment	North Carolina
Horticulture/Turfgrass Study Tour	
Responsible Industry for a Sound Environment	Texas
Horticultue/Turfgrass Study Tour	

Responsible Industry for a
Sound Environment Iowa

Horticultur/Turfgrass Study Tour

Responsible Industry for a
Sound Environment Utah

Horticulture/Turfgrass Study Tour

+

Title: Deep South Weed Tour

Extension Personnel: Edmondson, Gerald

Department: Okaloosa

SMPs: FL101

Percent Extension Time: 1

Extension Activities

Participated with Alabama and Georgia to present a Deep South Weed Tour at West Florida Research and Education Center.

Multi-State Partners:

Organization	State
Cooperative Extension	Florida
Delta Pine	Alabama
Gulf Coast Farm Analysis Association, Auburn University	Alabama
Hendrix Tractor Company	Alabama
Reit-Way Equipment Company	Alabama
USDA	Georgia
USDA Service Center, FSA	Florida

+

Title: Alabama/Florida Managing Crop and Livestock Production Under Pines

Extension Personnel: Edmondson, Gerald

Department: Okaloosa

SMPs: FL102

Percent Extension Time: 3

Extension Activities

The program was designed for clientele looking for alternatives to traditional agriculture. Discussion was held on Planting and Thinning Pine Trees for Grass Production, Grazing Livestock Under Pines, Alternative Crop Production Under Pines and Fencing.

Multi-State Partners:

Organization	State
Cooperative Extension	Florida

Fort Valley State
Cooperative Extension

Georgia



Title: Whitetail Deer/Food Plot Management
Extension Personnel: Edmondson, Gerald
Department: Okaloosa
SMPs: FL421
Percent Extension Time: 3
Extension Activities

Clientele are requesting information on managing wildlife and in particular food plots for white tail deer. A joint program was planned by Okaloosa, Walton, and Covington County, Alabama. The program was held at Paxton, Florida. Topics covered included

Multi-State Partners:

Organization	State
Cooperative Extension	Florida



Title: Tri-State Consumer Fraud Prevention Education program
Extension Personnel: Elmore, Joan
Department: Jackson
SMPs: FL512
Percent Extension Time: 7
Extension Activities

Agent met to plan a tri-state senior adult consumer fraud prevention education program. The program, Catch the Spirit-Be Wise, focused on identity theft, telemarketing fraud and funeral planning. The program was part of the Financial Security in Later Lif

Multi-State Partners:

Organization	State
"	"
Alabama Cooperative Extension System	Alabama
Georgia Extension Service	Georgia
University of Florida Extension	Florida



Title: Tri-State Agriculture Economic Development
Extension Personnel: Eubanks, Shepard
Department: Holmes
SMPs: FL101
Percent Extension Time: 3
Extension Activities

Multi-state committee organized by the Dothan, Alabama Area Chamber of Commerce in the fall of 2001 to explore, evaluate, preserve and revitalize the agricultural industry in a portion of the tri-state area. The area includes the counties of Henry, Housto

Multi-State Partners:

Organization	State
Alabama Extension Service	Alabama
Alabama Peanut Producers	Alabama
Coffee Co. Extension	Alabama
Dothan Chamber of Commerce	Alabama
Florida Peanut Producers	Florida
Geneva Co. Extension	Alabama
Henry Co. Extension	Alabama
Holmes Co. Extension	Florida
Houston Co. Extension	Alabama
Jackson Co. Extension	Florida
Seminole Co. Extension	Georgia
Washington Co. Extension	Florida



Title: Forestry and Wildlife Programming - Tri-States
Extension Personnel: Eubanks, Shepard
Department: Holmes
SMPs: FL102
Percent Extension Time: 3
Extension Activities

To increase knowledge and expertise in forestry and wildlife management. Specifically, to receive two 2-3 day inservice training to cover: habitat management, wildlife management, and food plot management; and to conduct clientele field days on demonstra

Multi-State Partners:

Organization	State
Extension	Florida



Title: Master Tree Farmer 2002
Extension Personnel: Eubanks, Shepard
Department: Holmes
SMPs: FL115
Percent Extension Time: 3
Extension Activities

Forestry training conducted via satellite to 13 southern states.

Multi-State Partners:

Organization	State
Extension	Florida



Title: CYFERNet Parent Editorial Board
Extension Personnel: Ferrer, Millie
Department: Family Youth and Community Science
SMPs: FL515
Percent Extension Time: 10
Extension Activities

I am a member of the editorial board CYFERnet Parents/Families. Eight states are contributing members of this board. CYFERnet is a national web-based network being developed in conjunction with USDA/CSREES, Land Grant University faculty, and Extension ed

Multi-State Partners:

Organization	State
Arkansas State University	Arkansas
Cornell	New York
CSREE- USDA	Washington D.C.
North Carolina State University	North Carolina
University of Idaho	Idaho
University of Illinois	Illinois
University of Vermont Extension	Vermont



Title: Reduced-risk tactics for thrips and tospoviruses on solanaceous crops
Extension Personnel: Funderburk, Joseph
Department: North Florida REC-Quincy
SMPs: FL107
Percent Extension Time: 15
Extension Activities

I am the principal investigator for a national project to implement for solanaceous crops a reduced-risk integrated pest management program for thrips and tospoviruses including biological control, cultural control, and biological insecticides. Project fu

Multi-State Partners:

Organization	State
Clemson University	South Carolina
Louisiana State University	Louisiana

Mississippi State University	Mississippi
North Carolina State University	North Carolina
University of Florida	Florida
University of Georgia	Georgia



Title: Florida/Alabama Managing Crops and Livestock Production Under Pines
Extension Personnel: Goodchild, Michael
Department: Walton
SMPs: FL102
Percent Extension Time: 2
Extension Activities

This program was designed to help landowners be more production on their lands. Topics included silvopasture, fencing systems, and agroforestry.

Multi-State Partners:

Organization	State
Alabama Cooperative Extension Service	Alabama
Fort Valley State Cooperative Extension	Georgia
Game and Fish Commission	Alabama
NRCS	Alabama



Title: Chronic Disease Prevention
Extension Personnel: Gordon, Danielle
Department: Leon
SMPs: FL511
Percent Extension Time: 4
Extension Activities

The Agent has participated in a multi-state effort between Leon County FCS Agents and the University of Georgia Extension FCS Agents in Thomas and Brooks/Grady/Echols counties. FCS Agents from both states have begun a series of 12 Fit Families newsletter

Multi-State Partners:

Organization	State
University of Georgia - Extension	Georgia



Title: Gadsden Tomato Forum
Extension Personnel: Grant, Henry

Department: Gadsden
SMPs: FL102
Percent Extension Time: 5
Extension Activities

To develop an annual report of research findings relevant to the problems of production and other regulations that influence the Gadsden County, FL and Decatur County, Ga. tomato industry.

Multi-State Partners:

Organization	State
NFREC	Florida

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Title: Improving Nutritional Management of Dairy Cattle
Extension Personnel: Hall, Mary
Department: Animal Sciences
SMPs: FL128
Percent Extension Time: 10
Extension Activities

Monsanto Transition Cow Seminar invited talk on "Energy and the transition cow: aiming for success in reproduction and milk." Louisville, KY 1/7. Presented information on improving dairy cow production performance and health in the transition period thro

Multi-State Partners:

Organization	State
Hergert Nutritional Services	Colorado
Hoof Trimmers Association	Montana
Monsanto Dairy	Virginia
Ohio State University Cooperative Extension	Ohio
Penn State University	Pennsylvania
Pioneer Hi-Bred International	Iowa
Private Consultant	Georgia
Texas A&M Cooperative Extension	Texas
Zinpro Corporation	Minnesota

+

Title: Precision Irrigation
Extension Personnel: Halsey, Lawrence
Department: Jefferson
SMPs: FL130
Percent Extension Time: 4
Extension Activities

In 2002, identify pivot irrigation with significant crop and landscape variation to establish trial by retrofitting pivot to apply variable rates of irrigation. Retrofit to be effected in 2003. Analyze results of trial and extend information through fie

Multi-State Partners:

Organization	State
NESPAL, Coastal Plains Exp Station, Tifton	Georgia



Title: Wildlife Field Day, Brooks Co, GA
Extension Personnel: Halsey, Lawrence
Department: Jefferson
SMPs: FL115
Percent Extension Time: 2
Extension Activities

Wildlife Field Day - Precision Ag applications for Wildlife and Plantation Management (Arrowhead Plantation, Brooks Co, GA).

Multi-State Partners:

Organization	State
UGA Extension, Brooks County	Georgia



Title: AARP Financial Management Program
Extension Personnel: Harrison, Mary
Department: Family Youth and Community Science
SMPs: FL512
Percent Extension Time: 5
Extension Activities

The AARP, a national association of older citizens, cooperates with extension to provide much needed financial management programs for women and older adults nation-wide. The programs are scheduled and handled by the Extension agents, assisted by AARP dis

Multi-State Partners:

Organization	State
AARP State Director	Florida
CSREES	National
EPA	Southeast Region
EPA/Extension	Georgia
Extension Liason with EPA	Southeast Region
Jump Start	Washington D.C.
Regional Manager, Healthy Homes	Wisconsin

Title: High School Financial Planning Program
Extension Personnel: Harrison, Mary
Department: Family Youth and Community Science
SMPs: FL715
Percent Extension Time: 5

Extension Activities

The National Endowment for Financial Education, headquartered in Denver, CO is a co-partner with the Cooperative Extension system (Federal and State) in the development and delivery of the High School Financial Planning Program. NEFE provides the funds an

Multi-State Partners:

Organization	State
Federal and State Cooperative Extension System	Florida
National Endowment for Financial Education	Colorado
U.S. Department of Treasury	South Eastern States

Title: District I Planning and Coordination Efforts for Agriculture
Extension Personnel: Heitmeyer, Lawrence
Department: Leon
SMPs: FL102
Percent Extension Time: 1

Extension Activities

Two planning meetings led to location of live animal evaluators from Alabama and Georgia.

Multi-State Partners:

Organization	State
Extension	Georgia

Title: IR-4 Program
Extension Personnel: Hochmuth, Robert
Department: Suwannee
SMPs: FL107
Percent Extension Time: 2

Extension Activities

The IR-4 program, which is a CREES grant, "Southern Region Program to Clear pesticides on Minor Crops". This is both research and extension, and is multi-discipline. Needs for pest control agents are gathered from growers and county agents adn checked w

Multi-State Partners:

Organization	State
Canada Dept of Agriculture	Canada
Mississippi State University	Mississippi
NC State University	North Carolina
Penn State University	Pennsylvania
Rutgers University	New Jersey
University of Arizona	Arizona
University of Florida	Florida
University of Georgia	Georgia



Title: Technical and Economic Efficiencies for Producing and Marketing Ornamental Plants

Extension Personnel: Hodges, Alan

Department: Food and Resource Economics

SMPs: FL119

Percent Extension Time: 20

Extension Activities

This interdisciplinary group of economists and horticulturists undertake a variety of projects aimed at improving management in production nurseries, horticultural retailing, and landscape services professions.

Multi-State Partners:

Organization	State
Cornell Univ.	New York
Louisiana State Univ.	Louisiana
Michigan State Univ	Michigan
Mississippi State Univ.	Mississippi
N.C. State Univ.	North Carolina
Rutgers Univ.	New Jersey
Univ. Delaware	Deleware
Univ. Georgia	Georgia
Univ. Tennessee	Tennessee
Univ. Tennessee	Tennessee



Title: Regional NE184 Project

Extension Personnel: Hutchinson, Chad

Department: Horticultural Sciences

SMPs: FL107
Percent Extension Time: 10
Extension Activities

his project is a multi-state potato variety evaluation program in which production and quality characteristics of new clones are compared to current commercially accepted varieties. Cooperative potato variety trials provide information on the production,

Multi-State Partners:

Organization	State
Cornell University	New York
HZPC Americas Corporation	Prince Edward
NERA	Maryland
North Carolina State University	North Carolina
Pennsylvania State University	Pennsylvania
Rutgers University	New Jersey
The Ohio State University	Ohio
University of Florida	Florida
University of Maine	Maine
USDA	Maryland
Virginia Polytechnic Institute	Virginia



Title: Multi-State Natural Resources
Extension Personnel: Jackson, L
Department: Okaloosa
SMPs: FL316
Percent Extension Time: 3
Extension Activities

-- 4-H Camp for youth ages 8 - 14 centered on watershed activities and involved planning participation from Alabama Extension. One camper was from Alabama. -- A program implementation meeting was attended by Natural Resource extension agents from FL, GA a

Multi-State Partners:

Organization	State
AL Extension	AL
UF	FL
UGA	GA



Title: Aquaculture Development
Extension Personnel: Jackson, L

Department: Okaloosa
SMPs: FL132
Percent Extension Time: 10
Extension Activities

Assist farmers in FL and AL to produce aquaculture products.

Multi-State Partners:

Organization	State
AL Extension	AL
UF	FL

Title: South Atlantic Regional Fish Extension
Extension Personnel: Jacoby, Charles
Department: Fisheries and Aquatic Science
SMPs: FL114
Percent Extension Time: 20
Extension Activities

Assist fishers by providing valued extension products including: a publication dealing with marine protected areas a publication dealing with the effects of upstream land use on estuarine fish production a regional planning session

Multi-State Partners:

Organization	State
Dept of Fisheries and Aquatic Sciences, Institute of Food and Agricultural Sciences, Florida Sea Grant College Program, University of Florida	Florida
Dept of Fisheries and Aquatic Sciences, Institute of Food and Agricultural Sciences, Florida Sea Grant College Program, University of Florida	Georgia
Marine Resource Research Institute, South Carolina Dept of Natural Resources	South Carolina
North Carolina Sea Grant College Program	North Carolina
South Carolina Sea Grant College Program	South Carolina

Title: Panhandle Peanut Shortcourse

Extension Personnel: Jowers, Henry
Department: Jackson
SMPs: FL101
Percent Extension Time: 3

Extension Activities

Planng committee for the annual Panhandle Peanut ShortcourseSpeaker at Panhandle Peanut ShortcourseProvide production information as related to peanut production throughout the year

Multi-State Partners:

Organization	State
University of Georgia Extension	Georgia
University of Georgia, Research Entomologist	Georgia

Title: Tri-State Agriculture Economic Development
Extension Personnel: Jowers, Henry
Department: Jackson
SMPs: FL270
Percent Extension Time: 1
Extension Activities

Multi-state committee organized by the Dothan, Alabama Area Chamber of Commerce in the fall of 2001 to explore, evaluate, preserve and revitalize the agricultural industry in a portion of the tri-state area. The area includes the counties of Henry, Houst

Multi-State Partners:

Organization	State
Alabama Extension Service	AL
Alabama Peanut Producers Assoc.	AL
Coffee Co Extension	AL
Dothan Area Chamber of Commerce	AL
Florida Peanut Producers Assoc.	FL
Geneva Co Extension	AL
Henry Co Extension	AL
Holmes Co Extensin	FL
Houston Co Extension	AL
Jackson Co Extension	FL
Seminole Co Extension	Ga
Washington Co Extensi	FL

Title: Multi-state extension activities for the nursery and landscape industries
Extension Personnel: Knox, Gary
Department: North Florida REC-Quincy
SMPs: NONE
Percent Extension Time: 15

Extension Activities

In Service Trainings Organized: Georgia-Florida In Service Training: Current Issues in Professional/Commercial Landscape Management. Jacksonville FL. Nov. 4, 2002. Attended by 23 county faculty from Georgia and Florida. Meetings Organized: Georgia/Florida

Multi-State Partners:

Organization	State
University of Georgia	Georgia

Title: School and Daycare IPM
Extension Personnel: Koehler, Philip
Department: Entomology and Nematology
SMPs: FL122
Percent Extension Time: 5

Extension Activities

Promotion and maintenance of IPM in School and Daycares with the goal of reducing unnecessary pesticide exposure while controlling pests.

Multi-State Partners:

Organization	State
Alabama Department of Agriculture	Alabama
University of Georgia, Entomology	Georgia
University of Georgia, Housing and Consumer Economics	Georgia
University of Tennessee, Entomology	Tennessee
University of Tennessee, Health and Safety Mary Ellen	Tennessee
University of Tennessee, Housing and Consumer Economics	Tennessee
University of Tennessee, Human Ecology	Tennessee

Title: Identification and control of a leaf spot in peanut
Extension Personnel: Kucharek, Tom
Department: Plant Pathology
SMPs: FL101
Percent Extension Time: 5

Extension Activities

I continued to gather observations and evidence for the true nature of a leaf spot in peanut that appears to be one or both of the common leaf spots. I am convinced now that what I have called funky leaf spot is early and late leaf spots that have dela

Multi-State Partners:

Organization	State
University of Georgia	Georgia

+

Title: Blue Mold Warning Service for tobacco
Extension Personnel: Kucharek, Tom
Department: Plant Pathology
SMPs: FL101
Percent Extension Time: 5

Extension Activities

I am the blue mold coordinator for Florida. Beginning in 1980, I proposed at a Symposium in Raleigh, NC, that we communicate among the tobacco-growing states as to the occurrences of blue mold, a fast developing fungal disease on the foliage of the tobac

Multi-State Partners:

Organization	State
North Carolina State Univeristy	North Carolina
North Carolina State University	North Carolina
Univeristy of Georgia	Georgia
University of Kentucky	Kentucky
Virginia Tech University	Virginia

+

Title: Yield loss estimates
Extension Personnel: Kucharek, Tom
Department: Plant Pathology
SMPs: FL101
Percent Extension Time: 1

Extension Activities

I provide estimates of yield losses in wheat and soybean from plant diseases for national and regional use. We use to have similar systems for tobacco and peanut.

Multi-State Partners:

Organization	State
North Carolina State University	North Carolina
University of Minnesota, USDA	Minnesota

Title: Evaluation of peanut genotypes for resistance to rust
Extension Personnel: Kucharek, Tom
Department: Plant Pathology
SMPs: FL101
Percent Extension Time: 1
Extension Activities

Provided space at Pine Acres and accessibility to students with Dr. Albert Culbreath to expose plants of various peanut genotypes to rust which was present at my field test.

Multi-State Partners:

Organization	State
University of Georgia	Georgia

Title: Evaluation and Accountability System for Extension
Extension Personnel: Ladewig, Howard
Department: Agricultural Education and Communication
SMPs: NONE
Percent Extension Time: 15
Extension Activities

Developed database system for state use in reporting plan of work and reports of accomplishments.

Multi-State Partners:

Organization	State
Illinois CES	Illinois
Indiana CES	Indiana
Kentucky CES and AES	Kentucky
South Dakota CES	South Dakota
Texas CES	Texas
Washington CES	Washington

Title: Improving Sweetpotato Quality & Yield
Extension Personnel: Lamberts, Mary
Department: Miami-Dade
SMPs: FL107
Percent Extension Time: 1
Extension Activities

Dr. Sorenson has been instrumental in helping us with a program to monitor sweetpotato weevils using pheromone traps. Since we have not yet started trials for this year, we have not relied on his assistance.

Multi-State Partners:

Organization	State
North Carolina State University	NC

Title: 4-H International Day Camps
Extension Personnel: Lee, Dorothy
Department: Escambia
SMPs: FL109
Percent Extension Time: 5
Extension Activities

Planned and conducted a five-day 4-H camp at the Langley Bell 4-H Center, along with Pam Allen, EFNEP Agent Escambia County, and Kay Brown, 4-H Program Leader Escambia County, Beth Bolles, Horticulture Agent Escambia County, and Sonya Wood Mahler, Environ

Multi-State Partners:

Organization	State
Alabama Cooperative Extension System - Baldwin County,	Alabama
Alabama Cooperative Extension System - Escambia County,	Alabama
Alabama Extension Service - Baldwin County Extension	Alabama
Escambia County/UF IFAS Extension	Florida
Okaloosa County/UF IFAS Extension	Florida
Santa Rosa County/UF IFAS Extension	Florida

Title: A multifaceted approach for control of blueberry pests in southern United States
Extension Personnel: Liburd, Oscar
Department: Entomology and Nematology
SMPs: FL101
Percent Extension Time: 3
Extension Activities

This regional project is a blueberry IPM agreement with cooperators in Georgia, Mississippi, and Canada. Dr. Dan Horton is a fruit entomologist at the University of Georgia (Tifton). Dan will be working with Georgia blueberry growers and will be respo

Multi-State Partners:

Organization	State
Agriculture Canada	Canada

University of Georgia

Georgia

USDA-ARS

Mississippi



Title: Master Tree Farmer
Extension Personnel: Long, Alan
Department: Forest Resources and Conservation
SMPs: FL420
Percent Extension Time: 5
Extension Activities

This Multi-State Program (#37) involved 10 southern states in a series of satellite broadcasts from Clemson University. MTF is designed as an introduction for landowners to many different aspects of forest management. Broadcasts were on 7 consecutive Tue

Multi-State Partners:

Organization	State
Alachua Co CES	Florida
Auburn University	Alabama
Clemson University	South Carolina
Columbia Co CES	Florida
Hamilton Co CES	Florida
Holmes Co CES	Florida
Jackson Co CES	Florida
Leon Co CES	Florida
Louisiana State Univ	Louisiana
Madison Co CES	Florida
North Carolina State Univ	North Carolina
Okaloosa Co CES	Florida
Oklahoma State Univ.	Oklahoma
Orange Co CES	Florida
Putnam Co CES	Florida
Southern Regional Extension Forester	Georgia
Texas A & M	Texas
University of Arkansas	Arkansas
University of Florida	Florida
University of Georgia	Georgia
University of Kentucky	Kentucky
University of Tennessee	Tennessee

Walton Co CES	Florida
Washington Co CES	Florida



Title: Subtropical Agroforestry
Extension Personnel: Long, Alan
Department: Forest Resources and Conservation
SMPs: FL420
Percent Extension Time: 5
Extension Activities

Conduct survey of landowners and extension agents in Florida, Georgia and Alabama regarding the use of agroforestry practices in each state. Prepare extension publications on different agroforestry practices in the Southeast. Organize and conduct in-service

Multi-State Partners:

Organization	State
University of Florida	Florida
University of Georgia	Georgia
University of Virgin Islands	US Virgin Islands



Title: Gulf Oyster Industry Technical Support
Extension Personnel: Mahan, William
Department: Franklin
SMPs: FL132
Percent Extension Time: 1
Extension Activities

ISSC Vibrio vulnificus Education Subcommittee: The Franklin County Agent and Dr. John Supan (LA Sea Grant - Seafood Specialist) were both appointed to this ISSC committee. The committee members are charged with developing and over seeing the implementa

Multi-State Partners:

Organization	State
AL Sea Grant	AL
Georgia Sea Grant	GA
LA Sea Grant	LA
Texas Sea Grant	TX
UF/IFAS	FL
UF/IFAS & Sea Grant	FL



Title: 4-H Watershed/Marine Camp
Extension Personnel: Mahan, William
Department: Franklin
SMPs: FL203
Percent Extension Time: 2

Extension Activities

Extension Agents for AL, GA & FL as a subcommittee of the Tri-State Natural Resources Program Implementation Team planed a multi-state 4-H Watershed/Marine Camp to be held at 4-H Camp Timpoochee in

Multi-State Partners:

Organization	State
Auburn Extension, 4-H	AL
UF/IFAS & Sea Grant	FL
UF/IFAS, 4-H	FL
UF-IFAS, 4-H	FL

Title: Tri-State Natural Resource Program Implimentation Team
Extension Personnel: Mahan, William
Department: Franklin
SMPs: FL114
Percent Extension Time: 2

Extension Activities

Tri-State Natural Resource Program Implementation Team: Natural Resource Extension Agents and Specialists from FL, AL, & GA met this year to discuss ways to conduct multi-state natural resource Extension programs. Areas identified for additional progra

Multi-State Partners:

Organization	State
AL & GA Extension	AL & GA
UF/IFAS	FL

Title: Sharing Weekly Newspaper Garden Columns, Multi-County and Multi-state
Extension Personnel: Marshall, David
Department: Leon
SMPs: FL114
Percent Extension Time: 10

Extension Activities

Horticulture agents in northwest Florida share our weekly gardening columns with one another. Because of this, we can often use a column from another agent rather than having to write a column every week. In Leon County, we also proactively plan newspaper

Multi-State Partners:

Organization	State
UF Extension	Florida
Univ. of Ga. Extension	Georgia



Title: Georgia-Florida Green Industry Updates
Extension Personnel: Marshall, David
Department: Leon
SMPs: FL114
Percent Extension Time: 5
Extension Activities

2002 Green Industry Updates Teach Horticultural Professionals in South Georgia / North Florida This marked the tenth year for this multi-state programming effort. We had programs in Brunswick, Georgia and in Quincy, Florida, at the NFREC, this year. The up

Multi-State Partners:

Organization	State
UF Ext	Florida
UGA Ext	GA
UGA Extension	Georgia



Title: Georgia/ Florida Green Industry Update
Extension Personnel: Mattis, Pamela
Department: Duval
SMPs: FL112
Percent Extension Time: 1
Extension Activities

GA/FL Green Industry Update - November 5, 2002 Georgia-Florida Green Industry Update, agent moderated an afternoon session and presented on Florida Lab Services and Sampling Procedures to 3 times in a joint GA/FL session on diagnostic services available

Multi-State Partners:

Organization	State
University of Georgia ExtensionCM	Georgia



Title: Member of Tri-State Agriculture PIT.
Extension Personnel: Mayfield, Joshua
Department: Gadsden
SMPs: FL101
Percent Extension Time: 20

Extension Activities

Shared planning and implementation of row crop, forage, and livestock educational programming with extension personnel in South Georgia and South Alabama in 2002.

Multi-State Partners:

Organization	State
Alabama Cooperative Extension Service	Alabama
Georgia Cooperative Extension Service	Georgia



Title: Member of Tri-State Natural Resources Conservation PIT.
Extension Personnel: Mayfield, Joshua
Department: Gadsden
SMPs: FL411
Percent Extension Time: 10
Extension Activities

Worked to deliver extension programming for the S. Alabama, S. Georgia, and N. Florida area in wildlife, natural resources, water conservation, and agroforestry management.

Multi-State Partners:

Organization	State
Alabama Cooperative Extension Service	Alabama
Georgia Cooperative Extension Service	Georgia



Title: 2002 IPM and Tomato Spotted Wilt Survey
Extension Personnel: Mayfield, Joshua
Department: Gadsden
SMPs: FL107
Percent Extension Time: 10
Extension Activities

A survey of tomato growers in N. Florida and S. Georgia was conducted to determine acreage and IPM practices used for management of thrips and Tomato Spotted Wilt virus in fields. Survey results were presented at the 2002 NFREC Fall Field Day and are sti

Multi-State Partners:

Organization	State
Georgia Cooperative Extension Service	Georgia

Title: Fall 2002 Child Care Training "Renewing Our Vision For Children"
Extension Personnel: McAlpine, Margaret
Department: Nassau
SMPs: FL513
Percent Extension Time: 5

Extension Activities

*Collaborated with Duval County FCS Agent Stephanie Toelle and Baker County FCS Terri Thompson and University of Georgia, Glynn County Extension Director Dorothy H. Graves for the planning and implementation of a multi-state child care conference for chil

Multi-State Partners:

Organization	State
The University of Georgia	Georgia
University of Florida Baker County	Florida
University of Florida Duval County	Florida
University of Florida Nassau County	Florida

Title: Georgia County Agricultural Extension Agents Florida Agriculture In-service
Extension Personnel: McAvoy, Eugene
Department: Hendry
SMPs: FL106
Percent Extension Time: 1

Extension Activities

Provide Georgia extension educators and researchers with an overview into the impending regulatory challenges facing vegetable producers in Florida as well as vegetable crops and production practices with potential adaption to Georgia conditions.

Multi-State Partners:

Organization	State
University of Georgia	Georgia

Title: Hunger and Food Security in America
Extension Personnel: McKinney, Michael
Department: Hillsborough
SMPs: NONE
Percent Extension Time: 2

Extension Activities

To develop a program workshop for participants attending the 2003 Public Issues Leadership Development Conference in Washington, D.C. in 2003 on the topic of Hunger and Food Security in America.

Multi-State Partners:

Organization	State
Cooperative Extension	PA



Title: Reduced-risk Tactics for Thrips and Tospoviruses on Solanaceous Crops
Extension Personnel: Momol, Timur
Department: North Florida REC-Quincy
SMPs: FL107
Percent Extension Time: 10
Extension Activities

This project examines the environmental and economical benefits of newly developed reduced-risk tactics for managing thrips and tospoviruses on tomato, pepper and other solanaceous crops. Activities include replicated field experiments, on-farm demonstrat

Multi-State Partners:

Organization	State
UF/IFAS	Florida
UGA	Georgia



Title: Community Preparedness
Extension Personnel: Monroe, Martha
Department: Forest Resources and Conservation
SMPs: FL420
Percent Extension Time: 10
Extension Activities

Establishing research protocols for national project; collecting data for initial case study

Multi-State Partners:

Organization	State
SOU	OR
UMN	MN
USFS	WA



Title: Santa Rosa Nurseries Participate at the Gulf Coast Horticultural Expo and Seminar.
Extension Personnel: Mullins, Daniel
Department: Santa Rosa
SMPs: FL121
Percent Extension Time: 1
Extension Activities

The Gulf Coast Horticultural Expo is held in late January of each year in Mobile, Alabama. This event includes many educational seminars, and is considered to be one of the best "small" trade shows in the country. Nurseries from all over the Southeast,

Multi-State Partners:

Organization	State
Master Gardener Association	Alabama



Title: Emerald Coast Flower and Garden Festival
Extension Personnel: Mullins, Daniel
Department: Santa Rosa
SMPs: FL114
Percent Extension Time: 1
Extension Activities

Provided a 4 hour gardening clinic and provided Master Gardener volunteers to perform other duties and prepare exhibits.

Multi-State Partners:

Organization	State
Extension Service	Alabama, Georgia
Minnesota Cooperative Extension	Minnesota



Title: Fit Families
Extension Personnel: Munn, Jessica
Department: Leon
SMPs: FL511
Percent Extension Time: 1
Extension Activities

Fit for the Future newsletters

Multi-State Partners:

Organization	State
University of Florida Extension	Florida
University of Georgia Extension	Georgia



Title: Manure Phosphorus Management for the Suwannee River Basin: A Model for Highly Leachable Soils
Extension Personnel: Mylavarapu, Rao
Department: Soil and Water Science
SMPs: FL101
Percent Extension Time: 10

Extension Activities

A Master's student is recruited to formulate extension component for the field project involving both Florida and Georgia. Field sites have been selected and samples are being collected. It is intended that a demonstration be made to IFAS state and county

Multi-State Partners:

Organization	State
USDA	Georgia



Title: Southern Region Pest Management Center
Extension Personnel: Nesheim, Olaf
Department: Food Science and Human Nutrition
SMPs: FL101
Percent Extension Time: 66
Extension Activities

I serve as a Co-director of the USDA-CSREES Southern Region Pest Management Center. The Center is a three year competitive grant award to UF-IFAS. The Center links with other states in the Southern Region by state pest management information programs tha

Multi-State Partners:

Organization	State
Auburn University	Alabama
Clemson University	South Carolina
Lousiana State Univeristy	Lousiana
Mississippi State University	Mississippi
North Carolina State University	North Carolina
Oklahoma State University	Oklahoma
Texas A & M University	Texas
Univeristy of Puerto Rico	Puerto Rico
University of Arkansas	Arkansas
University of Georgia	Georgia
University of Kentucky	Kentucky
University of Tennessee	Tennessee
Virginia Tech University	Virginia



Title: School and Daycare IPM
Extension Personnel: Oi, Faith
Department: Entomology and Nematology
SMPs: FL122

Percent Extension Time: 10
Extension Activities

Promotion and maintenance of IPM in School and Daycares with the goal of reducing unnecessary pesticide exposure while controlling pests.

Multi-State Partners:

Organization	State
Alabama Dept. of Ag	Alabama
University of Georgia, Entomology	Georgia
University of Georgia, Housing and Consumer Economics	Georgia
University of Tennessee, Entomology	Tennessee
University of Tennessee, Health and Safety	Tennessee
University of Tennessee, Human Ecology	Tennessee
University of Tennessee, Social Work	Tennessee



Title: Areawide Fireant Management
Extension Personnel: Oi, Faith
Department: Entomology and Nematology
SMPs: FL122
Percent Extension Time: 2
Extension Activities

Website development; integration of presentation with School and Daycare IPM workshops.

Multi-State Partners:

Organization	State
Clemson University	South Carolina
Oklahoma State University	Oklahoma
Texas A&M University	Texas
University of Florida	Florida
USDA-ARS CMAVE	Florida



Title: Biologically-Based sustainable vegetable production System without Use of Methyl Bromide
Extension Personnel: Olczyk, Teresa
Department: Miami-Dade
SMPs: FL107

Percent Extension Time: 2

Extension Activities

The agent will interact with growers, conduct field days and write & distribute extension publications based on the results.

Multi-State Partners:

Organization	State
ARS USDA	MD
VPI, Blackburg, VA	VA

Title: Reduced-Risk Tactics for Thrips and Tospovirus on Solanaceous Crops

Extension Personnel: Olson, Stephen

Department: North Florida REC-Quincy

SMPs: FL107

Percent Extension Time: 10

Extension Activities

This project examines the environmental and economical benefits of newly developed reduced-risk tactics for managing thrips and tospoviruses on tomato, pepper and other solanaceous crops. Activities include replicated field experiments, on-farm demonstrat

Multi-State Partners:

Organization	State
Clemson University	South Carolina
Clemson UniversitySterling Southern	South Carolina
LSU	Louisiana
NCSU	North Carolina
UGA	Georgia

Title: Pest Management

Extension Personnel: Osborne, Lance

Department: Central Florida REC-Apopka

SMPs: FL105

Percent Extension Time: 5

Extension Activities

Conduct Scout training programs in conjunction with Georgia and Florida Reserarch and Extension. Conduct Trainging programs on new and important pests.

Multi-State Partners:

Organization	State
Univeristy of Florida	Florida
University of Georgia	Gerogia



Title: A Tristate Consortium to Address Produce Safety
Extension Personnel: Parish, Mickey
Department: Citrus REC-Lake Alfred
SMPs: FL108
Percent Extension Time: 10
Extension Activities

Met with representatives of other universities. Participated in workshops related to Good Agricultural Practices.

Multi-State Partners:

Organization	State
TAMU	Texas
Texas A&M	Texas
UC, Davis	California



Title: Fresh Produce Food Safety Training Program for the Southeast
Extension Personnel: Ritenour, Mark
Department: Indian River REC-Ft. Pierce
SMPs: FL107
Percent Extension Time: 10
Extension Activities

Jeff Brecht, Steve Sargent and myself (the Florida contingent of this regional grant) prepared materials and conducted several workshops for the horticultural industries. Also presented at a training workshop in Atlanta, Georgia. Three publications were c

Multi-State Partners:

Organization	State
Louisiana State University	Louisiana
Mississippi State University	Mississippi
North Carolina	North Carolina State
Oklahoma State University	Oklahoma
South Carolina	Clemson University
Texas A & M	Texas
University of Arkansas	Arkansas
University of Florida	Florida
University of Georgia	Georgia
University of Kentucky	Kentucky

University of Tennessee
Virginia Tech

Tennessee
Virginia

Title: Southern Region Advisory Council Task Force
Extension Personnel: Rudd, Rick
Department: Agricultural Education and Communication
SMPs: FL801
Percent Extension Time: 5
Extension Activities

The task force representing the southern region of the United States prepared a training for interested Extension faculty. The training will be delivered in March of 2001.

Multi-State Partners:

Organization	State
Extension	Louisiana

Title: Horticulture Website for North Florida/South Georgia
Extension Personnel: Rudisill, Ken
Department: Bay
SMPs: FL114
Percent Extension Time: 10
Extension Activities

Horticulture Website for North Florida / South Georgia Activities: Horticulture agents from northwest Florida and southwest Georgia are teaming up to provide the public with a website of horticultural information for the two-state area. In the near future

Multi-State Partners:

Organization	State
UF Extension	Florida
UG Extension	Georgia

Title: Mosquito Identification and Certification Workshop
Extension Personnel: Rutledge, Cynthia
Department: Florida Medical Entomology Lab. - Vero Beach
SMPs: NONE
Percent Extension Time: 3
Extension Activities

2 week training course. Students were taught how to collect, preserve and identify mosquitoes. Field work in identifying mosquito habitats. Lectures on mosquito-borne diseases. Comprehensive final exam given; passing students received Florida Department

Multi-State Partners:

Organization	State
Glynn County Mosquito Control	GA
Johns Hopkins School of Public Health	MD
MA Dept. of Health	MA
NY State Dept. of Health	NY
PA Dept. of Health	PA
Savannah Mosquito Control District	GA

+

Title: Development of Training Materials and Programs for Safe Florida Produce
Extension Personnel: Sargent, Steven
Department: Horticultural Sciences
SMPs: FL107
Percent Extension Time: 20
Extension Activities

Southeastern U.S. Regional Training Grant in Food Safety
Obtaining this multi-state grant has resulted in the development of training materials for handlers of horticultural crops, and training of county faculty, statewide faculty and industry. (with J. Br

Multi-State Partners:

Organization	State
NCSU	North Carolina
UF/IFAS	Florida
UGA	Georiga

+

Title: Improving the safety of fruits and vegetables: a tristate consortium
Extension Personnel: Schmidt, Ronald
Department: Food Science and Human Nutrition
SMPs: FL109
Percent Extension Time: 1
Extension Activities

Collaborator on nation-wide team for training of produce farmers in good agricultural practices (GAPs).
Developing state-wide "train the trainer" team with trade associations, cooperative extension, and others.
To conduct training at sites throughout Fl

Multi-State Partners:

Organization	State
Colorado State Univ.	Colorado
Cornell University	New York

Kansas State Univ.	Kansas
Texas A & M Univ.	Texas
Texas A& M University	Texas
Texas A&M University	Texas
Univ. of Arizona	Arizona
Univ. of California	California
Univ. of Florida	Florida
Univ. of Georgia	Georgia
Univ. of Hawaii	Hawaii
Univ. of Missouri	Missouri
University of California	California
University of Florida	Florida
Virginia Tech. Univ.	Virginia
Washington State Univ.	Washington



Title: Consumer Food Safety and Food Irradiation Education Program
Extension Personnel: Schmidt, Ronald
Department: Food Science and Human Nutrition
SMPs: FL109
Percent Extension Time: 3
Extension Activities

Collaborator on nation wide team for assessing knowledge and developing consumer training on food irradiation. Targeting health professionals and public health officials. Developing and presenting science based information in train the trainer format.

Multi-State Partners:

Organization	State
Fight BAC	
Florida Dept. of Health	Florida
Kansas State Univ.	Kansas
Minnesota Dept. of Health	Minnesota
Penn State Univ.	Pennsylvania
Purdue Univ.	Indiana
Texas A & M Univ.	Texas
Univ. of Arkansas	Arkansas
Univ. of California	California
Univ. of Florida	Florida

procedures. To date, Phase I data collection has been

Multi-State Partners:

Organization	State
Texas A&M	TX
UC Davis	CA

+

Title: Stream and Lake Ecology & Management Workshops
Extension Personnel: Sheftall, Jr., William
Department: Leon
SMPs: FL114
Percent Extension Time: 3
Extension Activities

The agent planned, coordinated and facilitated a series of 2 all-day, multi-state field workshops for GA and FL Master Tree Farmers, Forest Stewardship landowners, Florida LakeWatch volunteers and Florida Master Wildlife Conservationists interested and/or

Multi-State Partners:

Organization	State
Sinkola Farms/Thomas Co	GA
Thomasville Community Resource Center	GA
University of Georgia Extension/Decatur Co	GA
University of Georgia Extension/Mitchell Co	GA
University of Georgia Extension/Thomas Co	GA

+

Title: Field Training Class for Master Tree Farmer Graduates
Extension Personnel: Sheftall, Jr., William
Department: Leon
SMPs: FL416
Percent Extension Time: 2
Extension Activities

At the conclusion of the 2002 Master Tree Farmer II live telecast course, the agent planned, coordinated, facilitated and helped teach an 8-hour field class on private property in Gadsden County, FL managed by Southern Forestry Consultants, that illustrat

Multi-State Partners:

Organization	State
Auburn Extension/DED	AL

Auburn Extension/Houston Co.	AL
Auburn Extension/Montgomery Co.	AL
Southern Forestry Consultants/Bainbridge	GA
UGA Extension/Brooks Co.	GA
UGA Extension/Decatur Co.	GA
University of Ga Extension/Thomas Co	GA



Title: NACAA/RISE Horticulture & Turfgrass Study Tour
Extension Personnel: Shelby, Mark
Department: Sarasota
SMPs: FL114
Percent Extension Time: 2
Extension Activities

Assisted in planning and implementing the NACAA/RISE Horticulture & Turfgrass Study Tour for 20 Extension Agents from across the United States. This Agent organized and conducted the portion of their visit in Florida where they visited the Florida House

Multi-State Partners:

Organization	State
Clemson Univ. Extension	South Carolina
RISE	North Carolina
Univ. of Florida Extension	Florida
Univ. of Georgia Extension	Georgia



Title: Enhancing Seed Availability for the Clam Aquaculture Industry Through Application of Remote Setting Techniques
Extension Personnel: Sturmer, Leslie
Department: Levy
SMPs: FL132
Percent Extension Time: 10
Extension Activities

This program was a collaborative effort among researchers at the Office of Sea Grant Development at Louisiana State University and faculty with the UF Food and Resource Economics Department and Cooperative Extension Service. A letter of memorandum writte

Multi-State Partners:

Organization	State
Louisiana State University	Louisiana

Title: Diversification for the Hard Clam Aquaculture Industry through Investigation of Ark Clam Culture and Marketability
Extension Personnel: Sturmer, Leslie
Department: Levy
SMPs: FL132
Percent Extension Time: 2

Extension Activities

A partnership among the clam farming community, UF, and UG has been developed to focus and leverage available resources to enable development of alternative molluscan shellfish species for aquaculture. Researchers at the UG Shellfish Aquaculture Lab are

Multi-State Partners:

Organization	State
University of Georgia, Shellfish Aquaculture Laboratory	Georgia

Title: Development and Implementation of Cultured Clam Crop Assistance Programs
Extension Personnel: Sturmer, Leslie
Department: Levy
SMPs: FL132
Percent Extension Time: 3

Extension Activities

Continued to work closely with aquaculture extension agents and Sea Grant marine agents in those states where the pilot crop insurance program was being evaluated by the USDA Risk Management Agency (RMA). Those states included South Carolina, Virginia, a

Multi-State Partners:

Organization	State
Clemson University/Sea Grant	South Carolina
Southeastern Massachusetts Aquaculture Center/Sea Grant	Massachusetts
USDA Risk Management Agency/ Research and Evaluation Division	Missouri
USDA Risk Management Agency/ Southeastern Regional Services Office	Georgia
Virginia Institute of Marine Sciences/Sea Grant	Virginia

Title: Regional Sea Grant Marine Agents Derelict Trap Meeting

Extension Personnel: Sweat, Donald
Department: Pasco
SMPs: FL312
Percent Extension Time: 1

Extension Activities

Program planning.

Multi-State Partners:

Organization	State
Alabama Sea Grant	Alabama
Florida Sea Grant	Florida
Louisiana Sea Grant	Louisiana
Mississippi Sea Grant	Mississippi
Texas Sea Grant	Texas



Title: Georgia Tech Training and Outreach Program
Extension Personnel: Swisher, Marilyn
Department: Family Youth and Community Science
SMPs: FL101
Percent Extension Time: 2
Extension Activities

I collaborated with Griffin Tech, a college in Griffin, Georgia, to provide in-service training for leaders from non- profit community based organizations and state and local agencies. This is the third year that I have performed this activity for Griffin

Multi-State Partners:

Organization	State
Appropriate Technology Transfer for Rural Areas	Arkansas
Griffin Tech	Georgia
Kentucky State University	KY
National Center for Appropriate Technology	Arkansas/Montana
Organic Materials Review Institute	California
University of the Virgin Islands	US Virgin Islands
USDA	Washington, D.C.



Title: Tobacco Farmers Partnering Program
Extension Personnel: Thomas, William
Department: Columbia

SMPs: FL101
Percent Extension Time: 2
Extension Activities

Extension Representative on educational Tobacco Quality Assurance Committee for Florida and Georgia tobacco growers.

Multi-State Partners:

Organization	State
Phillip Morris, USA	Virginia
University of Florida	Florida
University of Georgia	Georgia

+

Title: Renewing Our Vision for Children
Extension Personnel: Thompson, Terri
Department: Baker
SMPs: FL515
Percent Extension Time: 40
Extension Activities

Coordinated and Planned 1 day Child care Conference along with two agents from Florida and one agent from Georgia

Multi-State Partners:

Organization	State
University of Georgia	Georgia
University of Georgia Cooperative Extension	Georgia

+

Title: FL-GA FCS Program Development
Extension Personnel: Toelle, Stephanie
Department: Duval
SMPs: FL515
Percent Extension Time: 5
Extension Activities

Agent Toelle initiated contact with FCS agent in Glynn County, GA to discuss multistate program development. Toelle also surveyed agents in bordering FL counties. Agents Thompson in Baker County, McAlpine in Nassau County, Britton and Dorschel in Duval

Multi-State Partners:

Organization	State
Baker County Extension	Florida
Glynn, Camben, and Brantley Counties Extension	Georgia



Title: Elder Financial Abuse
Extension Personnel: Turner, Josephine
Department: Family Youth and Community Science
SMPs: NONE
Percent Extension Time: 25
Extension Activities

Multi-state activities spun off from the conference held in Montgomery, October 2001. (I served on the planning committee for the Multi state conference. Representatives from 6 States: Alabama, Georgia, Florida, Mississippi, Tennessee and South Carolin

Multi-State Partners:

Organization	State
Cooperative Extension	Mississippi
USDA/CSREES	Washington, DC



Title: Master Tree Farmer 2002
Extension Personnel: Tyree, Allen
Department: Hamilton
SMPs: NONE
Percent Extension Time: 3
Extension Activities

Seven 3-hour satelite broadcasts on Master Tree Farming every Tuesday night from Clemson University to February through March 2002 at 12 sites in Florida. Tyree was the agent in Hamilton County that assisted with classes presented at the Hamilton County

Multi-State Partners:

Organization	State
southeastern land-grant universities	~10 southern states



Title: Gulf Coast Turfgrass Expo and Field Day
Extension Personnel: Unruh, Joseph
Department: West Florida REC-Jay
SMPs: FL114
Percent Extension Time: 5
Extension Activities

The Gulf Coast region (Florida panhandle, southern Mississippi, Alabama, and Georgia) is unique; unlike any other region in the United States. Because of this uniqueness, special needs for growing turfgrass exist. A major function of the Turfgrass Program

Multi-State Partners:

Organization	State
Auburn Univ.	Alabama
UF/IFAS	Florida
Univ. of Georgia	Georgia
USDA-ARS - Tifton, GA	Geogia



Title: Southern Extension Marketing Committee
Extension Personnel: VanSickle, John
Department: Food and Resource Economics
SMPs: FL101
Percent Extension Time: 25
Extension Activities

The SEMC meets once annually to discuss programs that can be shared within the region. The SEMC also plans the Southern Outlook Conference. I developed a presentation for the group on Risk Management and the use of Futures Markets. These efforts resulted

Multi-State Partners:

Organization	State
Auburn University	Alabama
Clemson University	South Carolina
Mississippi State University	Mississippi
Texas A&M University	Texas
University of Georgia	Georgia
University of Kentucky	Kentucky
Virginia Tech	Virginia



Title: Strengthening Extension Advisory Leadership
Extension Personnel: Vavrina, Charles
Department: Southwest Florida REC-Immokalee
SMPs: FL101
Percent Extension Time: 5
Extension Activities

ASRED - Strengthening Extension Advisory Leadership (SEAL) Committee Developed and began pilot testing an advisory committee module on Parliamentary Procedure through Ag. Ed, 4-H and FCS to include on-line evaluation. Information on SEAL and the module i

Multi-State Partners:

Organization	State
Clemson	SC

MSU	MS
NCSU	NC
UK	KY
Va. Tech	VA



Title: Alabama/Florida Alternative Farm Opportunities
Extension Personnel: Ward, Bruce
Department: Walton
SMPs: FL101
Percent Extension Time: 3
Extension Activities

Alternative Farm Opportunities was a program designed for clientele looking for alternatives to traditional agriculture. Discussion was held on Financing Alternative Agriculture, Lending Programs for Small Farms, Beekeeping, Hunting and Fishing Opportuni

Multi-State Partners:

Organization	State
Cooperative Extension	Alabama



Title: Dairy Records Management System
Extension Personnel: Webb, Daniel
Department: Animal Sciences
SMPs: FL128
Percent Extension Time: 5
Extension Activities

Annual meeting in October Board meetings in October and March Spring Workshop for all DHIA workers in 22- states participation Workshops for dairy farm consultants (veterinarians and nutritionists) Meetings of specific work groups/committees Pocket Dairy CTAP D

Multi-State Partners:

Organization	State
Alabama DHIA	AL
ISu	IA
Kan SU	KS
Louisiana State Univ	LA
LSU	LA
Miss State U	MS
Miss State Univ	MS
NCSU	NC

OSU	OK
SE DHIA	FL & GA
SE DHIA	FL
TA&M	Tx
Tenn DHIA	TN
U G	GA
U Ky	KY
U Mo	MO
UF	FL
UI	IL
Univ Ga	GA
V Tech	VA



Title: Southeast Dairy Management Conference
Extension Personnel: Webb, Daniel
Department: Animal Sciences
SMPs: NONE
Percent Extension Time: 4
Extension Activities

An annual conference for dairy producers, managers and employees is held in Macon Ga. This conference provides latest information on management techniques for dairy farm workers as well as consulting advisors. A proceedings is published.

Multi-State Partners:

Organization	State
Auburn U	AL
U G	GA
UF	FL



Title: Extension, The Addictive Organization: Organizational Approaches to Balancing Work & Family Issues
Extension Personnel: Williams, Mary
Department: Nassau
SMPs: FL513
Percent Extension Time: 2
Extension Activities

90 minute seminar presentation on organizational approaches to balancing work and family issues at NAE4-HA. Williams wrote & submitted abstract for peer review, was key coordinator and convener of panel, facilitated background and closing discussions.

Multi-State Partners:

Organization	State
University of Florida	Florida
University of Nebraska	Nebraska



Title: Effects of Growth Regulators of Growth and development of Blueberry
Extension Personnel: Williamson, Jeffrey
Department: Horticultural Sciences
SMPs: FL107
Percent Extension Time: 10
Extension Activities

Description of Activity: Testing growth regulators (i.e., gibberellic acid, cytokinins, hydrogen cyanamide and ethephon) on blueberry growth and development. This work is done cooperatively by researchers and extension specialists at the Universities of F

Multi-State Partners:

Organization	State
University of Georgia	Georgia



Title: Ag in the Classroom - Where's the Beef
Extension Personnel: Wilson, Suzanne
Department: Holmes
SMPs: FL701
Percent Extension Time: 2
Extension Activities

Introduce Alabama youth to the beef industry with hands-on activities, classroom activities, field trips and volunteer education.

Multi-State Partners:

Organization	State
Alabama Extension Service - Geneva County	Alabama



Title: Sustainable agronomic crop production
Extension Personnel: Wright, David
Department: North Florida REC-Quincy
SMPs: FL101
Percent Extension Time: 10
Extension Activities

We have partnered with both Auburn University and University of Georgia to offer inservice training to

agents. We feel that we can offer more and varied information by involving more specialists. We have the multi-state project with livestock/row crops

Multi-State Partners:

Organization	State
Auburn Univ.	Alabama
Univ. Georgia	Georgia
Univ. of Georgia	Georgia
USDA/ARS	Georgia



Title: Best Management Practices for producing container-grown plants
Extension Personnel: Yeager, Thomas
Department: Environmental Horticulture
SMPs: NONE
Percent Extension Time: 5

Extension Activities

Adoption of BMPs by container nursery operators so that plant production results in minimal impact on the natural environment

Multi-State Partners:

Organization	State
Auburn University	Alabama
North Carolina St. Univ.	North Carolina
University of Maryland	Maryland
USDA	Tennessee
Virginia Polytechnic Institute and State University	Virginia

X ~ INTEGRATED EXTENSION PROGRAMS

U.S. Department of Agriculture
 Cooperative State Research, Education, and Extension Service
 Supplement to the 5-Year Plan of Work
 Multistate Extension Activities and Integrated Activities
 (Attach Brief Summaries)

Institution University of Florida
 State Florida

Check one: Multistate Extension Activities
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Title of Planned Program/Activity	Estimated Costs				
	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
<u>See attached</u>	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Total	_____	_____	_____	_____	_____

Clinton T. Waddell Feb 28, 2003
 Director Date

Form CSREES-PLAN (2/00)

U.S. Department of Agriculture
 Cooperative State Research, Education and Extension Service
 Integrated Extension Activities

Faculty Name: Adjei, Martin
Department: Range Cattle REC-Ona
Extension Research: 70
 30
Extension Program Number: RCREC-MBA-01
Extension Program Title: Florida State Mole Cricket Task Force
Research Project: Mole Cricket Project
% Extension Time Expended: 25
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Area-wide testing of beneficial nematodes for mole cricket control in Florida pastures and sod farms. Nematodes were applied in strips on 16 different ranches in 2001 and 6 sites in 2002. Pitfall traps were installed on sites treated in 2001 to monitor spread of nematodes in mole cricket population and evaluate pasture grass recovery. Monitoring will continue in 2003. Sound traps will be used to determine rate of infection in trapped mole crickets on sites treated in 2002. A technician and a part-time field aide are provided transportation to conduct all field related activities of this project. Data from all studies are

entered in electronic files, analyzed and published by M.B. Adjei

Total Smith-Lever Funds Expended by Adjei, Martin \$0

Faculty Name: Balerdi, Carlos
Department: Miami-Dade
Extension 100
Research 0

Extension Program Number: CMP2
Extension Program Title: Urea and Boron Foliar Sprays on Avocados
Research Project: PROJECT
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:
Test effect on yield.

Extension Program Number: CMP2
Extension Program Title: Nitrogen and Iron Nutrition of Carambolas
Research Project: PROJECT
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:
Evaluate correction of deficiencies and effect on canopy.

Extension Program Number: CMP2
Extension Program Title: IR-4 New Pesticide Evaluations
Research Project: PROJECT
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:
Help find cooperators needed for pesticide registration tests.

Total Smith-Lever Funds Expended by Balerdi, Carlos \$0

Faculty Name: Blount, Ann
Department: North Florida REC-Marianna
Extension 30
Research 70

Extension Program Number: NFFP-E101
Extension Program Title: Multi-state in-service training on southeastern forages
Research Project: QUN 03854
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$157

Extension Integrated Activites:
Multi-state in-service training, alternating between Auburn, University of Georgia and University of Florida as annual meeting locations. It is designed to train tri-state county faculty on current topics in forage research and extension pertinent to the southern Coastal Plain Region.

Total Smith-Lever Funds Expended by Blount, Ann \$157

Faculty Name: Bobroff, Linda
Department: Family Youth and Community Science
Extension 100
Research 0

Extension Program Number: FYCS LBB 1
Extension Program Title: Evaluation of Diabetes Education Program
Research Project: Diabetes Project
% Extension Time Expended: 15
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:
 Evaluation of an Extension-based, collaborative diabetes education program study in four counties in Florida.

Total Smith-Lever Funds Expended by Bobroff, Linda \$0

Faculty Name: Bowman, Linda
Department: Santa Rosa
Extension 100
Research -1

Extension Program Number: 8
Extension Program Title: Butter Bean Pilot Project
Research Project: PROJECT
% Extension Time Expended: 100
Smith-Lever Funds Expended: \$11,299

Extension Integrated Activites:
 Butter Bean Pilot ProjectThe butter bean pilot project was a cooperative venture between TEAM Santa Rosa agribusiness committee, West Florida Research and Education Center and the Santa Rosa Extension Service. The project was developed to see if butter beans could be grown, harvested, processed and marketed to local restaurants as a potential alternative crop for local farmers. The beans were grown at the research farm. A local farmer harvested and shelled 1000 pounds of beans. Volunteers from TEAM Santa Rosa, WFREC and Santa Rosa Extension Service processed and marketed the beans. A local food company flash froze the product. The beans were sold to local restaurants. A survey was conducted by the committee to see if restaurant owners were satisfied with the quality and price of the beans. The FCS agent responsibility was to provide technical advice on safe method for blanching beans and to assist with processing and marketing.

Total Smith-Lever Funds Expended by Bowman, Linda \$11,299

Faculty Name: Brecht, Jeffrey
Department: Horticultural Sciences
Extension 30
Research 60

Extension Program Number: FL109
Extension Program Title: S-294 Multi-State Project, Postharvest Quality and Safety in Fresh- cut Vegetables and Fruits

Research Project: HOS03846
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$2,163

Extension Integrated Activities:
Extend research information on fresh-cut vegetables and fruit

Total Smith-Lever Funds Expended by Brecht, Jeffrey \$2,163

Faculty Name: Cabrera, Brian
Department: Ft. Lauderdale-REC
Extension 70
Research 25

Extension Program Number:
Extension Program Title: Household and Structural Insect Multimedia Database
Research Project: PROJECT
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
Insect specimens and damage items are being collected, identified, catalogued, and photographed.

Total Smith-Lever Funds Expended by Cabrera, Brian \$0

Faculty Name: Chung, Kuang-Ren
Department: Citrus REC-Lake Alfred
Extension 30
Research 70

Extension Program Number: PROGRAM-canker education
Extension Program Title: Development and Delivery of Canker Education to Diverse Audiences in Florida
Research Project: PROJECT-canker
% Extension Time Expended: 30
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
A functional statewide team coordinated at a central point to develop and distribute many different educational programs is proposed. These educational programs are needed to conduct canker education, to identify the groups that require the information, to identify the desired behavior of the client groups, to assess the needs for canker education among these groups, to generate the most effective means to penetrate the resistant groups, and to utilize or develop tools, products and activities to achieve these educational goals.

Total Smith-Lever Funds Expended by Chung, Kuang-Ren \$0

Faculty Name: Crane, Jonathan
Department: Tropical REC-Homestead
Extension 70
Research 20

Extension Program Number: 1) State Major Program, HOM-03517
Extension Program Title: FL111 Tropical Fruit Crop Management in Florida, Extension-Research Demonstrations
Research Project: HOM-03517
% Extension Time Expended: 25
Smith-Lever Funds Expended: \$39,773

Extension Integrated Activities:

1. Extension-research demonstration on iron timing, application methods, and rates for carambola production. 2. Extension- research demonstration on nitrogen timing, application methods and rates for carambola production. 3. Extension-research demonstration on 'Tahiti' lime rootstock evaluation in cooperation with UF-Citrus Research and Education Center and USDA-ARS, Miami. 4. Extension-research demonstration on use of various iron sources for the nutritional needs of lychee trees. Completed during 2002. 5. Research investigation on hydrology of natural and man-modified oolitic limestone. See Integrated Projects in the Research Section for more details.

Extension Program Number: 2) IR-4, Minor Use Pesticide Registration
Extension Program Title: IR-4 Minor Use Pesticide Registration Project No. 4
Research Project: IR-4 Project
% Extension Time Expended: 15
Smith-Lever Funds Expended: \$5,966

Extension Integrated Activities:

Conduct field trials for collection of residue samples to establish residue tolerances. This information is then used to petition the U.S.-E.P.A. and chemical companies to register pest control products for use on tropical fruit crops in Florida.

Total Smith-Lever Funds Expended by Crane, Jonathan \$45,739

Faculty Name: Degner, Robert
Department: Food and Resource Economics
Extension 40
Research 60

Extension Program Number: FL120
Extension Program Title: Agricultural Land Retention in Miami-Dade County
Research Project: FLA-FRE-0001A
% Extension Time Expended: 40
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

The goal of this study is to retain agriculture and rural land through the enhancement of the economic viability of commercial agriculture in Miami-Dade County. This study will collect and analyze data concerning the long-term economic outlook of the agricultural sector and the development of recommendations to enhance the sector's economic biability.

Total Smith-Lever Funds Expended by Degner, Robert \$0

Faculty Name: Funderburk, Joseph
Department: North Florida REC-Quincy
Extension 20
Research 80

Extension Program Number: QUN03903
Extension Program Title: Reduced-risk tactics for thrips and tospovirus on solanaceous crops
Research Project: QUN03903
% Extension Time Expended: 15
Smith-Lever Funds Expended: \$2,205

Extension Integrated Activities:

I am the principal investigator for a national project to implement for solanaceous crops a reduced-risk integrated pest management program for thrips and tospoviruses including biological control, cultural control, and biological insecticides. Project funded by a competitive grant from USDA CSREES and another competitive grant from a commodity group.

Total Smith-Lever Funds Expended by Funderburk, Joseph \$2,205

Faculty Name: Gilreath, James
Department: Gulf Coast REC-Bradenton
Extension 30
Research 70

Extension Program Number: FL 107
Extension Program Title: IR-4 Methyl bromide alternatives program for tomato and strawberry in Florida
Research Project: BRA 04087
% Extension Time Expended: 30
Smith-Lever Funds Expended: \$3,711

Extension Integrated Activities:

See the section for extension projects as all of the work on this project is integrated with other disciplines.

Total Smith-Lever Funds Expended by Gilreath, James \$3,711

Faculty Name: Hall, Mary
Department: Animal Sciences
Extension 60
Research 40

Extension Program Number: Dairy Nutr 1
Extension Program Title: Improving Nutritional Management of Dairy Cattle
Research Project: Dairy Nutrition 1
% Extension Time Expended: 20
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Research information developed on carbohydrate feeding and in product evaluation experiments performed in commercial herds are provided through meetings/conferences, extension publications (including newsletters), farm visits, and a website to nutritionists, dairy farmers, veterinarians and other agribusiness personnel for their application on farm.

Total Smith-Lever Funds Expended by Hall, Mary \$0

Faculty Name: Haman, Dorota
Department: Agricultural and Biological Engineering
Extension 60
Research 20

Extension Program Number: AGE-DZH4
Extension Program Title: Sustainable Food Production Through Recycling of Food and Food- Processing Waste Using Anaerobic Digestion and Fertigation.

Research Project: AGE-DZH4
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$4,077

Extension Integrated Activities:

A liquid organic fertilizer can be produced from restaurant food waste using anaerobic digestion process. This fertilizer can be used on organic farms. However, organic content of the fertilizer can contribute to plugging of microirrigation system. Due to organic nature of the farming system, there is a limited number of chemicals that can be used to prevent clogging of microirrigation emitters. A microirrigation system that allows for simultaneous testing of three different irrigation drip tapes has been designed and installed. The experiment consists of 7 treatments to evaluate clogging problems related to injection of organic fertilizer. Various clogging prevention techniques were tested in addition to control treatment (no clogging prevention). Filtration and following chemical injection tested: chlorine injection, acid injection, chlorine and acid, and ozone injection. The report was prepared in September 2002 and the results were presented at the IA conference in New

Extension Program Number: AGE-DZH3
Extension Program Title: Water Conservation in Ornamental Plant Production
Research Project: AGE-DZH3
% Extension Time Expended: 15
Smith-Lever Funds Expended: \$6,116

Extension Integrated Activities:

This research and extension program is focusing on development and evaluation of new production systems for container nurseries that have a potential for higher water use efficiencies. The objective is to develop an economical production system that would allow for ornamental container plant production with 70% or higher irrigation application efficiency.

Total Smith-Lever Funds Expended by Haman, Dorota \$10,193

Faculty Name: Hodges, Alan
Department: Food and Resource Economics
Extension 70
Research 30

Extension Program Number:
Extension Program Title: Florida's Water Resources: An Extension Education Initiative
Research Project: Drought
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Evaluated economic impacts of drought in Florida on ornamental horticulture and forestry industries.

Total Smith-Lever Funds Expended by Hodges, Alan

\$0



Faculty Name:	Hunsberger, Adrian
Department:	Miami-Dade
Extension	100
Research	-1
Extension Program Number:	CMP 42
Extension Program Title:	South Florida Insect Survey
Research Project:	Project 1
% Extension Time Expended:	5
Smith-Lever Funds Expended:	\$0

Extension Integrated Activites:

This project is to study and form collections of insects of South Florida to compare with new insect finds to be better able to determine if new pests are being introduced.

Extension Program Number:	CMP 42
Extension Program Title:	Questions & Answers on Homeowner Pest Management
Research Project:	Project 2
% Extension Time Expended:	1
Smith-Lever Funds Expended:	\$0

Extension Integrated Activites:

Questions & answers written by the agent will be posted on the UF/IPM website. For homeowner pest management.

Total Smith-Lever Funds Expended by Hunsberger, Adrian

\$0



Faculty Name:	Hutchinson, Chad
Department:	Horticultural Sciences
Extension	40
Research	60
Extension Program Number:	HOS-CMH-2
Extension Program Title:	Regional NE184 Project
Research Project:	HAS-03875
% Extension Time Expended:	5
Smith-Lever Funds Expended:	\$1,139

Extension Integrated Activites:

his project is a multi-state potato variety evaluation program in which production and quality characteristics of new clones are compared to current commercially accepted varieties. Cooperative potato variety trials provide information on the production, adaptation, and performance stability of new potato clones under a wide range of geographic, climatic, soil, and cultural conditions. Twenty-six fresh market white-skinned, red-skinned, russet-skinned, and chip potato selections were evaluated. The standard fresh market white-skinned variety, LaChipper, and red-skinned variety, Red LaSoda, for the region were not included in the trial. NY115 produced the highest total and marketable yields at was 48.4 and 43.0 MT/ha, respectively. NY115 is a round, white-skinned clone under consideration for fresh market production. Marketable yield for Atlantic, the standard chipping potato for the region, was 40.5 MT/ha. Specific gravity of Atlantic tubers was 1.076. Of the clones evaluated, B1425-9 will be evaluated further for chip production. Marketable yield and specific gravity of B1425-9 were 41.4 and 1.081,

respectively. Russet Legend and Russet Norkotah were highest producing russet-skinned selections with a marketable yield of 30.6 and 31.7 MT/ha, respectively.

Total Smith-Lever Funds Expended by Hutchinson, Chad \$1,139

Faculty Name: Lamb, Elizabeth
Department: Indian River REC-Ft. Pierce
Extension 30
Research -1

Extension Program Number:
Extension Program Title: Implementation of Best Management Practices (BMP) for Citrus and Vegetable Crops to Reduce Surface Water Runoff
Research Project: FTP03893
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 - Collection of weekly plant nutrient status and season yield data for 2 growing seasons at 2 locations-
 Analysis of results for quarterly reports-Coordination of project with producers and field managers

Extension Program Number:
Extension Program Title: Integrated Management of Foliar Diseases of Vegetables in Southern Florida
Research Project: BGL03937
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Coordinated production of crop in field trials

Extension Program Number:
Extension Program Title: Use of DiTera tomatoes for biological control of nematodes in tomatoes
Research Project:
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Coordinated field trials Assisted in collection of samples and laboratory evaluation of soil bacteria

Extension Program Number: FTP-PVC-1
Extension Program Title: Field soilless culture as an alternative to soil/MeBr for tomato and pepper

Research Project:
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Collection and analysis of sap and nutrient solution samples weekly from on-farm trial in Fort Pierce Provide producer and cooperators with results weekly Coordinate exchange of information between research personnel and producer

Extension Program Number: FTP-PVC-1
Extension Program Title: Use of kaolin as a disease control method in greenhouse

cucumbers

Research Project:
% Extension Time Expended: 2
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:
On-farm trial of kaolin for the control of downy mildew and gummy stem blight in greenhouse cucumbers

Extension Program Number: FTP-PVC-1
Extension Program Title: Compost as amendment in greenhouse pepper production
Research Project: PROJECT
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:
Two trials of the effect of varying percentages of compost on the early development of greenhouse peppers were run. In the first trial, increasing the percent of compost in the mix decreased transplant quality. The second trial was not conclusive. Further trials of using compost as an amendment in perlite-based hydroponic systems for greenhouse pepper production are planned.

Total Smith-Lever Funds Expended by Lamb, Elizabeth \$0

Faculty Name: Lamberts, Mary
Department: Miami-Dade
Extension 100
Research 0
Extension Program Number: CMP8
Extension Program Title: Incidence and variability of cucurbitviruses in Florida and Puerto Rico
Research Project: FLA-ENY-0395
% Extension Time Expended: 2
Smith-Lever Funds Expended: \$7

Extension Integrated Activites:
Collected 40 each samples from 5 different squash fields. Correlated these to digital images for 2 fields so researchers could correlate symptoms to disease expression.

Total Smith-Lever Funds Expended by Lamberts, Mary \$7

Faculty Name: Li, Yuncong
Department: Tropical REC-Homestead
Extension 30
Research 70
Extension Program Number: HOM-LI-01
Extension Program Title: Determining Application Rates and Mineralization Rates for Biosolids used for Crops Grown on Calcareous Soils
Research Project: PROJECT
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$966

Extension Integrated Activites:

Measuring mineralization rates of biosolids in the calcareous soils and sub-tropical climate of South Dade, determining appropriate application rates on agricultural crops and transferring information to growers.

Extension Program Number: HOM-LI-01
Extension Program Title: Using soil organic amendment to improve lychee production in south Florida
Research Project: PROJECT
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$966

Extension Integrated Activities:
We are determine the application rate of biosolids for lychee trees.

Total Smith-Lever Funds Expended by Li, Yuncong \$1,932



Faculty Name: Liburd, Oscar
Department: Entomology and Nematology
Extension 40
Research 50

Extension Program Number: ENY-04059
Extension Program Title: A multifaceted approach for control of blueberry pests in southeastern United States
Research Project: ENY-04059
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
The overall goal of this project is to develop a multifaceted research and extension approach for managing key pests in blueberries. Our objective is to develop and deliver effective monitoring and sampling insect pests protocols to blueberry growers in Florida and neighboring states. We would also like to investigate the potential of using parasitoids and predators for management of blueberry pests.

Extension Program Number: ENY-04025
Extension Program Title: Chemical Ecology and Management of Insect Pests of Blueberries
Research Project: ENY-04025
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
In Florida, insect pest problems have never been studied. Subsequently, very few information is available with respect to types of insect pests and insecticide usage. This project aims to develop a comprehensive database through surveying independent consultants, extension specialists and growers. After identification of some of the major problems, the project goal is to develop research and extension protocols to address these problems.

Total Smith-Lever Funds Expended by Liburd, Oscar \$0



Faculty Name: Mahan, William
Department: Franklin
Extension 100

Research -1

Extension Program Number: CMP 300
Extension Program Title: Advancing the Capacity of Post Harvest Treatments (PHT) For Processing Safe Oysters In Florida
Research Project: 2002-06137
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$284

Extension Integrated Activites:

USDA Special Research Grant (\$374,147 for three years) to research post harvest treatment options for the FL oyster industry to reduce the illness rate of *Vibrio vulnificus*. In addition to the research, Extension education programs will be conducted to educate the oyster processors in FL of the PHT options available to them.

Extension Program Number: CMP 300
Extension Program Title: CLAMMRS (Clam Lease Assessment, Management, and Modeling Using remote Sensing): Alligator Harbor Aquaculture Use Area, Franklin County
Research Project: CLAMMRS
% Extension Time Expended: 2
Smith-Lever Funds Expended: \$114

Extension Integrated Activites:

The remote sensing equipment will be used to monitor, record, and archive water quality and atmospheric data important to the management of the area for the production of shellfish. The data will be posted on a Web-page for easy access by the clam farmers. In addition, Extension education classes will teach the farmers how to use the information on the web-site.

Extension Program Number: CMP 300
Extension Program Title: Oyster Industry Issues
Research Project: *Vibrio vulnificus*
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$568

Extension Integrated Activites:

Working with Dr. Steve Otwell and Dr. Gary Rodrick to keep the oyster processors updated on current research and processing options. In addition the Franklin County Agent works with Dr. John Supan to provide technical information to the gulfwide oyster industry.

Total Smith-Lever Funds Expended by Mahan, William \$966

Faculty Name: Mannion, Catharine
Department: Tropical REC-Homestead
Extension 40
Research 60
Extension Program Number: HOM-CMM01
Extension Program Title: Integrated Crop Management of Commercial Ornamental Plants
Research Project: HOM-00001
% Extension Time Expended: 40
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:

Increase the number of commercial nurseries using IPM practices; promote selection of pesticides for use in nurseries to minimize adverse effects; and increase the number of trained pest management scouts available for nurseries in Florida.

Total Smith-Lever Funds Expended by Mannion, Catharine \$0

Faculty Name: Mayo, Douglas
Department: Jackson
Extension 100
Research -1
Extension Program Number: 301
Extension Program Title: Florida Bull Test
Research Project: Bull Test
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$611

Extension Integrated Activities:

Agent served on advisory committee, worked with specialist to promote sale, developed web site and consulted with clientele participants.

Total Smith-Lever Funds Expended by Mayo, Douglas \$611

Faculty Name: Momol, Timur
Department: North Florida REC-Quincy
Extension 60
Research 40
Extension Program Number: NFREC-DDIS
Extension Program Title: Digital Image Database for IPM
Research Project: DID for IPM
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$647

Extension Integrated Activities:

The proposed project will extend an existing pest diagnostic data currently being collected and improve DDIS.

Total Smith-Lever Funds Expended by Momol, Timur \$647

Faculty Name: Monroe, Martha
Department: Forest Resources and Conservation
Extension 70
Research 0
Extension Program Number: FOR-FireM1
Extension Program Title: Wildland Fire Education Toolkit
Research Project: PROJECT
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$946

Extension Integrated Activities:

Assess audience perspectives, develop kit of resource materials, conduct training, support agents in use of materials with public programs, and evaluate outcomes. Evaluate agent use of materials.

Total Smith-Lever Funds Expended by Monroe, Martha \$946

Faculty Name: Munoz-Carpena, Rafael
Department: Tropical REC-Homestead
Extension 60
Research 40
Extension Program Number: RMC-E-2 Water Conservation in So. Dade
Extension Program Title: Water Conservation in So. Dade - Soil moisture devices
Research Project: HOM-00001: Water
% Extension Time Expended: 50
Smith-Lever Funds Expended: \$9,482

Extension Integrated Activities:

- Water conservation survey to a large group of growers (500) across all 4 commodity groups present in So. Miami-Dade. Average 35% response (as high as 40% in two groups).- Workshop "Innovations in irrigation". Extension Office-Homestead, January 17, 2002 Lecture and one-to-one. - Workshop "Vegetable Research Update", February 15, 2002, Extension Office- Homestead, Lecture and one-to-one.- "So. Florida Drip Irrigation school". Extension Office-Homestead, August 22, 2002, Lecture and field demonstration - Meeting Extension w/J.Crane and T. Olczyk, Extension Office-Homestead. September 26, 2002. - USDA-ARS and USACE meeting: So. Dade Restoration Projects and Agriculture, USDA-ARS Miami, October 8, 2002. Lecture, 35 participants - Workshop "Improving irrigation management for Tropical Fruit Groves". TREC- Homestead. October 17, 2002, Lectures (2) and field demonstration. 25 participants- USDA-NRCS EQIP Meeting, Extension Office-Homestead, Dec 10, 2002, Lecture, 29 participants

Extension Program Number: RMC-E-1 Hydrology and Water Quality in So. Miami Agricultural region
Extension Program Title: Hydrology and Water Quality in So. Miami-Dade Agricultural
Research Project: HOM-00001:
% Extension Time Expended: 40
Smith-Lever Funds Expended: \$7,585

Extension Integrated Activities:

- "BMP project meeting SFWMD/USDA-ARS/ UF TREC", TREC-Homestead, March 5, 2002, Lecture, 18 participants- "SDSWCD Frog Pond farmers meeting", Homestead, April 4, 2002, Lecture and one-to-one, SDSWCD-Homestead, 9 participants.- "UF Agricultural Leadership Group meeting on Hydrology in the Agricultural region around ENP", TREC- Homestead, May 24, 2002, Lecture, 40 participants- "South Florida hydrology review and recent research and extension efforts in So. Miami-Dade Co", Extension Office-Homestead, August 6, 2002. Lecture, 28 participants- "USDA-ARS and USACE meeting: So. Dade Restoration Projects and Agriculture", USDA-ARS Miami, October 8, 2002. Lecture, 35 participants - "USDA-NRCS EQIP Meeting", Extension Office-Homestead, Dec 10, 2002, Lecture, 29 participants

Total Smith-Lever Funds Expended by Munoz-Carpena, \$17,067

Faculty Name: Nesheim, Olaf
Department: Food Science and Human Nutrition

Extension 100
Research -1
Extension Program Number: FL 123
Extension Program Title: Southern Region Pest Management Center
Research Project: PROJECT
% Extension Time Expended: 60
Smith-Lever Funds Expended: \$47,602

Extension Integrated Activites:

The Southern Region Pest Management Center is funded by the CSREES Integrated Research, Education, and Extension Competitive Grants Program for Pest Management. According to the RFP for the grant that funded the Center, the Center administers a regional competitive grants program to establish and maintain a regionally based pest management information and communication network among the states and territories in the Southern Region. The information network is to collect, synthesize, and disseminate information on pest management practices; coordinate crop profile development and develop pest management strategic plans for important commodities in the region; and coordinate science reviews of documents related to crop production, pest management, regulatory, health and environmental risk issues. The project leaders for the subcontracts in each of the states have primarily extension appointments, however, due to the nature of the projects they administer, they must work with both experiment station and extension faculty to accomplish the objectives.

Total Smith-Lever Funds Expended by Nesheim, Olaf \$47,602

Faculty Name: Norcini, Jeffrey
Department: North Florida REC-Quincy
Extension 30
Research 70
Extension Program Number: WF/G MON-JGN
Extension Program Title: Introduction and Evaluation of Native Wildflowers and Grasses
Research Project: MON-03609
% Extension Time Expended: 15
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:

FDOT Project; SMPs: 121, 420, 421 Demonstrations Wildflower demonstrations statewide (interstates) and locally (NFREC- Qcy demo site) Publications EDIS Norcini, J.G. 2002. Coreopsis: A guide to identifying and enjoying Florida's state wildflower. Fla. Agric. Expt. Sta. Publ. ENH 867. (EP121) Norcini, J.G. 2002. Seed production of Leavenworth's coreopsis. Fla. Agric. Expt. Sta. Publ. ENH868. (EP122) Trade Norcini, J.G., J.H. Aldrich, and F. G. Martin. 2002. How seed source affects performance of selected wildflowers. American Nurseryman 195(6):51 (March 15). NFREC E-Newsletter Articles -

Extension Program Number: WF/G MON-JGN
Extension Program Title: Introduction and Evaluation of Native Wildflowers and Grasses
Research Project: MON-03609
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:

Native Wildflower Seed Production: An Alternative Commodity for Tobacco Growers; SMPs: 121, 420, 4211. Role: PI

(and all the administrative/leadership duties associated with that role)². Two tobacco growers received greenhouses - transplants for this project were or will be produced; encouraged to use for any type of liner production in the future except for tobacco³. Hired / trained Project Liaison (Langdon Kirby)^a. periodically met to discuss wildflower seed production practices^b. arranged for him and Kim Lay (Fla. Dept. Agric. & Consumer Services) to travel to the midwest to two USDA Plant Materials Centers and meet with their personnel to discuss wildflower seed production practices^c. provided him with a digital camera and basic instructions (plus online training tools) on how to operate it so that he could provide "photographic" and video documentation for use in future training presentations^d. based on info that I provided plus training received at PMCs, Langdon oversaw planting of five field demo sites (transplants or direct seeded with wildflower seed drill)

Extension Program Number: WF/G MON-JGN
Extension Program Title: Introduction and Evaluation of Ornamental Plants
Research Project: MON-03609
% Extension Time Expended: 2
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Native/Nonnative Grass Evaluation/Demo Gardens - Leon County CES; WFREC-Jay; SMPs: FL114, FL420 Leon County MGs and Master Wildlife Conservationists, and Santa Rosa County MGs recorded data during the 2002 growing season. Their experience has allowed them to become better aware of the how well these species are adapted to our climate, and provided them insight into the growth and flowering of these species under north Florida conditions. The knowledge gained by the MGs and MWCs will directly benefit both County Extension programs because it will aid the MGs and MWCs in answering inquiries from nurserymen, landscapers, and consumers.

Total Smith-Lever Funds Expended by Norcini, Jeffrey \$0



Faculty Name: Oi, Faith
Department: Entomology and Nematology
Extension Research: 100
 0
Extension Program Number: PAT1-2
Extension Program Title: Areawide Fireant Management
Research Project: ENY-03845
% Extension Time Expended: 2
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Website development; integration of presentation with School and Daycare IPM workshops.

Extension Program Number: PAT1-1
Extension Program Title: School and Daycare IPM
Research Project: ENY-03845, ENY-
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Coordinated grant related objectives of School and Daycare IPM.

Total Smith-Lever Funds Expended by Oi, Faith \$0

Faculty Name: Olczyk, Teresa
Department: Miami-Dade
Extension 100
Research 0
Extension Program Number: CMP 39
Extension Program Title: Vegetable Variety Evaluation in Florida
Research Project: PROJECT
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$26

Extension Integrated Activities:

The agent conducted several field trials between 1997-2002 evaluating many snap bean and okra cultivars under the field conditions and planting season (fall-winter) in Homestead area. This 5 year integrated project will allow evaluate new vegetable varieties and advanced public and private experimental lines for their potential for commercial production in Florida. Variety evaluations will be conducted in many locations around the state.

Extension Program Number: CMP 39
Extension Program Title: Potato Varietal Improvment
Research Project: HAS-03553
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$26

Extension Integrated Activities:

Participation in the state-wide variety trials in cooperation with Dr. C. Hutchinson from UF ARC Hastings. Two field trials were planted on November 27, 2002 in the Homestead area in the commercial potato fields. Four USDA breeding lines will be compared with the standard La Rouge and La Soda varieties.

Extension Program Number: CMP 39
Extension Program Title: Potato selection for Adaptability in Subtropical Climates
Research Project: PROJECT
% Extension Time Expended: 2
Smith-Lever Funds Expended: \$11

Extension Integrated Activities:

Cooperated with Dr. O'Hair from UF TREC in evaluating potato cultivars (breeding lines from USDA and University of Maine) Activities included: planting, collecting data, harvesting, and grading of potatoes (with help from the Extension Biologist R. Regalado). Cooperated with the Ag. teacher from South Dade High and his students participating in these field

Extension Program Number: CMP 38
Extension Program Title: Sweet Corn Reduced Phosphorus Trials
Research Project: PROJECT
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$26

Extension Integrated Activities:

A large scale (3 acres) field trial was planted in the Homestead area on November 21, 2002 with cooperation from the local grower. Grower typical Phosphorus fertilizer rate will be compared with reduced phosphorus rates (50% and 0%).

Extension Program Number: CMP 38

Extension Program Title: Evaluating alternatives to Methyl Bromide
Research Project: PROJECT
% Extension Time Expended: 2
Smith-Lever Funds Expended: \$11

Extension Integrated Activities:

Cooperating with Drs. Bryan, Klassen and Li from UF TREC on several projects related to developing new tomato production systems with biological alternatives to methyl bromide.

Extension Program Number: CMP 38
Extension Program Title: Mining Gold in Florida: Feasibility of Lycopene and Novel -
Byproducts Recoveries from Cull Tomatoes
Research Project: PROJECT
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$5

Extension Integrated Activities:

Contact with growers, providing tomato fruit (green and ripe) for the study.

Extension Program Number: CMP 38
Extension Program Title: Improving postharvest quality of herbs
Research Project: PROJECT
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$5

Extension Integrated Activities:

Cooperated with Dr. S. Sargent and the local herb grower on several issues related to improving postharvest quality of fresh herbs, modifying coolers and evaluating different insulation packaging materials used in shipping to distant markets.

Extension Program Number: CMP 45
Extension Program Title: Evaluating low-cost soil moisture monitoring tools
Research Project: PROJECT
% Extension Time Expended: 2
Smith-Lever Funds Expended: \$11

Extension Integrated Activities:

Cooperating with Drs. R. Munoz-Carpena and Y. Li from UF TREC in evaluating four low cost soil-moisture monitoring devices in the lab., vegetable fields and fruit groves to determine their usefulness for scheduling irrigation for crops grown in the calcareous soils.

Extension Program Number: CMP 45
Extension Program Title: Water Conservation Survey, Miami-Dade County
Research Project: PROJECT
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$5

Extension Integrated Activities:

Four versions of survey were developed and sent to selected ornamental nurseries, golf courses, tropical fruit and vegetable growers to determine practices adopted by agricultural and commercial users to conserve and protect their supply of water. About 600 surveys were sent out and about 25-30% were returned. Results of this water conservation survey will be used in developing research projects and extension programs for these clients.

Total Smith-Lever Funds Expended by Olczyk, Teresa \$127

Faculty Name: Osborne, Lance
Department: Central Florida REC-Apopka
Extension 30
Research 45

Extension Program Number: FL-112
Extension Program Title: Biological Control of Selected Arthropod Pests and Weeds
Research Project: APO-03934
% Extension Time Expended: 75
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

We are developing extension tools that can be used by growers in many different regions. We digitized the book, "Insect and Related Pests of Flowers and Foliage Plants", by North Carolina State University (sites at <http://ifas.ufl.edu/~apkweb/ncstate/ncstate.htm> and http://ipmwww.ncsu.edu/INSECT_ID/AG136/ncstate.html). This book was produced by Hatch projects: Project Number: FLA-APO-03006, Project Title: Biological Control of Selected Arthropod Pests and Weeds Through Introduction of Natural Enemies (S-301) and Project Number: FLA-APO-02445, Project Title: Entomopathogens for Use in Pest Management Systems (S-267:it has been renewed and has a new number). We send natural enemies that we have collected and colonize to laboratories all over the United States. We sent a small beetle that eats mealybugs to the USDA laboratory in Delaware to be evaluated for the control of the Pink Hibiscus Mealybug. This mealybug is a MAJOR pest of many crops. It will even kill 100 year old trees. We have applied for 2 grants to support our efforts in developing IPM programs for pests of ornamental plants. We also conducted a multistate "Scout Training Program". Faculty for the University of Georgia and University of Florida participated.

Total Smith-Lever Funds Expended by Osborne, Lance \$0

Faculty Name: Parish, Mickey
Department: Citrus REC-Lake Alfred
Extension 10
Research 90

Extension Program Number: LAL-MEP-1
Extension Program Title: A Tristate Consortium to Address Produce Safety
Research Project: LAL/FOS04021
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Attended meetings and participated in conference calls regarding research and extension projects for this grant. Gave talks at workshops and interacted with industry representatives regarding information transfer activities.

Total Smith-Lever Funds Expended by Parish, Mickey \$0

Faculty Name: Ritenour, Mark
Department: Indian River REC-Ft. Pierce
Extension 70
Research 0

Extension Program Number: PHCV-MR-1
Extension Program Title: Fertilizer N and high temperature effects on sheepnosing in grapefruit.
Research Project: PROJECT
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$1,606

Extension Integrated Activities:

We have taken data on nitrogen effects on sheepnosing of Grapefruit and Sunburst Tangerines. Set up experiments in a grapefruit grove aiming to alter temperatures around developing fruit early in the season. There were three treatments: 1) trees covered with clear plastic, 2) trees covered with shade cloth, and 3) control (no cover). Tagged fruit at two different bloom times to follow throughout the growing season. Collected temperature and humidity data within the tree canopy and measured fruit shape throughout the season (on both the north and south sides of the tree). Ran quality evaluations at commercial harvest and harvested fruit for storage tests.

Extension Program Number: PHCV-MR-3
Extension Program Title: Non-Chemical Reduction of Postharvest Diseases
Research Project: USDA Specific
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$3,211

Extension Integrated Activities:

In 2002 conducted several studies involving time x temperature treatments investigating the effects of hot water (and in one case hot vapor) on grapefruit injury and postharvest shelf life. We have tested on late- and early-season grapefruit and have run some tests of how degreening time might alter the results.

Total Smith-Lever Funds Expended by Ritenour, Mark \$4,817

Faculty Name: Sand, Robert
Department: Animal Sciences
Extension 80
Research 20

Extension Program Number: FL 103
Extension Program Title: Effect of Single Trait Selection for Marbling on Productivity of a Cow Herd
Research Project: 03074
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$910

Extension Integrated Activities:

Examining the effects of single trait sire selection on the productivity of the cow herd in terms of the performance of the females in the herd and the steers on the rail.

Total Smith-Lever Funds Expended by Sand, Robert \$910

Faculty Name: Sargent, Steven
Department: Horticultural Sciences
Extension 70
Research 20

Extension Program Number: FL 107-Vegetables

Extension Program Title: Techniques for Maintaining Postharvest Quality of Vegetables
Research Project: FLA-HOS-03559;
% Extension Time Expended: 50
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Continued investigation was made of the cause for sporadic outbreaks of soft rot in packed tomatoes in the Quincy and Palmettos areas in the 2001 spring season. Tomatoes were sampled in the field, packing line and from packed cartons and brought to the Postharvest Horticulture Laboratory in Gainesville or at the NFREC-Quincy to document decay and have organisms identified (J. Bartz, T. Momol, M. Mahovic, S.M. Olson, P. Gilreath, A.J. Fox, collaborators). We secured a \$15,000 grant in 2000-2001 and a \$24,000 grant for 2001-2002 from the Florida Tomato Committee to support this work related to improve sanitation during tomato handling. A three-year grant from USDA-TSTAR program for \$150,000 will be used to develop postharvest information related to specialty tomatoes, including roma, cherry, grape types, beginning in

Total Smith-Lever Funds Expended by Sargent, Steven \$0

Faculty Name: Schneider, Keith
Department: Food Science and Human Nutrition
Extension 80
Research 15

Extension Program Number: FS-001-Consumer
Extension Program Title: Evaluation of Randomly Sampled Ground Beef
Research Project: FOS-2002-005
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

The goal were to sample a total of 200 ground beef samples will be sampled over the course of the 1-week survey. Sampling occurred between 11/6 to 11/9 of 2001. Analysis continued until 2/15/2002. Samples were received and coded by Company personnel. All coded samples were delivered in good (chilled) condition to the laboratory site (University of Florida, FSHN Dept., Gainesville, FL). Collection of the ground beef samples was the responsibility of Consumer's Union. The following analysis were performed: Total aerobic plate count, E. coli / coliform and Total fat content.

Extension Program Number: FS-004-Combined FL-135
Extension Program Title: Improving the Safety of Fruits and Vegetables: A Tri-state
Research Project: FLA-FOS-04021
% Extension Time Expended: 20
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Performing statewide safety of four Florida produced commodities. Ultimately this information will be used to teach farmers, processors, retailers, consumers and county agents proper produce handling procedures. To date, Phase I data collection has been completed for tomatoes in the State of Florida.

Extension Program Number: FS-003-Processing
Extension Program Title: Developing Guidance to Expedite Food Product Recalls to Mitigate or Contain a Purposeful Contamination of Commercially Distributed Food
Research Project: FSO-2002-003

% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Task 1: Collect all available training literature on food product recall procedures, collate, and extract unique features for incorporation in final manual. Task 2: Visit with FDA District Office, Maitland, FL and collect information and examples from Recall Coordinator. Task 3: Visit Office of Regulatory Affairs, FDA, Rockville, MD and collect information on multi- state recalls (examples, timelines, etc) from Federal Recall Coordinator. Task 4: Construct manual and convert to PFD format. Task 5: Design and conduct training sessions for Extension Agents in Florida, evaluate training and materials. Task 6: Post all materials on EDIS and EDEN if appropriate.

Extension Program Number: FS-003-Processing
Extension Program Title: Two novel postharvest treatments for enhancing the safety of fresh fruits and vegetables produced in Florida

Research Project: FOS-2002-006

% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Two novel postharvest treatments for enhancing the safety of fresh fruits and vegetables produced in Florida

Extension Program Number: FS-003-Processing
Extension Program Title: A Study to Determine the Efficacy of Treatments on Extending the Shelf-life of Seafood.

Research Project: FOS-2002-004

% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

The objective of this study is to examine the efficacy two treatments on extending the shelf-life of two of the five proposed matrices. The two matrices currently being proposed are cod and squid. If successful, the other matrices shrimp, tuna, catfish and salmon may also be examined. Total aerobic and lactic acid bacteria plate counts will be taken as well as a sensory evaluation for each type of seafood.

Extension Program Number: FS-003-Processing
Extension Program Title: Produce Safety and Biosecurity - A Multi-State Research, Education and Extension Initiative

Research Project: FOS-2002-002

% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Target commodities for this project will be fresh produce and fresh-cut produce. This project is multi-functional in that it will address objectives related to research, education, and Extension. Research Objectives: a. To assess current GAP plans on selected vegetable production farms in Georgia, South Carolina, and Florida and to identify points of vulnerability that do not adequately address biological and chemical security and food safety needs; b. To assess HACCP programs suitable for use in the fresh-cut industry and to identify points of vulnerability that do not adequately address biological and chemical security and food safety needs; and c. To evaluate retention of food-borne pathogens and bacterial toxins at identified points and to evaluate potential intervention methods to control or prevent problems related to biosecurity. Education Objectives: a. To develop a multi-university, college-level course linking food safety and security of foods against biological and chemical terrorism; b. To develop a distance learning

course on developing and implementing food safety procedures in any phase of the fresh produce operation; and c. To assess the impact of the course that is offered. Extension Objectives: a. To design, implement and evaluate workshops and/or short courses for fresh and fresh-cut produce management personnel that provide step-by-step guidance on developing food safety plans which incorporate food security issues; b. To develop a curriculum package for use by County Extension Agents and/or program assistants to teach field workers how to avoid both unintentional and intentional contamination as well as other safe handling procedures and to train County Extension Agents to implement and evaluate the curriculum for field workers; c. To develop curriculum components, fact sheets and assessment checklists on produce handling and safety, to supplement existing training for the foodservice industry and to develop model criteria for certification in fruit and vegetable handling; and d. To develop a computer module and fact sheet dealing with consumer handling of produce for use at health fairs, points of purchase, as well as in classroom sessions; and to train County Extension and Family and Consumer Science agents to implement and evaluate the module.

Extension Program Number: FS-003-Processing
Extension Program Title: Advancing the Capacity of Post Harvest Treatments (PHT) For Processing Safe Oysters in Florida
Research Project: FOS-2002-001
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

GOAL: To increase the options and capacity for post-harvest treatments (PHT's) that can be used to reduce health risks associated with consumption of raw oysters commercially processed in Florida. OBJECTIVES: 1. Improve methods of freezing for immediate commercial application for all shellstock and shucked oyster products that are destined for raw consumption. a. Determine the availability and applicability of freezing in current processing operations as an immediate measure of capacity consistent with federal mandates for commercial compliance by December 31, 2004. b. Validate the freezing methodology relative to cryogenic and mechanical rates, storage temperature, duration of storage and related processing conditions that reduce the detectable levels of *Vibrio vulnificus*. c. Assess product characteristics for oysters processed by the respective validated freezing methods in order to judge applications relative to product source, season, shelf-life, utilization (thawing and preparation), and potential market and consumer acceptance. d. Determine the economic costs and potential consequences for adoption of validated freezing methods. e. Develop verification procedures that can be used by processors and responsible regulatory authorities to assure individual operations can maintain the validated freezing methods. Similarly, the verifications can be used in more routine (i.e. daily or per batch) operations to evidence performance (i.e. HACCP compliance and market specifications). f. Provide the necessary technology transfer and liaison for commercial adoption, regulatory allowance and market recognition for the validated freezing of oyster products destined for raw consumption. Develop and help implement appropriate HACCP programs and pre-requisite sanitation control procedures. 2. Investigate future use of existing PHT methods, i.e. cool pasteurization and hydrostatic pressure, that are not immediately applicable for processing of Florida oysters due to cost constraints, potential patent issues, lack of validations, supply-side effects, and/or commercial logistics involving small, individual firms vs. larger or collaborative operations. a. Prepare current status reports on both cool pasteurization and hydrostatic pressure PHT methods that can be used to direct commercial, regulatory and any necessary fiscal support to adopt these methods in Florida. b. Provide commercial and regulatory liaison with firms employing, patenting, and marketing these PHT methods in order to determine potential applications in Florida either as independent operations or through collaborative regional service operations. c. Provide demonstrations of these existing PHT methods either through site visits, product evaluations, meetings with process representatives, and/or audio-visual support in order to better judge potential adoption in Florida. 3. Explore new PHT options that are not used in current oyster processing, i.e. electron beam irradiation,

high magnetic field pulse, etc.a. Conduct PHT trial applications of current electron beam irradiation to reduce *Vibrio vulnificus* in oyster products destined for raw consumption in anticipation of approved use of irradiation in processing of seafood or oysters.b. Consider trial PHT applications of high magnetic field pulses available through the existing National Magnetic Field Laboratory facilities in Tallahassee, Florida. c. Investigate PHT applications involving electric currents, intense light pulses, and other advanced methods with potential to reduce pathogenic bacteria without altering the product attributes expected for raw oyster consumption.

Extension Program Number: FS-003-Processing
Extension Program Title: Sanitation to eliminate hazardous microorganisms from tomato fruit
Research Project: FOS-1105-2001
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 This project will examine procedures to assure the quality and safety of tomatoes in the state of Florida. The results from this study will go directly to the Florida Tomato Committee which in turn hopes to implement them to provide new operating procedures throughout the state.

Extension Program Number: FS-002-Retail
Extension Program Title: Advisory For Retail Processing With Proper Controls & Variances For Product Safety
Research Project: FOS-2002-007
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 GOAL To initiate an Advisory for Retail Processing (ARP) for development of uniform retail manufacturing guidelines using HACCP principles which integrate extension, research, industry, and regulatory programs to provide guidance to industry and regulators in recognition of appropriate controls and variances that assure food safety in retail processing.OBJECTIVES1. In order to support the National Food Safety System, initiate a Advisory for Retail Processing (ARP) for high risk foods which includes national representatives from extension programs (academic advisors), federal agencies, regional state regulatory affiliates, retail industry, retail industry trade organizations, and AFDO leadership to provide information, guidance, regulatory support, and training for industry and regulatory officials who are involved in assuring retail food safety.2. Complete a qualitative and quantitative baseline research assessment of the types of manufacturing currently being performed at retail. From the compiled data, identify and prioritize product/process pairs that present the major food safety concerns.3. Develop an Advisory Compendium for Retail Processing of High Risk Foods that will provide guidance to industry and regulatory jurisdictions for uniform controls and variance for retail. Maintain the Compendium on the AFDO web site and advance notice and utility of this site.4. Provide initial advisories in the Compendium for retail processing for Specialty Meats/Poultry, Fresh Juices, Fresh-Cut Produce, Reduced Oxygen Packaging, Smoked Fish, and Sushi. Provide this information to support and encourage training through established extension programs at the state and county levels. Protocol will be developed to provide AFDO certifications for future training.

Total Smith-Lever Funds Expended by Schneider, Keith \$0

Faculty Name: Sheftall, Jr., William
Department: Leon
Extension 100

Research -1
Extension Program Number: 35
Extension Program Title: Native & Non-native Ornamental Grass Evaluation Test Garden
Research Project: MON-03609
% Extension Time Expended: 100
Smith-Lever Funds Expended: \$2,844

Extension Integrated Activites:

The agent served as Leon Extension faculty liaison with the North Florida Research and Education Center to establish a grass test garden on the Leon Extension grounds. The garden was physically prepared and fenced in consultation with REC technicians during winter 2000. The agent worked with the technicians to plan and coordinate each step of development: herbiciding, sub-soiling, irrigating, tilling, mulching with filter cloth and chipper debris, fencing, installing drip irrigation, and cutting holes for planting. The agent coordinated the recruitment of MGs and MWCs who turned out to install the 180 grass plants on January 20, 2000. The agent formed 2 grass evaluation teams composed of 2-4 extension volunteers for each of the 3 years of the trial. Interested MGs and MWCs met with Dr. Jeff Norcini and the agent to discuss various jobs, responsibilities and time commitments associated with evaluating grasses in the Native & Non-native Ornamental Grass Evaluation Test Garden. Other jobs assigned to volunteers were data entry, weed maintenance and pruning. Beginning in March 2000, 2001 and 2002, each team conducted a monthly evaluation of 3 of the 6 replicates of each of the 30 species out-planted. Evaluation included: initiation of flowering, peak of flowering, uniformity in flowering, persistence of seed head, growth of inflorescence, height of plant, basal width of plant, top width of plant, and 2-D shape of plant. Within the August

- November fall flowering season, weekly evaluation was made of the ornamental quality of the flowering/ fruiting inflorescence, between initiation of flowering and peak flowering. The agent and the Leon County Horticulture Agent David Marshall coordinated Field Days held in October 2000, 2001 and 2002 to demonstrate the Year 1, 2 & 3 performance and aesthetic qualities of the 30 species. Over the 3 field days, NFREC and county faculty have explained the project to 75 visiting nursery professionals, landscape architects and designers, DOT ROW managers, and golf course designers and superintendents..

Total Smith-Lever Funds Expended by Sheftall, Jr., William \$2,844

Faculty Name: Shukla, Sanjay
Department: Southwest Florida REC-Immokalee
Extension 60
Research 40
Extension Program Number: IMOK-WAT-1
Extension Program Title: Development and evaluation of water and nutrient management strategies for vegetables in Southwest Florida
Research Project: IMM-00001
% Extension Time Expended: 15
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:

1) Development of watermelon water use research/extension project 2) Development of irrigation scheduling research/extension project 3) Development and evaluation of irrigation and nutrient BMPs for Southwest Florida

Extension Program Number: IMOK-WAT-2
Extension Program Title: Evaluation and demonstration of cow-calf BMPs in South Florida

Research Project: IMM-00001
% Extension Time Expended: 15
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Three research/extension projects were developed and funded by UF-IFAS and several state and federal agencies. Two visits were made to visit 10 ranches in the Lake Okeechobee area to select the watersheds for monitoring. The monitoring design is expected to be completed in 2002. First report is due in October, 2002.

Extension Program Number: IMOK-WAT-3
Extension Program Title: Evaluation of agricultural reservoirs for water storage in SW Florida

Research Project: IMM-00001
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

1) Developed a research proposal for evaluating the reservoirs in the Caloosahatchi river watershed for supplemental irrigation for citrus and obtained funding (\$130,000).2) Organized a workshop on citrus grove water management.3) Pulished results of a ground water monitoring study in citrus grove in a trade magazine.4)Developed two EDIS publication on citrus irrigation and water management.

Extension Program Number: IMOK-WAT-4
Extension Program Title: Watershed Education Program for Florida

Research Project: IMM-00001
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

1) Reviewed literature on watershed hydrology and land use impacts on watersheds2) Made two presentations to South Florida extension agents3) Developed In-service training on watershed water quality in conjunction with Drs Chuck Jacoby, Mike Spranger, and William DeBusk.

Total Smith-Lever Funds Expended by Shukla, Sanjay \$0

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Faculty Name: Simonne, Amarat
Department: Family Youth and Community Science
Extension 70
Research 30

Extension Program Number: FYCS-AHS1
Extension Program Title: Enhancing food safety and quality for Floridains
Research Project: FYC-03690
% Extension Time Expended: 30
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

This research project generated research information that benefit the exetension programs.

Extension Program Number: FYCS-AHS2
Extension Program Title: Food Handler Training and Education
Research Project: FYC-03690
% Extension Time Expended: 25

Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

The main objective of these surveys is to assess current knowledge of consumers in major issues of food safety and quality. The results will be used to design or develop appropriate educational programs to address any deficiencies of knowledge or develop intervention program to improve food safety practices among consumers. From the initial survey result, it is possible to develop appropriate training. Pre-, post-test and delayed post- test data will be used to create a logic model for measuring outcomes of food safety materials or training programs. When necessary, a statistical consultant will be employed to address the statistical analyses from survey data and the logic model.

Total Smith-Lever Funds Expended by Simonne, Amarat \$0

Faculty Name: Stansly, Philip
Department: Southwest Florida REC-Immokalee
Extension 60
Research 40
Extension Program Number: 1
Extension Program Title: Integrated Management of Soil Borne Pests & Soil Fertility for a Sustainable Vegetable
Research Project: 98-EPMP-1-0343
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$2,191

Extension Integrated Activities:

Total Smith-Lever Funds Expended by Stansly, Philip \$2,191

Faculty Name: Stiles, Carol
Department: Plant Pathology
Extension -1
Research 30
Extension Program Number: Plant Disease Clinic
Extension Program Title: Diagnosis and control of Pythium diseases of turf in Florida
Research Project: Pythium
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:

Pythium spp. affect turfgrass in Florida, causing three types of diseases: Pythium blight, Pythium root rot, and Pythium damping-off. Although Pythium blight can be diagnosed by symptoms, signs, and isolation of the pathogen from aerial tissue, Pythium root rot generally has symptoms of a more general decline that may be confused with (and complicated by) nematode and insect damage. Several different species of Pythium are involved in root rot, and these have not been characterized for Florida turf situations. The activities for this project include:1) A chronological survey for Pythium isolates from two test plot sites (one in Gainesville, one in Belle Glade).2) Collection of Pythium isolates from turf samples submitted to the Plant Disease Clinic3) Species identification of collected isolates4) Pathogenicity tests to determine which species are pathogenic on Florida turfgrasses. With this information, we should be able to develop ways to more specifically diagnosis the root rot aspects of Pythium in turfgrasses.

Total Smith-Lever Funds Expended by Stiles, Carol \$0

Faculty Name: Sturmer, Leslie
Department: Levy
Extension 100
Research 0
Extension Program Number: CMP608
Extension Program Title: Development of Spreadsheets to Facilitate Record Keeping for the Hard Clam Aquaculture Industry in Florida

Research Project:
% Extension Time Expended: 12
Smith-Lever Funds Expended: \$2,896

Extension Integrated Activities:

The development of an inventory software program was a collaborative effort between UF faculty in the Food and Resource Economics Department and Cooperative Extension Service with funding procured from the USDA Risk Management Agency and administered through the USDA Cooperative Research, Education and Extension Services. This program resulted in simplified computerized spreadsheets using existing software packages that are specific to the management practices employed by the Florida clam aquaculture industry. The marine economic specialist (Adams) was a co-principal investigator in this \$15,000 grant.

Extension Program Number: CMP605
Extension Program Title: Enhancing Seed Availability for the Clam Aquaculture Industry Through Application of Remote Setting Techniques

Research Project:
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$2,414

Extension Integrated Activities:

A Florida Sea Grant-funded research and demonstration project to develop technical procedures and determine economic feasibility of transferring remote setting technology from the Pacific Northwest molluscan shellfish industry to the clam aquaculture industry in Florida, thus increasing the availability of acquiring seed for commercial growers.

Extension Program Number: CMP609
Extension Program Title: CLAMMRS (Clam Lease Assessment, Management, and Modeling using Remote Sensing): Alligator Harbor Aquaculture Use Area, Franklin County

Research Project: FAS04045
% Extension Time Expended: 4
Smith-Lever Funds Expended: \$965

Extension Integrated Activities:

A collaborative research and extension effort among the FL Department of Agriculture and Consumer Services, Division of Aquaculture staff and UF faculty from the Department of Fisheries and Aquatic Sciences and Cooperative Extension Service. A water quality and weather monitoring station for a new lease area in Franklin County was funded through this project. Further, educational opportunities are provided to the new clam growers in this county. The project is funded through a special research grant awarded to the UF Agriculture Experiment Station by the USDA Cooperative State Research, Education, and Extension Service and will be continued through 2003.

Extension Program Number: CMP606

Extension Program Title: CLAMMRS, Clam Lease Assessment, Management, and Modeling using Remote Sensing
Research Project: FAS03902
% Extension Time Expended: 8
Smith-Lever Funds Expended: \$1,931

Extension Integrated Activities:

A collaborative research and extension effort among the FL Department of Agriculture and Consumer Services, Division of Aquaculture staff and UF faculty from the Department of Fisheries and Aquatic Sciences, Department of Environmental Engineering Sciences, and Cooperative Extension Service was continued this year. The 4-year project, called CLAMMRS, Clam Lease Assessment, Management, and Modeling using Remote Sensing, was funded by the U.S. Department of Agriculture. The integrated project allows for the adoption of remote sensing technologies for the Florida clam culture

Extension Program Number: CMP606
Extension Program Title: Implementation of EADIN: Expert Assistance and Distance Identification Network
Research Project: FAS004045
% Extension Time Expended: 2
Smith-Lever Funds Expended: \$483

Extension Integrated Activities:

With Department of Fisheries and Aquatic Sciences faculty (Phlips, Baker) implementing a project that will develop a system and protocol for rapid identification of biological samples, in particular phytoplankton. EADIN: Expert Assistance and Distance Identification Network is funded through a special research grant awarded to the UF Agriculture Experiment Station by the USDA Cooperative State Research, Education, and Extension Service.

Extension Program Number: CMP606
Extension Program Title: Diversification for the Hard Clam Aquaculture Industry Through Investigation of Ponderous Ark and Blood Ark Culture and Marketability
Research Project: FAS04045
% Extension Time Expended: 3
Smith-Lever Funds Expended: \$724

Extension Integrated Activities:

An experimental molluscan shellfish hatchery was set up this year at the Whitney Lab which will allow IFAS research and extension faculty to address seed production barriers and needs for a slate of promising marine bivalve candidates. Spawning and larval rearing trials were initiated in 2002 for the ponderous ark and blood ark. Work will continue on these two alternative molluscan shellfish species in 2003. In addition, faculty at the Food and Resource Economics Department are determining the product attributes of these bivalves and are assessing the magnitude of the potential market. This project is funded through a special research grant awarded to the UF Agriculture Experiment Station by the USDA Cooperative State Research, Education, and Extension Service. This project is further integrated by incorporating the expertise of faculty at Florida Atlantic University. Early developmental studies being conducted will result in a hatchery manual/video which documents spawning techniques and normal embryological stages for each species. This work is being funded through the Florida Sea Grant College Program

Extension Program Number: CMP606
Extension Program Title: Genetic Issues in Hard Clam Aquaculture
Research Project: FAS03947
% Extension Time Expended: 7
Smith-Lever Funds Expended: \$1,690

Extension Integrated Activites:

Initiated in 2001 by Department of Fisheries and Aquatic Sciences research faculty (Baker, Bowen) and extension faculty to begin evaluating the genetic diversity or "health" of Florida broodstock lines. Further, funding through a special research grant awarded to the UF Agriculture Experiment Station by the USDA Cooperative State Research, Education, and Extension Service is providing the support for the development of a salt water running facility in Cedar Key. This project is be be continued through 2003.

Total Smith-Lever Funds Expended by Sturmer, Leslie \$11,103

Faculty Name: Tyree, Allen
Department: Hamilton
Extension 100
Research -1
Extension Program Number: 4
Extension Program Title: Test on Suppression of Viruses and Blue Mold with Selected Agrichemicals.
Research Project: PROJECT
% Extension Time Expended: 1
Smith-Lever Funds Expended: \$154

Extension Integrated Activites:

Fungicides/biological agents were sprayed on tobacco plants on county farm and observed to determine efficacy of products towards cucumber mosaic virus, tomato spotted wilt virus, and blue mold control.

Extension Program Number: 4
Extension Program Title: Pine Tree Experimental/Observational Plots at the Suwannee Valley Research Center
Research Project: PROJECT
% Extension Time Expended: 3
Smith-Lever Funds Expended: \$463

Extension Integrated Activites:

Continued observation of pine tree plots at the Suwannee Valley Research Center for weeds and herbicide control.

Total Smith-Lever Funds Expended by Tyree, Allen \$618

Faculty Name: Unruh, Joseph
Department: West Florida REC-Jay
Extension 50
Research 0
Extension Program Number: JAY-JBU03
Extension Program Title: Nutritional and Environmental Considerations of Turfgrass Fertility
Research Project: SOS-03212
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:

Field study to improve nutrient management recommendations and develop Best Management Practices for home lawns.

Extension Program Number: JAY-JBU03
Extension Program Title: Water and Nutrient Management for Florida Landscape Turf
Research Project: JAY-03922
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Field study to improve nutrient management recommendations and develop BMPs for home lawns.

Extension Program Number: JAY-JBU03
Extension Program Title: Best Management Practices for Florida Lawn Grasses
Research Project: JAY-03922
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 This is a multiple location study to determine optimal fertilization and irrigation practices for the various home lawn grasses used in Florida. In an effort to develop parameters for best management practices for homeowners and landscape management companies, we are looking at this project in various geographic locations. This will then be combined with an extension program to deliver the information to the target audience.

Extension Program Number: JAY-JBU04
Extension Program Title: Alternatives to Methyl Bromide in Turfgrass Systems
Research Project: JAY-03922
% Extension Time Expended: 5
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Research/Demonstration activities focused on identifying alternatives to the soil fumigant, methyl bromide, in turfgrass

Extension Program Number: JAY-JBU02
Extension Program Title: Weed Biology and Control for Turfgrass and the Landscape
Research Project: JAY-03620
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activities:
 Research/demonstration activities focused at solving practical problems in turfgrass weed management. Outcomes include field day reports, Pest Control Guide for Turfgrass Managers (ENH-124), and Florida Weed Management Guide (SP- 53)

Total Smith-Lever Funds Expended by Unruh, Joseph \$0

Faculty Name: van Blokland, P.J
Department: Food and Resource Economics
Extension 60
Research -1
Extension Program Number: Finance
Extension Program Title: Citrus Investment Budgeting
Research Project: Citrus Investing
% Extension Time Expended: 10

Smith-Lever Funds Expended: \$2,111

Extension Integrated Activites:

To match grove land values and FCOJ prices with new investing in citrus production

Total Smith-Lever Funds Expended by van Blokland, P.J \$2,111

Faculty Name: VanSickle, John
Department: Food and Resource Economics
Extension 70
Research 20
Extension Program Number: FL120
Extension Program Title: Economics and Policy Within the Florida Tomato Industry
Research Project: FRE
% Extension Time Expended: 15
Smith-Lever Funds Expended: \$9,509

Extension Integrated Activites:

Evaluations of industry organization and public policy are conducted and presented to the industry. The information generated by this project helps the industry organizations develop an agenda for public policy development. It also helps producers understand the impacts of policy and market structure on the industry.

Total Smith-Lever Funds Expended by VanSickle, John \$9,509

Faculty Name: Yeager, Thomas
Department: Environmental Horticulture
Extension 70
Research 30
Extension Program Number: FL105
Extension Program Title: BMP Development
Research Project: Hatch 3544
% Extension Time Expended: 70
Smith-Lever Funds Expended: \$36,507

Extension Integrated Activites:

Extension program is dependent on information developed by researchers both in and out of state. Personnel with research appointments serve on the design team and participate in inservice training.

Total Smith-Lever Funds Expended by Yeager, Thomas \$36,507

Faculty Name: Yurgalevitch, Charles
Department: Miami-Dade
Extension 100
Research -1
Extension Program Number: 12
Extension Program Title: Water Use Conservation Survey
Research Project: PROJECT
% Extension Time Expended: 5

Smith-Lever Funds Expended: \$0

Extension Integrated Activites:

Dec. 19 - Met with Rafael Munoz-Carpana, Yuncong Li and Wagner Vendrame to discuss water use survey at TREC. Jan. 4 - Met with Rafael Munoz-Carpana, Yuncong Li, Wagner Vendrame, Teresa Olczyk to discuss a water conservation survey for Miami-Dade county. Feb. 4 - Met with Rafael Muñoz-Carpana, Yuncong Li, Wagner Vendrame, Carlos Balerdi, Joe Garofalo, Jon Crane and Jody Haynes to review the water conservation survey for Miami-Dade county and set up a schedule for the next 6 months. Mar. 7 - Met with the Water Use Survey committee (Rafael Muñoz-Carpana, Carlos Balerdi, Teresa Olczyk, Jonathan Crane and myself) in our offices to revise the water use survey for final approval by the committee. September - Mailed out flyers to 780 commercial users of water in Miami-Dade County to inform them of the survey's impending arrival in the coming weeks.

Total Smith-Lever Funds Expended by Yurgalevitch, Charles \$0

Faculty Name: Zekri, Mongi
Department: Hendry
Extension 100
Research 0

Extension Program Number: CMP-8
Extension Program Title: Diaprepes root weevil emergence in citrus groves
Research Project: PROJECT
% Extension Time Expended: 10
Smith-Lever Funds Expended: \$0

Extension Integrated Activites:

Weekly surveys are conducted to determine the emergence patterns of Diaprepes root weevils using Tedder's traps. Data are collected and graphs are generated to provide growers with average number of weevils per trap as well as total weevils collected during the weekly intervals. With knowledge of emergence patterns, growers can determine the best time to control Diaprepes in the most efficient way.

Total Smith-Lever Funds Expended by Zekri, Mongi \$0

Total 2002 Smith-Lever Funds Expended on Extension Integrated \$217,120

XI ~ INTEGRATED RESEARCH PROJECTS

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Supplement to the 5-Year Plan of Work
Multistate Extension Activities and Integrated Activities
(Attach Brief Summaries)

Institution University of Florida
 State Florida

Check one: Multistate Extension Activities
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Title of Planned Program/Activity	Estimated Costs				
	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
<u>See attached</u>	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
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_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
Total	_____	_____	_____	_____	_____


 Director

Feb 28, 2003
 Date

Form CSREES-PLAN (2/00)

U.S. Department of Agriculture Cooperative
 State Research, Education and Extension Service
 Integrated Research Activities

Research Project # ABE-03491
Research Title Parameter Sensing And Control Systems For Drying Agricultural Commodities
Research Faculty Talbot, M. T. Baird, C. D. Chau, K. V.

Description of Activity
 Efficient curing/drying of important Southern Region agricultural commodities requires effective sensors and techniques for continuous measurement of critical parameters. This projects implements control systems and collects and evaluates data documenting effectiveness and efficiency of sensors/control systems in curing/drying the various commodities involved.

Impacts / Accomplishments
 Primary impact related to improved drying controls for peanut drying through use of computer controls.

Total Hatch: \$7,525

Research Project # ABE-03492
Research Title Microirrigation Of Horticultural Crops In Humid Regions
Research Faculty Haman, D. Z.Zazueta, F. S.Dukes, M.

Description of Activity

Microirrigation systems can help conserve water, increase crop production and economic return, and maintain high water quality, but systems must be properly designed, managed and maintained to achieve these benefits. The purpose of this project is to develop management systems using microirrigation techniques to apply water and nutrients to horticultural crops while minimizing adverse impacts on water quality, to document economic benefits and to determine effects on water resources.

Impacts / Accomplishments

Microirrigated multi-pot boxes provided significant water savings in all seasons. In some seasons plants were grown using only water harvested from the rain. A model of water use for plants grown in the new production system is being developed. Several publications were published and submitted. The chemical treatments against clogging of a drip tape with effluent injection on organic vegetables were successful for two out of three drip tapes evaluated in spring of 2001. Injection of chlorine, acid and/or ozone resulted in similar tape performance. We observed decrease of total flow rate due to some plugging but the uniformity was high for two drip tapes out of three tested in the experiment. There was a significant difference in overall clogging among three types of tapes used in the experiment. Results from the first year of drip irrigation and N application have shown that watermelon yields responded quadratically to irrigation rates. the interaction irrigation rate x N rate was not significant for early and total marketable. The effect of N rate was significant for early yield but not for total yield.

Total Hatch: \$500

Research Project # ABE-03596
Research Title Animal Manure And Waste Utilization, Treatment And Nuisance Avoidance For A Sustainable Agriculture
Research Faculty Nordstedt, R. A.Chynoweth, D. P.

Description of Activity

Manure from production of meat, milk and eggs can contribute to nitrogen and phosphorus in both groundwater and surface water if they are not properly managed and utilized. This is particularly important in the sandy soils and vulnerable water resources in Florida. This project evaluates new and more effectively engineered systems for processing animal manures into useful products, such as compost and nursery potting media, and for removing nutrients from stormwater runoff from animal production facilities.

Impacts / Accomplishments

Constructed wetlands and overland flow systems were shown to be effective in removing nutrients from dairy farm runoff. Composting systems for dairy manure were successfully demonstrated on commercial farms. A saleable peat replacement product was created from screened dairy farm wastewater. These results give economic incentives to removal of nutrients from dairy farms and to reducing nutrient losses to the environment.

Total Hatch: \$2,147

Research Project # ABE-03824
Research Title Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine and Dairy Facilities
Research Faculty Bucklin, R. A.Jones, P. H.

Description of Activity

Livestock heat stress limits production in warm climates such as Florida's. Air pollution in livestock housing can cause health problems for workers and livestock. This project studies systems for ventilation and air pollution control methods for livestock housing

Impacts / Accomplishments

Heat stress is a major factor limiting livestock production in Florida. The studies of new methods to cool dairy housing will result in additional housing choices for dairy producers. Lameness has a significant impact on cow health and production. the results of this study will be used to develop improved types of flooring and improved methods of treating lameness.

Total Hatch: \$447



Research Project # AGR-03594
Research Title Formation, Sprouting And Longevity Of Hydrilla Tubers
Research Faculty Haller, W. T.Fox, A. M.Langeland, K. A.Stocker, R. K.

Description of Activity

The submersed aquatic weed hydrilla invades waterways of the southeast U.S., displacing native vegetation and adversely impacting irrigation, flood control, recreation and public health. Long-term control strategies must include depletion of populations of hydrilla tubers. This project examines factors that influence the production, longevity and germination of hydrilla tubers, with the objective of improving long-term control of hydrilla populations.

Impacts / Accomplishments

Since its introduction into the US in approximately 1960, hydrilla has become the most serious and expensive to manage submersed aquatic weed in many areas of the country. It is now found growing in the wild to Maine along the east coast and from California to Washington state on the west coast. The control of hydrilla will become more efficient and more cost effective if we had a more thorough understanding of the physiological and ecological basis for its reproduction, which is the purpose of this project.

Total Hatch: \$24,624

Total Hatch: \$24,624



Research Project # AGR-03726
Research Title Evaluation of Forage Germplasm and Forage Management Practices
Research Faculty Chambliss, C. G.Sollenberger, L. E.

Description of Activity

Improved warm season and cool season forages are needed for cattle production in Florida. This project aims to develop improved forage cultivars and management practices for livestock producers in Florida.

Impacts / Accomplishments

Florida livestock producers will be able to select the the most productive and highest quality warm season perennial grass for their use. The fall forage gap may be filled by strategic planting of annual forages and provide a source of high-quality forage for grazing replacement heifers until winter forages are ready. Better establishment weed control will provide greater assurance of rapid establishment of pure stands of grass which translates into quicker and greater returns on new grass plantings.

Total Hatch: \$7,429

Research Project # ANS-03572
Research Title Byproduct Feedstuffs: Rumen Degradability Of Carbohydrate And Fat Fractions And Effects On Feed Effi
Research Faculty Hall, M. B. Van Horn, H. H.

Description of Activity

1. Analyze soluble fiber and neutral sugar contents of dried citrus pulp collected across the harvest season from a variety of sources. 2. Measure differences in fermentation rates and products between citrus pulp and hominy feed. In vitro fermentations of original samples, ethanol-insoluble residues, and neutral detergent production measurement system. Type and amounts of volatile fatty acids produced will be compared between and within feed type and substrate. Rates of carbohydrate (soluble fiber and neutral detergent fiber) fermentation will be determined from the gas production curves and compared among and within feeds and carbohydrate type. 3. In vitro fermentations with six fat sources (fish oil, tallow, poultry fat, calcium soaps of poultry fat, whole cottonseed, and corn oril) will be used to determine the pattern of biohydrogenation of fats and their effect on neutral detergent fiber digestibility at 0, 12 and 24 hours of fermentation. Fats will be incorporated into hominy, corn silage, or alfalfa hay before being mixed together and subjected to in vitro fermentation. Following fermentation, samples will be subjected to fatty acid analysis. 4. A nitrogen balance trial with lactating dairy cows will be conducted to assess the affect of the substitution of soluble fiber for starch. On isonitrogenous corn silage- and alfalfa-based rations, citrus pulp will be substituted for hominy feed.

Impacts / Accomplishments

Describing the temporal differences among fermentable carbohydrates in their yields of products, including organic acids and microbial protein, is an essential starting point for predicting the yield of metabolizable nutrients to the cow. Differences noted in microbial CP yield for sucrose, starch, and pectin are in agreement with and help to explain the results of animal feeding trials. Currently, microbial yield from these three non-NDF carbohydrates are treated as being equivalent. This information will be used to modify animal feeding recommendations and they open the door for investigations into appropriate carbohydrate and protein supplementation strategies to meet animal nutrient requirements. This information can be used to help reduce nutrient excretion by animals through more accurate ration formulation and better feed efficiency.

Total Hatch: \$18,904

Research Project # ANS-03596
Research Title Animal Manure And Waste Utilization, Treatment And Nuisance Avoidance For A Sustainable Agriculture
Research Faculty Van Horn, H. H. Hall, M. B.

Description of Activity

The effect of adding flocculants to dairy flushwaters to precipitate manure fertilizer nutrients, especially P[potassium?], will be evaluated along with management systems to assist farmers to concentrate manure

nutrients for export off-farm. Several anaerobic digestion systems will be tested for reducing odor. Reducing N[nitrogen?] excretion by improving rumen utilization of dietary carbohydrate and protein will also be investigated.

Impacts / Accomplishments

Many Florida dairies will use no-till, sod-based forage programs with Tifton 85 bermudagrass as the primary forage in a two- or three-crop system to scavenge and utilize high levels of manure N efficiently. This system will be used especially in deep sand soils to protect against leaching of nitrate N to groundwater.

Total Hatch: \$2,896

Research Project # ANS-03651
Research Title Breeding To Optimize Maternal Performance And Reproduction Of Beef Cows In Southern Region
Research Faculty Olson, T. A.

Description of Activity

The reproductive and maternal capacity of brood cows is the most important economic component of beef cattle production in the Southeast. Breed crosses that are productive in other parts of the U.S. often are unadapted to Florida. The purpose of this study is to evaluate the maternal and reproductive performance of new breeds and crosses of beef breeds that may be more productive than existing crossbred females.

Impacts / Accomplishments

The Tuli breed may be an option for beef cow-calf producers in subtropical areas of the United States, especially as calf crop born and weaned of Tuli-Angus F1 cows appear to be similar to that of the highly productive Brahman-Angus F1 cows.

Total Hatch: \$967

Research Project # ANS-03659
Research Title Metabolic Relationships In Supply Of Nutrients For Lactating cows
Research Faculty Hall, M. B.

Description of Activity

Experiments will evaluate the effect on animal performance and nitrogen utilization of substituting neutral detergent-soluble fiber for starch in the rations of lactating dairy cows. Future experimennts will include evaluation of different sources of carbohydrate supplementation on efficiency of nitrogen utilization, animal performance, and variation in fermentation products available for the animal's use.

Impacts / Accomplishments

The carbohydrate analysis system we developed is currently used by commercial feed analysis laboratories for use by nutritionists in the field. It is also in use in university research laboratories. Used in combination with the information developed on animal use of the different carbohydrates, it allows a more objective method for diet formulation to enhance animal performance, health, feed efficiency, and potentially decreased nutrient excretion.

Total Hatch: \$226

Research Project # ANS-03912

Research Title Enhancing Production and Reproductive Performance of Heat-stressed Dairy Cattle

Research Faculty Hansen, P. J. Staples, C. R.

Description of Activity

Heat stress is a major limiting factor in dairy production systems that acts to reduce milk yield and reproductive performance. This project will provide insight into the biological changes induced by heat stress which decrease performance of lactating dairy cows. This information will be used to develop management practices to reduce the negative effects of heat stress. Particular emphasis will be placed on using embryo transfer or other technologies to enhance pregnancy rates during heat stress.

Impacts / Accomplishments

These results illustrate the importance of apoptosis as a survival mechanism for preimplantation embryos exposed to heat shock.

Total Hatch: \$468



Research Project # APO-03364

Research Title Biology And Management Of Arthropod Pests Of Vegetables

Research Faculty Leibee, G. L.

Description of Activity

Insects routinely present problems in the production of cabbage and other cole crops. Insecticide resistance and cancellation of insecticide registrations have limited the ability to manage these insects with insecticides alone. This project examines the integration of traditional and new insecticides with the use of parasites and predators, cultural control, host plant resistance, and action thresholds to reduce the overall use of and dependence upon insecticides.

Impacts / Accomplishments

Providing methods to increase the production of *Diadegma insulare* will allow the large-scale studies necessary to facilitate the use of this important parasite in the management of the diamondback moth. The increased use of parasites in the management of the diamondback moth will lead to less dependency on insecticides.

Total Hatch: \$4,162

Total Hatch: \$12,487



Research Project # APO-03413

Research Title Development Of Improved Carrot Varieties For Florida

Research Faculty Strandberg, J. O. White, J. M.

Description of Activity

Development of high-quality carrot cultivars requires the incorporation of resistance to numerous disease that affect carrot production. the mission of this project is to study important diseases of carrot and the pathogens that incite them and to search for sources of resistance among cultured carrots or the Plant Introduction Service *Daucus* collection. Development of methodology to screen germ plasm and to incorporate resistance genes into carrot are important aspects of this project.

Impacts / Accomplishments

Significant carrot production in Florida no longer exists. Fortunately, recent trends by the USDA and State Agricultural Experiment Station are to release inbred parents and carrot breeding lines to commercial breeders who will use them to develop diverse regionally-adapted hybrid cultivars. the research accomplishments of this project will continue to benefit the US and worldwide carrot industry and continue to provide improved carrots to the consumer.

Total Hatch: \$4,508



Research Project # APO-03609
Research Title Introduction And Evaluation Of Ornamental Plants
Research Faculty Henny, R. J.Stamps, R. H.

Description of Activity

The ornamental industry is continually in need of new plant materials to expand their markets. This project examines growth and performance of new plants that may have commercial ornamental potential.

Impacts / Accomplishments

Evaluation of new germplasm is important to the continued refinement of an industry. Development of new cultivars indicates the progressive nature of an industry as well as providing better products for the consumer

Total Hatch: \$15,108



Research Project # BGL-03364
Research Title Biology And Management Of Arthropod Pests Of Vegetables
Research Faculty Nuessly, G. S.

Description of Activity

Arthropod pests cause significant losses to South Florida vegetable crops. This project will determine appropriate control strategies for these pests, including cultural, chemical, biological controls and host plant resistance.

Impacts / Accomplishments

Insect resistance in cos lettuce will save growers money and reduce handler and environmental impact. Corn research findings and transgenic sweet corn resistant to worm pests will lead to reduced pesticide use. Our newly released sweet corn offers a shrunken 2?? type variety with a high level of resistance to worm pests without reliance on proteins foreign to the natural corn gene pool.

Total Hatch: \$1,738

Total Hatch: \$289

Total Hatch: \$868



Research Project # BRA-03492
Research Title Microirrigation Of Horticultural Crops In Humid Regions
Research Faculty Stanley, C. D.Csizinszky, A. A.

Description of Activity

the need to conserve water resources has become an important issue in recent years. The use of microirrigation systems has been shown to reduce water applications by as much as 50 percent compared

to other irrigation systems. The purpose of this project is to develop new management practices which can make microirrigation more functional and profitable for use on horticultural crops.

Impacts / Accomplishments

a) Biostimulant applications did not increase strawberry yields. Therefore, under optimum nutritional conditions and irrigation regimes, the application of biostimulant products is not recommended. b) The impact of using containerized transplants could be huge financially if earlier fruit production occurs, but environmentally the water savings could be as much as 6 billion gallons less water being applied to establish transplants compared to current practices. c) The impact of knowing where to maintain water table levels will result in more efficient use of water and improved tuber production. Improvement of the means by which water tables are controlled would further improve the consistency of high levels of production, thus improving the financial state of producers.

Total Hatch: \$61
Total Hatch: \$143
Total Hatch: \$205

Research Project #	BRA-03764
Research Title	Strawberry Cultivar Development
Research Faculty	Price, J. F.

Description of Activity

Susceptibility to twospotted spider mite is one of the most serious problems facing the west central Florida strawberry industry. The purpose of this project is to develop cultivars that are tolerant to twospotted spider mite.

Impacts / Accomplishments

Two-spotted spider mites and other arthropods limit strawberry production in Florida. Data from these experiments can be useful to select integrated methods of pest management that will result in efficient crop management practices.

Total Hatch: \$7,965
Total Hatch: \$7,965

Research Project #	BRA-03832
Research Title	Microirrigation Technologies for Protection of Natural Resources and Optimum Production
Research Faculty	Stanley, C. D. Csizinszky, A. A.

Description of Activity

Irrigated agriculture is facing increased public pressure and institutional regulation for water quality concerns and conservation of natural resources. This project examines the management improvements (such as nutrient management and water conservation) that are a result of using microirrigation practices

Impacts / Accomplishments

a) The use of small amounts of shredded yard waste under the microirrigation tubing will increase earliness and fruit size of bell peppers. b) The application of 'eN-ZONE' and 'C-CAT' biostimulants through the microirrigation tubing may allow to reduce N and K fertilizer application by 30% and increase the early yield and fruit size of tomatoes. c) Filter strips could potentially provide the benefit of sediment and nutrient trapping as a side benefit. In the case of the citrus site, use of effective better

management practices (BMPs) such as microirrigation and fertigation greatly enhance the runoff retention usefulness of the filter strips since more effective temporary storage can occur when the filter strip is dry before rain. . Certainly there are limitations to the temporary runoff retention abilities of the filter strips, but they seem to be a lower cost alternative to permanent high cost retention ponds. d) Determination of tomato varieties with tolerance to rising saline content in irrigation water will result in more options for producers to choose if they are faced with having to use lower quality water. This could encourage use of lower quality water for irrigation as opposed to using water that could be available for other uses, thus resulting in more conservative of this vital natural resource.

Total Hatch: \$1,251
Total Hatch: \$2,919



Research Project # DOV-03586
Research Title The Epidemiology And Control Of Strawberry Diseases
Research Faculty Chandler, C. K.

Description of Activity

Certain microbes cause diseases on strawberry. This project studies these microbes and develops new and improved methods for controlling their diseases.

Impacts / Accomplishments

This research studies the causes and control of plant diseases on strawberry. Both chemical based and cultural methods are developed and evaluated for use by commercial growers to help them produce strawberry fruit and reduce pesticide use. These new control methods will reduce production costs and increase profitability for strawberry growers.

Total Hatch: \$37,334
Total Hatch: \$9,332



Research Project # DOV-03764
Research Title Strawberry Cultivar Development
Research Faculty Chandler, C. K. Legard, D. E.

Description of Activity

Low early season yield, lack of fruit firmness, and susceptibility to anthracnose fruit rot are three of the most serious problems facing the west central Florida strawberry industry. The purpose of this project is to develop cultivars that produce high early season yields of firm, anthracnose-resistant fruit.

Impacts / Accomplishments

Genotypes such as 'Carmine' and FL 95-269, which are better adapted to fall and winter production than some standard cultivars, could add millions of dollars worth of value to the west central Florida strawberry industry.

Total Hatch: \$9,703
Total Hatch: \$22,640



Research Project # ENH-03543
Research Title Establishing Trees In Urban Landscapes
Research Faculty Gilman, E. F.

Description of Activity

Trees will be grown in containers and in the ground to simulate conditions in a nursery. They will be transplanted to a simulated landscape site, typically a sandy, well-drained soil. Growth measurements after transplanting will include root, trunk and shoot growth as well as xylem potential in selected cases.

Impacts / Accomplishments

The savings from existing urban trees in Florida may be equivalent to more than three 100-MW power plants. With this much at stake, efficient practices that retain and add to urban tree canopy are vital to the economy in Florida. We found that trees grow at nearly the same rate in nurseries regardless of production method. This is useful because it allows urban tree managers to make better-informed decisions on tree selection. We have also determined that application of soil amendments such as mycorrhizae-forming fungi and other organic materials to the backfill soil at transplanting had no impact on post-transplant stress, growth, or survival after planting trees in urban landscapes. However, the nursery production method did impact survivability and growth under real-world conditions. Under limited irrigation conditions root-pruned field-grown trees that were dug and held in the nursery for ten weeks before transplanting to a landscape had the greatest survival of all production methods following transplanting; trees from containers died in greater numbers (55%) and sooner than field-grown B&B trees (14%). Following transplanting to the landscape growth rate of surviving trees was not affected by nursery production method. Under limited irrigation conditions common to most landscapes, planting field-grown B&B trees that were root pruned regularly in the nursery and dug ten weeks before transplanting to the landscape provided for the most live trees per dollar.

Total Hatch: \$6,964
Total Hatch: \$16,251



Research Project # ENH-03544
Research Title Improved Nutrition And Irrigation Of Ornamental Plants
Research Faculty Yeager, T. H.

Description of Activity

Nutritional regulation relative to growth, environmental effects, and cultural practices are increasingly important economically to Florida's ornamentals industries. This project aims to establish optimal nutrient and water delivery practices for Florida's ornamental industry.

Impacts / Accomplishments

Irrigation and nutrition research from this project has resulted in management strategies or BMPs such as monitoring substrate nutrition to make environmentally conscious decisions regarding fertilization. The amount of fertilizer applied and timing of reapplications should be based on achieving desirable substrate nutritional levels in order to prevent excessive application or leaching of fertilizer.

Total Hatch: \$8,405



Research Project # ENY-03490
Research Title Biological Control Of Selected Arthropod Pests And Weeds
Research Faculty Cuda, J. P.Frank, J. H.Capinera, J. L.Hoy, M. A.

Description of Activity

Many invasive species of pest insects and weeds cause problems for agriculture and natural areas in Florida and other southern states. This project is attempting to provide permanent, environmentally sound

control of a long list of pest species - by the importation of specialist biological control agents. It is part of a Southern Regional (multi-state) project.

Impacts / Accomplishments

Establish biocontrol agents for the Asian citrus psyllid and brown citrus aphid.

Total Hatch: \$55
Total Hatch: \$55

Research Project # ENY-03694
Research Title Managing Plant-parasitic Nematodes in Sustainable Agriculture with Emphasis on Crop esistance
Research Faculty Dickson, D. W.

Description of Activity

Root-knot nematodes cause serious plant disease on a number of agronomic and vegetable crops in Florida. This project seeks a sustainable solution to the root-knot nematode problem by developing plants with resistance to the nematode.

Impacts / Accomplishments

the information attained will aid in sustaining root-knot nematode management in the future.

Total Hatch: \$1,578

Research Project # ENY-03796
Research Title Biological Control of Scapteriscus Mole Crickets
Research Faculty Frank, J. H.Adams, B. J.Buss, E. A.Leppla, N. C.

Description of Activity

Scapteriscus mole crickets, native to South America, are the worst pest insects of pasture and turf-grasses in Florida. Chemical pesticides provide only temporary control, are very expensive, and are potentially harmful to the environment. This project studies how to enhance effects of two biological control agents that already have been established in parts of Florida. It investigates prey-specificity of a third biological control agent, which has been imported but not yet released.

Impacts / Accomplishments

Natural and assisted spread of Steinernema scapterisci and Larra bicolor to additional areas should reduce pest mole cricket populations. Repeated demonstration of such reduction should persuade ranchers and turf managers to use biological control.

Total Hatch: \$37,160

Research Project # ENY-03798
Research Title Biologically Based Ipm Systems for Management of Plant-parasitic Nematodes
Research Faculty Dickson, D. W.

Description of Activity

Plant parasitic nematodes are important plant pathogens of numerous crops grown in Florida. This project aims to survey for nematode biological control agents and to develop them for use in IPM programs.

Impacts / Accomplishments

Providing Florida bell pepper growers with root-knot nematode resistant cultivars will greatly reduce dependency on soil fumigants, and aid with the sustainability of the crop.

Total Hatch: \$1,605

Research Project # ENY-03860
Research Title Interactions Among Bark Beetles, Pathogens, And Conifers In North American Forests
Research Faculty Foltz, J. L.

Description of Activity

The southern pine beetle is the most serious of the insects affecting pine forests in the South. Outbreaks sometimes kill all pines over thousands of acres. This project investigates the biotic and abiotic factors associated with the explosion of populations from endemic levels to the outbreak state.

Impacts / Accomplishments

Collections of the clerid predator *Thanasimus dubius* exceeded those of all previous years, suggesting that natural enemies were effectively preventing bark beetles from attacking anything but the weakest trees.

Total Hatch: \$932

Total Hatch: \$399

Research Project # ENY-03934
Research Title Biological Control of Arthropod Pests and Weeds
Research Faculty Frank, J. H. Cuda, J. P. Hoy, M. A. Leppla, N. C.

Description of Activity

Exotic pests continue to pose threats to American agriculture, making continued efforts in importation biological control relevant and necessary. It is anticipated that natural enemies will be discovered and introduced for control of melaleuca, Brazilian peppertree, old world climbing fern, kudzu, tropical soda apple, water hyacinth (including pathogens), Chinese tallow, Chinese privet, tarnished plant bug, brown citrus aphid, cotton fleahopper, bromeliad weevil, red imported fire ant, muscoid flies, mole crickets, and weevils.

Impacts / Accomplishments

It now becomes useful to test whether control of red imported fire ants in citrus groves will lead to increased parasitism of brown citrus aphid and of citrus psyllid by their respective parasitoids

Total Hatch: \$832

Total Hatch: \$831

Research Project # FOS-03741
Research Title Food Technology Research Support to Florida Agriculture Industries in Value Adding Enterprises
Research Faculty Bates, R. P.

Description of Activity

The purpose of this project is to improve the quality of fruits and vegetables produced in Florida, and identify new products or opportunities to add value to fruits and vegetables produced in Florida. New and/or improved products and quality could increase the profitability of producing these crops in Florida.

Impacts / Accomplishments

Numerous Florida growers and processors are expressing interest in the nutraceutical value of their crops and processed products. Consequently, we're receiving many inquiries regarding the qualitative and quantitative phytochemical composition of ingredients and the influence of processing, storage, and distribution on these foods. The cited activities, and other efforts in the areas of teaching and extension synergistically complement the value adding research program and contributes to the total IFAS effort.

Total Hatch: \$25,790



Research Project # FOS-03764
Research Title Strawberry Cultivar Development
Research Faculty Sims, C. A.

Description of Activity

Strawberry cultivars will be developed with improved quality characteristics.

Impacts / Accomplishments

The improvement in the quality of strawberries being produced in Florida.

Total Hatch: \$9,230



Research Project # FRE-03599
Research Title The Effect Of Farmland Boom/bust Cycles On The Rural Economy
Research Faculty Schmitz, A.Moss, C. B.Mulkey, W. D.

Description of Activity

Farmland values in United States have experienced frequent boom/bust cycles. these cycles have significant implications for rural communities and institutions. This research develops an empirical model of farmland boom/bust cycles and links these cycles to economic cycles in rural communities.

Impacts / Accomplishments

None provided

Total Hatch: \$14,740
Total Hatch: \$22,110



Research Project # FRE-03825
Research Title Technical and Economical Efficiencies of Producing, Marketing and Managing nvironmental Plants
Research Faculty Hodges, A. W.

Description of Activity

The production and marketing of nursery plants is a growing part of agriculture. Few resources are directed at this industry. It is critical that mechanisms must be developed to assist producers and marketers to better ascertain future opportunities and threats. The purpose of this research is to identify

where strategic advantages reside, particularly regarding economic expansion of firms and the efficient use of scarce resources.

Impacts / Accomplishments

The impact of these research and education programs is realized by horticulture industry managers who have adopted better management practices or are better informed about current market and economic conditions. Landscape service professionals who participated in the training programs on cost analysis and bidding were enabled to produce more accurate estimates of landscape job cost, and to prepare more competitive bids for service contracts. Various industry groups continue to request more market analysis and use the results for decision making. Turfgrass producers were better informed about potential new markets for their product that may increase overall demand for turfgrass. The economic impact analysis work enabled horticulture industry managers and leaders to better represent their industry to the public, regulators and policy-makers, and to better understand the policy issues facing the industry. Economic evaluations of irrigation technologies serve a fundamental need of producer firms for more efficient water use. The management of internet websites for promulgation of research results has made this information more accessible than ever before, and is now the preferred means for information dissemination.

Total Hatch: \$134
Total Hatch: \$316

Research Project #	FTL-03711
Research Title	Turfgrass Fertility Management and Environmental Impact
Research Faculty	Cisar, J. L.

Description of Activity

N and P are essential for healthy turfgrasses. However, the fertilization must minimize N and P losses in runoff waters. The project is designed to identify techniques that minimize nutrient loss in runoff waters from golf and home lawns, and to identify practices that promote playable sports turf. This project examines the effectiveness of fertilizer application techniques, sources, rates, and irrigation to reduce N and P in runoff waters.

Impacts / Accomplishments

These experiments are being conducted to quantify environmental impacts from turfgrass management, in particular nitrogen. The information will provide the basis for BMPS to minimize potential environmental impacts from turfgrass management.

Total Hatch: \$6,774
Total Hatch: \$6,774
Total Hatch: \$6,774
Total Hatch: \$6,774
Total Hatch: \$6,774

Research Project #	FTP-03700
Research Title	Plant Growth Regulators To Enhance Profitability Of Fresh And Processed Florida Citrus
Research Faculty	Stover, E. W.Tignor, M.

Description of Activity

Plant growth regulators (PGRs) are effective in improving fresh fruit quality and production in citrus but have given unpredictable and variable responses. Developing reliable recommendations for use of PGRs

and adoption by the Florida industry should contribute to citrus profitability. This project determines the effectiveness of PGRs in controlling cropping of citrus, evaluates the effect of PGRs on citrus fruit quality, and identifies procedures for effective use of PGRs in Florida citrus.

Impacts / Accomplishments

Based on this research, thousands of acres of Florida oranges are sprayed with GA for increased juice weight, increasing profitability for growers and processors. NAA fruit thinning / size enhancement has greatly increased in Florida citrus and many growers are testing benefits of fall / winter GA to enhance cropping. MBTA has great potential for the processing orange industry in Florida, if parameters can be identified which consistently enhance fruit Brix.

Total Hatch: \$5,861
Total Hatch: \$7,326
Total Hatch: \$1,465

Research Project # FYC-03782
Research Title Early Childhood Interventions for Violence Prevention in Florida
Research Faculty Evans, G. D.

Description of Activity

Trends in delinquency, violent felonies, and school violence point to a need for interventions aimed at reducing and/or preventing violent acts. The purpose of this study is to prevent the development of violence in children and families by targeting the risk factors related to violence (i.e., early and persistent child behavior problems, family management problems, and poor home-school linkages).

Impacts / Accomplishments

The results of these series of studies will help guide program development in violence prevention and rural mental health service delivery. Specifically, these projects are uncovering service delivery issues that complicate, and mediate, the effectiveness of said programs while pointing our successful strategies for preventing problems of conduct and social relations among children.

Total Hatch: \$4,916

Research Project # HOM-03402
Research Title Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of egetable Crops
Research Faculty Ploetz, R. C. Bryan, H. H.

Description of Activity

Many effective measures for controlling soilborne diseases and pests of vegetables, most notably fumigants that contain methyl bromide, will become unavailable in the near future. This project evaluates non-toxic and sustainable measures, such solarization and the use of cover crops, for ameliorating the effects of soilborne diseases and pests in Florida vegetable production.

Impacts / Accomplishments

As MeBr is lost for use on high value vegetable crops (e.g. tomato, eggplant, etc.) alternatives for its replacement will be needed. In the absence of MeBr, these studies demonstrated the potential for cover crops, organic composts, solarization, and resistant cultivars in these cropping systems. In combination, these practices/measures could be used when MeBr is no longer available. Specific work on phytophthora blight of pepper and squash suggests that this disease will be particularly difficult to control in the future.

Although results from this work enable a greater understanding of the challenge that we face, it also indicates that integrated management of the disease will require more effective components than are currently available (especially, better host resistance and more effective pesticides).

Total Hatch: \$31,921

Research Project # HOS-03402
Research Title Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of egetable Crops
Research Faculty Stall, W. M. Locascio, S. J.

Description of Activity

With the scheduled phase-out of methyl bromide as a fumigant for polyethylene mulched crops, an alternative for control of nutsedge and other weeds is critical for economical crop production. Alternative fumigants and herbicides will be applied to polyethylene mulched crops in an effort to control nutsedge and other weeds and to produce acceptable crop yields.

Impacts / Accomplishments

This work indicates that 1,3-D can be applied broadcast effectively to control pests. Broadcast application with bedding 7-10 days later minimizes the worker protection issues since hand labor is not involved in contrast to in-row applications. This work also shows that broadcast application of pebulate before bed preparation is less than in-row applications in nutsedge control.

Total Hatch: \$6,628
Total Hatch: \$9,944

Research Project # HOS-03457
Research Title Phenology, Population Dynamics And Interference: A Basis For understanding Weed iology And Ecology
Research Faculty Stall, W. M.

Description of Activity

Weed interference contributes to large losses of yield and quality in vegetable crops. The purpose of this study is to determine the population of weeds that will reduce yield and quality as well as the time in the crops life cycle that the weed is the most competitive.

Impacts / Accomplishments

Growers will be made aware of cucumber yield loss due to number of amaranth plants per meter of row. Control decisions can be made with control measure costs verses loss percentages as to number of weeds per row.

Total Hatch: \$46
Total Hatch: \$46

Research Project # HOS-03559
Research Title Senescence Physiology And Deterioration In Harvested Tomato And Other Fruits
Research Faculty Huber, D. J. Sargent, S. A.

Description of Activity

The shelf-life of fresh fruits and fresh-cut fruit products is limited by senescence and other factors contributing to deterioration. The purpose of this study is to learn more about the cellular physiology contributing to the deterioration and senescence of fruits and fruit products.

Impacts / Accomplishments

The information determined in these studies will aid in our understanding of why watermelon fruits react adversely to external sources of ethylene. The typical response is rapid and severe watersoaking, brought about by physiological changes affecting several tissue components. The problem is likely of significant importance to the watermelon industry, but estimates of these losses are not available because of the commercial unawareness of ethylene's role in the disorder. The use of food-grade waxes has great potential for extending the shelf-life and export potential of highly perishable tropical fruit including breadfruit.

Total Hatch: \$14,441

Research Project #	HOS-03846
Research Title	Postharvest Quality and Safety in Fresh-cut Vegetables and Fruits
Research Faculty	Brecht, J. K. Huber, D. J. Sargent, S. A.

Description of Activity

Traditional post-harvest approaches for vegetables and fruits (produce) are not sufficient to meet consumer demands for fresh-cut produce because of the increased perishability of these products. This project is concerned with development of novel approaches for assuring the quality and safety of fresh-cut produce through better understanding of fresh-cut vegetable and fruit physiology.

Impacts / Accomplishments

Fresh-cut produce can help increase the consumption of fresh produce due to its convenience and attractive appearance and flavor. Development of novel approaches for assuring the quality and safety of fresh-cut produce depends on a better understanding of fresh-cut vegetable and fruit physiology, including nutrients and other functional components as affected by storage and handling.

Total Hatch: \$1,011
Total Hatch: \$1,349
Total Hatch: \$1,011

Research Project #	IMM-03364
Research Title	Biology And Management Of Arthropod Pests Of Vegetables
Research Faculty	Stansly, P. A.

Description of Activity

Arthropod pests and associated disorders and diseases are destructive to vegetable crops. The objective of this project is to seek sustainable and economical methods of controlling pests on vegetables in Florida.

Impacts / Accomplishments

Management strategies were transferred to grower clientele through extension activities including field days, trade journals, extension publications and software. Reduced pest-related losses, reduction of pesticide use and increased use of selective pesticides were documented.

Total Hatch: \$1,820
Total Hatch: \$4,247

Research Project # IMM-03571
Research Title Dynamic Economic Analysis Of The Florida Citrus Industry
Research Faculty Roka, F. M.

Description of Activity

Global competition is forcing Florida citrus growers to redesign production systems. This project evaluates production inputs and labor requirements, and analyzes management practices which help to reduce unit cost of producing oranges and grapefruit.

Impacts / Accomplishments

The goal of mechanical harvesting systems in Florida is to reduce overall "net" harvesting costs to the grower, thereby increasing grower "on-tree" revenue. Lower unit harvesting costs by mechanical systems must be great enough to compensate growers for expenses related to tree preparation, lost yield, and uncertainty with respect to tree health. More than 15,000 acres were mechanically harvested during 2001-02. Growers with properly prepared trees realized between \$.25 and \$.35 savings per box. Depending on yield, those savings translated to between \$100 and \$200 per acre in increased on-tree revenue.

Total Hatch: \$2,362

Total Hatch: \$21,258

Research Project # IMM-03622
Research Title Water Management In Flatwoods Citrus Groves
Research Faculty Obreza, T. A.

Description of Activity

Florida agricultural and urban interests are competing for limited water resources. This project will improve agricultural water-use efficiency for citrus and vegetable crops grown on Florida flatwoods soils.

Impacts / Accomplishments

This project will result in micro-irrigation system maintenance guidelines that will help citrus growers keep their irrigation systems clean and efficient. As system maintenance improves, less water and fertilizer will be wasted.

Total Hatch: \$24,518

Research Project # LAL-03490
Research Title Biological Control If Selected Arthropod Pests And Weeds
Research Faculty Browning, H. W. Childers, C. C.

Description of Activity

Research to develop and implement biological control strategies for arthropod pests of citrus will focus on ecological studies to identify existing natural enemies of target pests. Elucidation of the niches that these exotic natural enemies for impartation. Field evaluation methods used to identify and characterize natural enemies will be used to evaluate the impact of natural enemy manipulation in overall citrus IPM.

Impacts / Accomplishments

None Provided

Total Hatch: \$12

Total Hatch: \$51

Research Project # LAL-03492
Research Title Microirrigation Of Horticultural Crops In Humid Regions
Research Faculty Parsons, L. R.

Description of Activity

Field experiments will be located on Ridge groves. Effects of micro-sprinkler irrigation application rate and timing will be studied. Depth of water movement after irrigation will be monitored in an attempt to reduce water movement below the root zone. Effects of irrigation volume on tree growth and fruit quality will be measured.

Impacts / Accomplishments

Description and symptoms shown will help growers identify stress symptoms from drought, salt, flooding, etc. This research has shown reclaimed water to be safe and effective for irrigation use. Reclaimed water can do much to reduce drought impact. In part, because of this research, reclaimed water use in Florida has increased by 233 million gallons/day in seven years. This information will also help improve irrigation scheduling guidelines by showing growers how deep water will go. It will help decrease deep percolation loss below the root zone. By using the information developed here, Florida citrus growers can save 5 million gallons of water statewide per year. This improved knowledge of field capacity and water content changes at different depths will help improve grower irrigation management.

Total Hatch: \$8
Total Hatch: \$12

Research Project # LAL-03759
Research Title Freeze Damage and Protection of Horticultural Species
Research Faculty Parsons, L. R.

Description of Activity

Ways to improve micro-sprinkler effectiveness for freeze protection will be studied. Micro-sprinklers of different output rates and spray patterns will be elevated to different heights inside citrus tree canopies. Effectiveness of different systems will be evaluated after freeze events. Other freeze protection methods that show promise will be evaluated.

Impacts / Accomplishments

If freezes had occurred to test these ideas, this research would tell us how micro-sprinkler emitter volume output and position height influences the amount of warming that occurs in the tree canopy above the emitter. Proper emitter placement will facilitate faster tree recovery after a freeze.

Total Hatch: \$273
Total Hatch: \$409

Research Project # LAL-03788
Research Title Development of Ecological Methods for Nematode Management
Research Faculty Noling, J. W.

Description of Activity

Field, laboratory, and greenhouse studies will be used to develop and integrate methods for managing and minimizing nematode impact on vegetable, fruit, and ornamental crops. Methods investigated will include cropping systems, cover crops, rotation crops, plant tolerance, solarization, and other novel methods.

Impacts / Accomplishments

The results of these studies have also demonstrated that the new strategies to replace methyl bromide, which include alternative fumigants and herbicides, are not perfect but are acceptable. In this regard, significant advances were also made in the integration of some of these tactics, and a pest management system has been devised which has the potential to be an economically viable replacement for methyl bromide. This system relies on the combination of 1,3 -D (Telone II) and chloropicrin in combination with a separately applied herbicide to that of methyl bromide for Florida fruit and vegetable production. However, the culmination of this research also has demonstrated that satisfactory yield responses probably cannot be achieved consistently in every field or in every season as equivalent to that of methyl bromide. As a result, growers must learn to expect some disease and loss, and to recognize that some inconsistency is unavoidable. The biggest continuing challenge facing both the scientific community and growers of Florida is developing and improving alternatives which further minimize the 5-10% impacts on yield for each of the methyl bromide dependent crops. The discovery of the additional in-row treatment of chloropicrin at bedding may represent a significant advancement in this regard.

Total Hatch: \$45,520

Research Project #	LAL-03832
Research Title	Microirrigation Technologies for Protection of Natural Resources and Optimum Production
Research Faculty	Parsons, L. R.

Description of Activity

Improper irrigation management with micro-sprinklers can lead to over-irrigation and/or loss of water and nutrients. This project will help improve irrigation management and help reduce potential groundwater contamination with nutrients caused by over-irrigation.

Impacts / Accomplishments

This research showed reclaimed water to be safe and effective for irrigation use. Reclaimed water can do much to reduce drought impact. In part, because of this research, reclaimed water use in Florida has increased by 285 million gallons/day in 10 years. Models help demonstrate water movement and potential leaching below the root zone on sandy soils. Information presented in this book will help Florida citrus growers improve irrigation management and can save 5 million gallons of water statewide per year.

Total Hatch: \$216

Research Project #	MAR-03854
Research Title	Selection and adaptation of grass and legume species for forage production in the southern oastal Plain and Peninsular Florida
Research Faculty	Blount, A. R.Quesenberry, K. H.Myer, R. O.Sprenkel, R. K.

Description of Activity

The forage production in the southern coastal plain and peninsular Florida is severely limited in the fall of the year. Efforts through plant breeding to develop varieties to fill this void would be advanageous to livestock production in this region. The purpose of this project is to integrate research with a number of plant breeding programs in the southeastern U.S. to cooperatively address fall season forage production

constraints. Concentration on breeding for physiological traits, specifically photoperiod, will be the major focus of this project.

Impacts / Accomplishments

Cultivars and germplasm resulting from this collaborative work, released in 2002, include: Q4188 Bahiagrass, 2002 (germplasm). C.L. Quarin, M.H. Urbani, A.R. Blount, E.J.Martinez, C.M. Hack, G.W. Burton, and K.H.Quesenberry. Q4205 Bahiagrass, 2002 (germplasm). C.L. Quarin, M.H. Urbani, A.R. Blount, E.J.Martinez, C.M. Hack, G.W. Burton, and K.H.Quesenberry. FLMR7 Red Clover, 2002 (cultivar experimental name). K.H. Quesenberry, A.R. Blount Beefbuilder III (FL X1997 (New) 4X late) Ryegrass. 2002 (cultivar). G. M. Prine, A.R. Blount, P. Mislevy FL X2001 (New) 4X LR mid-late Ryegrass. 2002 (cultivar). G. M. Prine, A.R. Blount, P. Mislevy FL X2001 (New 1) 4X LR late Ryegrass. 2002 (cultivar). G. M. Prine, A.R. Blount, P. Mislevy Horizon 474 Oat, 2002 (cultivar). R.D. Barnett, A.R. Blount, P.L. Pfahler, J. Johnson, B.M. Cunfer, G.D. Buntin, and D. Bland. Pennington Seed Co. "Supreme Southeastern Mixture" wildlife forage for southeastern US. developed in conjunction with the Florida Fish and Wildlife Conservation Commission and released to Pennington Seed in 2002.

Total Hatch: \$13,632

Research Project #	MON-03609
Research Title	Introduction And Evaluation Of Ornamental Plants
Research Faculty	Norcini, J. G.Knox, G. W.

Description of Activity

Use of herbaceous native plants is increasing; however, there is little information about the adaptability of these species to landscape or roadside situations. Appropriate seed sources are lacking. Florida ecotypes of herbaceous native plants will be evaluated (growth and physiology) under landscape and roadside conditions. Florida ecotypes of herbaceous native plant seeds will be increased.

Impacts / Accomplishments

Availability of Florida ecotype native wildflower seed is increasing, as is knowledge about the ecology of this seed. This will facilitate increased profitability for Florida's native wildflower seed producers (including tobacco farmers who could use wildflower seed to replace some of income lost by declines in the tobacco industry), and will allow end users to establish and manage native wildflower plantings more effectively. results of these evaluations of trees, shrubs and vines for growth, flowering, pest resistance and other ornamental characteristics are helping consumers and the nursery and landscape industries select the best species and cultivars for production and landscape use in Florida. Use of plants better adapted to Florida conditions can result in fewer pesticide and fertilizer applications as well as lower maintenance costs and greater customer satisfaction with landscape plants.

Total Hatch: \$25,724

Research Project #	ONA-03726
Research Title	Evaluation of Forage Germplasm and Forage Management Practices.
Research Faculty	Mislevy, P.Kalmbacher, R. S.Adjei, M. B.

Description of Activity

Little or no forage production is obtained from tropical forages durring cool season. This project examines the selection and management of warm season grasses that produce forage during both the warm and cool season

Impacts / Accomplishments

There is a need to determine adequate fertility for high yields of recommended forage grasses without excess soil accumulation, which can lead to environmental pollution. Annual applications of 20 and 93 kg ha⁻¹ P and K, respectively, continually produce high yields with minimal soil residue, resulting in a clean environment.

Total Hatch: \$1,220



Research Project # PLP-03336
Research Title Phylogenetic Relationships Of Pezizales (cup-fungi) And Tuberales (truffles)
Research Faculty Kimbrough, J. W.

Description of Activity

Continue field work to obtain cup-fungi and truffles necessary for ultrastructural and molecular studies; examine the ultrastructure of spores, septal pores and other apothecial organelles, and expand molecular studies of taxa discovered in these studies. Transmission and scanning electron microscopy will be applied to the study of septal pore organelles in asci, ascogenous hyphae, and excipular tissues of each species. When available, the ontogeny of spore wall development will be examined ultrastructurally.

Impacts / Accomplishments

Truffles have been shown to be polyphyletic, have evolved from different groups of epigeous Pezizales (cup-fungi). Ultrastructural aspects of spore wall development is useful in determining the proper alignment of various taxa.

Total Hatch: \$24,093



Research Project # PLP-03496
Research Title Polyphasic Analysis Of Xanthomonads Associated With Horticultural Crop Plants In
Research Faculty Stall, R. E.

Description of Activity

Collect xanthomonads from crop plants in Florida and from other National and international collections. These will be preserved for future characterizations. The characterization of the strains will be determined by fatty acid profile analyses and by genetically related techniques. The host ranges of the xanthomonads and cultivar specificity will be determined by several possible inoculation techniques.

Impacts / Accomplishments

In comparison of the sequence with those in a DNA gene bank, it was found that the sequence was homologous to hrp M which was originally isolated from *Pseudomonas syringae* pv. *phaseolicola*.

Total Hatch: \$9,827



Research Project # PLP-03603
Research Title Enhancing The Sustainability Of Commercial Peanut Production through Improved Disease Management
Research Faculty Kucharek, T. A.

Description of Activity

Plant diseases of peanut are the major limiting factor in Florida for yield. The purpose is to create a system of tactics that will minimize damage from plant diseases at minimum cost to the grower.

Impacts / Accomplishments

Two cultivars with resistance to *Cylindrocladium* black rot, Hull and Carver, were released in 2002. In field tests they were evaluated for resistance to CBR as breeding lines. they will allow for reduced fungicide sprays. Dollar returns for dollars expended can be maximized for fungicidal control of leaf spot by the grower with designated spray programs employed.

Total Hatch: \$10,278
Total Hatch: \$6,852

Research Project # PLP-03623
Research Title Biology And Management Of Diseases Affecting Vegetable Crops In North Florida
Research Faculty Weingartner, D. P.

Description of Activity

Plant diseases cause losses in crop production. This project develops control measures for plant diseases.

Impacts / Accomplishments

Recognition of tomato and potato late-blight pathosystems, coupled with genotype identification, could have dramatic impacts on amounts and types of fungicides used to control the disease in these crops.

Total Hatch: \$7,850
Total Hatch: \$11,776

Research Project # QUN-03364
Research Title Biology And Management Of Arthropod Pests Of Vegetables
Research Faculty Funderburk, J. E. Andersen, P. C.

Description of Activity

Biological and ecological information on the arthropod complexes of Florida vegetables will be generated including quantitative descriptions of growth, development, parasitism, predation, feeding, oviposition, etc., of the major pests. The causes of pest-related losses and the factors relating to pest situations such as the major components of the life systems of pests and how they interact with the other organisms will be determined. Methods for estimating and monitoring pestiferous and beneficial insect populations and for assessing pest damage will be developed. Appropriate management tactics that are practical, economical, environmentally sound, and acceptable to crop production standards will be developed. Action thresholds for insect and mite pests will be established and tactics that employ host plant resistance, predators and parasites, beneficial cultural practices, and selective pesticides to modify the life systems of arthropod pests will be developed.

Impacts / Accomplishments

Thrips and tospoviruses are serious worldwide pests of agronomic, vegetable, and ornamental crops. Growers have responded by applying toxic, broad-spectrum insecticides on a calendar basis yet this is not effective. Our research includes biological control, reduced-risk insecticides, and cultural tactics. It is being implemented for many crops and is being further adapted for different crop situations.

Total Hatch: \$2,353

Research Project # SWS-03711
Research Title Turfgrass Fertility Management and Environmental Impact
Research Faculty Sartain, J. B.

Description of Activity

Warm-season turf grasses are often grown under intensively managed conditions and as a result special attention must be paid to the management of their nutrition. This project will attempt to develop management practices which will sustain the nutritional needs of the turf grasses while minimizing the environmental impact of these practices.

Impacts / Accomplishments

Establishment of this methodology for assessing the N release characteristics of slow-release N sources in conjunction with extraction procedures will enable the analysis and labeling of slow-release N sources.

Total Hatch: \$20,634
Total Hatch: \$13,756

XII ~ STATISTICAL TABLES

Total Formula Funds Expended by Goal

	Goal1	Goal2	Goal3	Goal4	Goal5	Total
1862Extension	\$2,117,699	\$174,229	\$146,725	\$371,380	\$899,237	\$3,709,268
1862Research	\$2,357,868	\$185,055	\$76,467	\$484,570	\$332,094	\$3,436,054
1890Extension	\$588,866	\$219,827	\$249,616	\$115,556	\$294,066	\$1,467,931
*1890Research						

*1890 Research will report separately

Multi-State Funds Expended by Goal

	Goal1	Goal2	Goal3	Goal4	Goal5	Total
1862Extension	\$433,809	\$33,359	\$23,683	\$75,160	\$123,417	\$689,428
1862Research	N/A	N/A	N/A	N/A	N/A	N/A

1862 Integrated Extension/Research Formula Funding

	Goal1	Goal2	Goal3	Goal4	Goal5	Total
1862Extension	\$275,922	\$21,218	\$15,063	\$47,805	\$78,499	\$438,507
1862Research	\$407,988	\$24,442	\$-	\$255,895	\$57,033	\$745,358
1890Extension						
*1890Research						

*1890 Research will report separately

1862 Extension Matching Funds/Smith-Lever

Goal1	Goal2	Goal3	Goal4	Goal5	Total
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FederalSmith						
-Lever	\$3,510,352	\$297,492	\$250,531	\$634,069	\$1,655,399	\$6,347,844
	\$14,903,63					\$26,950,55
State	4	\$1,263,040	\$1,063,660	\$2,692,018	\$7,028,201	4
	\$13,963,93					\$25,251,28
County	8	\$1,183,404	\$996,595	\$2,522,283	\$6,585,063	2

1862 Research State Matching Funds

	Goal1	Goal2	Goal3	Goal4	Goal5	Total
State	\$51,900,676	\$4,036,046	\$1,195,962	\$16,885,214	\$5,616,345	\$79,634,245

1890 State Matching Funds

	Goal1	Goal2	Goal3	Goal4	Goal5	Total
State	\$261,104	\$97,914	\$110,969	\$52,221	\$130,552	\$652,760

FTEsandSys

	Goal1	Goal2	Goal3	Goal4	Goal5	Total
1862Extension(FTEs)	36	1	6	6	10	59
1862Research(Sys)	44	3	1	15	4	67

XIII ~ APPENDIX

Appendix A: List of Research Project Numbers, Titles and National Goals

U.S. Department of Agriculture
Cooperataive State Research, Education and Extension Service
Hatch Projects

Research Project #	Research Project Title	Goals
ABE-03491	Parameter Sensing And Control Systems For Drying Agricultural Commodities	2.1
ABE-03492	Microirrigation Of Horticultural Crops In Humid Regions	1.2
ABE-03596	Animal Manure And Waste Utilization, Treatment And Nuisance Avoidance For A Sustainable Agriculture	4.2
ABE-03824	Systems for Controlling Air Pollutant Emissions and Indoor Environments of Poultry, Swine and Dairy Facilities	1.2
AGR-03594	Formation, Sprouting And Longevity Of Hydrilla Tubers	1.2
AGR-03726	Evaluation of Forage Germplasm and Forage Management Practices	1.2
ANS-03572	Byproduct Feedstuffs: Rumen Degradability Of Carbohydrate And Fat Fractions And Effects On Feed Effi	1.2
ANS-03596	Animal Manure And Waste Utilization, Treatment And Nuisance Avoidance For A Sustainable Agriculture	4.2
ANS-03651	Breeding To Optimize Maternal Performance And Reproduction Of Beef Cows In Southern Region	1.2
ANS-03659	Metabolic Relationships In Supply Of Nutrients For Lactatingcows	1.2
ANS-03912	Enhancing Production and Reproductive Performance of Heat-stressed Dairy Cattle	1.2
APO-03364	Biology And Management Of Arthropod Pests Of Vegetables	1.2
APO-03413	Development Of Improved Carrot Varieties For Florida	1.2
Research Project #	Research Project Title	Goals

APO-03490	Biological Control Of Selected Arthropod Pest And Weeds	4.2
Research Project # APO-03609	Research Project Title Introduction And Evaluation Of Ornamental Plants	Goals 1.1
Research Project # APO-03825	Research Project Title Technical and Economical Efficiencies of Producing, Marketing, and Managing Environmental Plants	Goals 1.2
Research Project # APO-03875	Research Project Title Development Of New Potato Clones For Environmental And Economical Sustainability In The Northeast	Goals 1.1
Research Project # APO-03924	Research Project Title Development, Evaluation, And Safety Of Entomopathogens For Control Of Arthropod Pests	Goals 4.2
Research Project # BGL-03364	Research Project Title Biology And Management Of Arthropod Pests Of Vegetables	Goals 1.2
Research Project # BRA-03492	Research Project Title Microirrigation Of Horticultural Crops In Humid Regions	Goals 1.2
Research Project # BRA-03764	Research Project Title Strawberry Cultivar Development	Goals 1.2
Research Project # BRA-03832	Research Project Title Microirrigation Technologies for Protection of Natural Resources and Optimum Production	Goals 1.2
Research Project # DOV-03586	Research Project Title The Epidemiology And Control Of Strawberry Diseases	Goals 1.2
Research Project # DOV-03764	Research Project Title Strawberry Cultivar Development	Goals 1.1
Research Project # ENH-03543	Research Project Title Establishing Trees In Urban Landscapes	Goals 4.1
Research Project # ENH-03544	Research Project Title Improved Nutrition And Irrigation Of Ornamental Plants	Goals 1.2
Research Project # ENY-03490	Research Project Title Biological Control Of Selected Arthropod Pests And Weeds	Goals 1.2
Research Project # ENY-03694	Research Project Title Managing Plant-parasitic Nematodes in Sustainable Agriculture with Emphasis on Crop Resistance	Goals 1.2
Research Project # ENY-03796	Research Project Title Biological Control of Scapteriscus Mole Crickets	Goals 4.2
Research Project # ENY-03798	Research Project Title Biologically Based Ipm Systems for Management of Plant-parasitic Nematodes	Goals 1.2
Research Project # ENY-03860	Research Project Title Interactions Among Bark Beetles, Pathogens, And Conifers In North American Forests	Goals 1.2

Research Project # ENY-03934	Research Project Title Biological Control of Arthropod Pests and Weeds	Goals 1.2
Research Project # FOS-03741	Research Project Title Food Technology Research Support to Florida Agriculture Industries in Value Adding Enterprises	Goals 1.1
Research Project # FOS-03764	Research Project Title Strawberry Cultivar Development	Goals 1.1
Research Project # FRE-03599	Research Project Title The Effect Of Farmland Boom/bust Cycles On The Rural Economy	Goals 1.4
Research Project # FRE-03825	Research Project Title Technical and Economical Efficiencies of Producing, Marketing and Managing Environmental Plants	Goals 1.2
Research Project # FTL-03504	Research Project Title Biological Control And Management Of Soilborne Plant Pathogens For Sustainable Crop Production	Goals 4.2
Research Project # FTL-03711	Research Project Title Turfgrass Fertility Management and Environmental Impact	Goals 1.1
Research Project # FTL-03925	Research Project Title Biological Control of Soilborne Plant Pathogens for Sustainable Agriculture	Goals 4.2
Research Project # FTP-03492	Research Project Title Microirrigation Of Horticultural Crops In Humid Regions	Goals 1.2
Research Project # FTP-03700	Research Project Title Plant Growth Regulators To Enhance Profitability Of Fresh And Processed Florida Citrus	Goals 1.1
Research Project # FYC-03782	Research Project Title Early Childhood Interventions for Violence Prevention in	Goals 5.2
Research Project # HAS-03875	Research Project Title Development Of New Potato Clones For Environmental And Economical Sustainability In The Northeast	Goals 1.1
Research Project # HOM-03402	Research Project Title Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of Vegetable Crops	Goals 1.2
Research Project # HOS-03402	Research Project Title Integrated Pest Management As An Alternative For Control Of Soilborne Pests Of Vegetable Crops	Goals 1.2
Research Project # HOS-03457	Research Project Title Phenology, Population Dynamics And Interference: A Basis For understanding Weed Biology And Ecology	Goals 1.2
Research Project # HOS-03559	Research Project Title Senescence Physiology And Deterioration In Harvested Tomato And Other Fruits	Goals 2.1

Research Project # HOS-03846	Research Project Title Postharvest Quality and Safety in Fresh-cut Vegetables and	Goals 1.1
Research Project # IMM-03364	Research Project Title Biology And Management Of Arthropod Pests Of Vegetables	Goals 1.2
Research Project # IMM-03571	Research Project Title Dynamic Economic Analysis Of The Florida Citrus Industry	Goals 1.2
Research Project # IMM-03622	Research Project Title Water Management In Flatwoods Citrus Groves	Goals 4.2
Research Project # IMM-03924	Research Project Title Development,evaluation and Safety of Entomopathogens For Control of Arthropod Pests	Goals 1.2
Research Project # LAL-03490	Research Project Title Biological Control If Selected Arthropod Pests And Weeds	Goals 1.2
Research Project # LAL-03492	Research Project Title Microirrigation Of Horticultural Crops In Humid Regions	Goals 1.2
Research Project # LAL-03759	Research Project Title Freeze Damage and Protection of Horticultural Species	Goals 1.2
Research Project # LAL-03788	Research Project Title Development of Ecological Methods for Nematode Management	Goals 4.2
Research Project # LAL-03832	Research Project Title Microirrigation Technologies for Protection of Natural Resources and Optimum Production	Goals 4.2
Research Project # MAR-03854	Research Project Title Selection and adaptation of grass and legume species for forage production in the southern Coastal Plain and Peninsular Florida	Goals 1.2
Research Project # MON-03609	Research Project Title Introduction And Evaluation Of Ornamental Plants	Goals 1.2
Research Project # MON-03934	Research Project Title Biological Control of Arthropod Pests and Weeds	Goals 4.2
Research Project # ONA-03726	Research Project Title Evaluation of Forage Germplasm and Forage Management Practices.	Goals 1.2
Research Project # PLP-03336	Research Project Title Phylogenetic Relationships Of Pezizales (cup-fungi) And Tuberales (truffles)	Goals 1.2
Research Project # PLP-03496	Research Project Title Polyphasic Analysis Of Zanthomonads Associated With Horticultural Crop Plants In Florida	Goals 1.2
Research Project # PLP-03603	Research Project Title Enhancing The Sustainability Of Commercial Peanut Productionthrough Improved Disease Management	Goals 1.2
Research Project # PLP-03623	Research Project Title Biology And Management Of Diseases Affecting Vegetable	Goals 1.2

	Crops In North Florida	
Research Project # QUN-03364	Research Project Title Biology And Management Of Arthropod Pests Of Vegetables	Goals 4.2
Research Project # QUN-03693	Research Project Title Dynamic Soybean Insect Management For Emerging Agricultural Technologies And Variable Environments	Goals 1.2
Research Project # SWS-03711	Research Project Title Turfgrass Fertility Management and Environmental Impact	Goals 4.1

Appendix B: State Major Programs by Title and National Goals

SMP	Title	1 st	2 nd	3 rd	4 th
FL101	Practices for Competitive Agronomic Crop Production in Florida	1			
FL102	Florida Forage Production for Livestock and Dairy	1	4		
FL103	Improving the Production, Efficiency and marketability of Beef Cattle in Florida	1	2	4	
FL105	Management of Water and Nutrients in Florida's Nursery Industry	4			
FL107	Vegetable Production, Harvesting and Handling Efficiencies in Florida	1	2	4	5
FL108	Citrus Management in Florida	1	2	4	
FL111	Tropical Fruit Crops Management in Florida.....	1	4		
FL112	Ornamental Plant Production and Integrated Pest Management in Florida				
FL113	Sustainable Community Development and Enhancement of Natural Systems in Florida	1	4		
FL114	Environmental Landscape Management in Florida.....	4	5		
FL116	Florida Turfgrass Management.....	1	4	5	
FL117	Profitable and Sustainable Poultry Production in Florida				
FL119	Business Management for Horticultural Enterprises in Florida	1			
FL120	Managing Competitiveness in Agriculture Through Management, Finance, Marketing, and Policy				
FL121	Small Farm Sustainable Agriculture Alternative Opportunities and Crops in Florida.....	2	4		
FL122	Pesticide Applicator Training in Florida.....	2	4		
FL124	Florida's Farm and Home Safety and Disaster Preparedness and Recovery	1	4	5	
FL128	Sustaining the Economic Viability of the Florida Dairy Industry	1			
FL129	Profitable and Sustainable Sugarcane Production in Florida	1	4		
FL131	Quality and Management of Florida State Diagnostic Services.....	1	2	4	
FL132	Florida Aquaculture				
FL133	Weather and Climate				

FL134	Development, Evaluation, and Production of Florida Ornamental Crops				
FL135	Food Safety, Quality, and Technology in Florida.....	1	2		
FL261	Small Animal and Small-Scale Farm Profitability and Sustainability in Florida - 1890.....	1			
FL262	Nutrition, Diet and Health in Florida - 1890	3			
FL265	Improving Profitability of Small- Scale Crop Production in Florida.....	1			
FL267	Financial Management and Decision-Making in Florida - 1890.....	5			
FL269	Water Quality and Environmental Programs in North Florida	4			
FL270	Community Resource Development	5			
FL271	Adult and Child Health and Wellness Programs	3			
FL272	Herd Health and Food Safety.....	1	2		
FL273	Small Farms	1	3	4	5
FL312	Seafood and Aquaculture Product Quality and Safety in Florida.....	2			
FL315	Coastal and Marine Recreation and Waterway Management	4	5		
FL316	Florida's Coastal Environment and Water Quality.....	4			
FL317	Florida's Sustainable Marine Fisheries ...	1	4		
FL411	Florida Water Conservation.....	1	4		
FL412	Florida's Comprehensive Water Quality Program				
FL416	Management and Ecology of Aquatic, Wetland, and Invasive Exotic Plants in Florida	1	4		
FL420	Conserving Natural Resources in Florida.....	4			
FL510	Housing and Built Environment in Florida.....	5			
FL511	Food, Nutrition, and Health in Florida	3			
FL512	Family Economic Stability in Florida.....	5			
FL513	Community Development.....	5			
FL515	Successful Parenting/Family Development in Florida	5			
FL519	Aging in The Sunshine State				
FL201/FL701	Preparing Florida's Youth for the World of Work				
FL203/FL703	4-H EFNEP in Florida	3	5		
FL211/FL711	Animal Sciences Education	1	5		
FL212/FL712	Plant Sciences	5			
FL213/FL713	Science and Technology	5			

FL214/FL714	Environmental Education	4	5	
FL215/FL715	Individual and Family Resources Including Health and Safety.....	2	3	5
FL216/FL716	Citizenship/Leadership	5		
FL217/FL717	Communication Arts and Sciences	5		
FL218/FL718	Organizational Development	5		
FL801	Volunteerism in Extension			

Appendix C: Waivers

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Establishment of Target Percentages
for Multistate Extension Activities and Integrated Activities

Institution University of Florida
State Florida

Check one: Multistate Extension Activities
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Options for Determining Target Percentages (Circle one)

- A. 25 percent (Submission of Form CSREES-BASE is waived).
- B. Target Percentage of _____ (two times the Preliminary Baseline Percentage of _____).
- C. (Option only available if higher than option B and less than 25 percent.)
Target Percentage of _____ for FY 2000 and thereafter.
- D. (Option only available if higher than option B and less than 25 percent.)
Target Percentage for FY 2000 and thereafter phase-in:
FY 2000 _____
FY 2001 _____
FY 2002 _____

Clinton T. Waddill
Director

Feb 28, 2003
Date

Form CSREES-TARG (2/00)

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Request for Waiver from Target Percentage
for Multistate Extension Activities and Integrated Activities

Institution University of Florida
State Florida

Waiver for (circle one): Multistate Extension Activities
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

Fiscal Year (circle one): FY 2000
FY 2001
 FY 2002
FY 2003
FY 2004

Type of Waiver: Pre-waiver (Must be submitted prior to October 1)
 Post-waiver (Must be submitted with Annual Report of Accomplishments and Results)

Justification:

Hardship. IFAS had a reduction of State Appropriated funds in 2001-2002 of \$2.5 million dollars followed by another reduction of \$6.1 million in the 2002-2003 fiscal year. These two severe budget cuts over the past two legislative sessions have been absorbed through realignments, consolidations and staff reductions which have affected projects and programs in research and extension.

Clinton T. Waddill
Director

Feb 28, 2003
Date

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Establishment of Target Percentages
for Multistate Extension Activities and Integrated Activities

Institution University of Florida
State Florida

Check one: Multistate Extension Activities
 Integrated Activities (Hatch Act Funds)
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Target Percentage of _____ for FY 2000 and thereafter.
- D. (Option only available if higher than option B and less than 25 percent.)

Target Percentage for FY 2000 and thereafter phase-in:

FY 2000 _____
FY 2001 _____
FY 2002 _____

Christine T. Waddell
Director

Feb 28, 2003
Date

Form CSREES-TARG (2/00)

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Request for Waiver from Target Percentage
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Institution University of Florida
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Waiver for (circle one): Multistate Extension Activities
 Integrated Activities (Hatch Act Funds)
 Integrated Activities (Smith-Lever Act Funds)

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 FY 2001
 FY 2002
 FY 2003
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Christine T. Waddell

Feb 28, 2003

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
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Institution University of Florida
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Check one: Multistate Extension Activities
 Integrated Activities (Hatch Act Funds)
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Target Percentage for FY 2000 and thereafter phase-in:
FY 2000 _____
FY 2001 _____
FY 2002 _____


Director

Feb 28, 2003
Date

Form CSREES-TARG (2/00)

U.S. Department of Agriculture
Cooperative State Research, Education, and Extension Service
Request for Waiver from Target Percentage
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