

2014 University of Maryland - Eastern Shore and University of Maryland Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

The University of Maryland College Park (UMCP) and the University of Maryland Eastern Shore (UMES) have enjoyed a cooperative relationship in research and extension for many years. University of Maryland Extension (UME) is a partnership between UMCP and UMES. Both campuses also have their own research programs organized under the auspices of the Maryland Agricultural Experiment Station (MAES) at UMCP and the Agricultural Experiment Station (AES) at UMES. Collectively we will refer to UME, MAES, AES as UM.

The Strategic Plan for the UMCP states that, "The University of Maryland will be an institution with sweep and impact, where new ideas and ways of thinking make a difference." UME and MAES, in alignment with the University and the College of Agriculture and Natural Resources, are also focused on sweep, impact, and making a difference through outcomes that benefit Maryland's agro-ecosystem, community, youth and adults. This will be achieved by implementing relevant research and extension programs in the areas of genomics, sustainable (e.g., environmentally and economically) plant and animal production systems, healthy and nutritious food, and development of resilient communities and families.

UMES is on a "journey from excellence to eminence" and the Strategic Plan speaks pointedly to the commitment to advance productivity in research, economic development and transfer, and contribution to an enhanced quality of life in Maryland and facilitation of sustainable domestic and international economic development and competitiveness. UMES' research priorities, therefore, address environmental quality and sustainability, sustainable food production and security, human health and safety, conservation and use of coastal and marine resources, and bioenergy. Furthermore, UMES strives to educate and train the next generation of teachers, educators, and scientists in the food, agricultural and related sciences.

University of Maryland Extension will tackle the big, critically important societal issues and those that are the "most challenging and vexing." To determine what are the most challenging and vexing issues, UME engages stakeholders in dialog, scans the environment for changing conditions, analyzes data available from multiple, trusted sources, and relies upon the expertise and leadership of impact teams made up of field-based educators, researchers, campus-based Extension Specialists, and stakeholders that guide program development and delivery. Coupled with the exemplary research through MAES, AES, and teaching expertise at both Universities, UME can achieve measurable impacts that build strong and resilient economies, communities, families, and individuals. The Maryland Agricultural Experiment Station (MAES) in partnership with UME coordinates the research arm of the College of Agriculture and Natural Resources and responds to the state and national questions related to the agro-ecosystem at all levels (e.g., genomics, plant and animal systems, community, ecosystem level, etc.) through well thought-out research and extension programs. It fosters science-based basic and applied research that ranges from crop variety development to food safety and ecosystem health.

The Universities have identified six challenge areas in this 2013-2017 Plan of Work which represent major programmatic initiatives that UM will direct resources to accomplish. These impact areas are a broad-based method of dividing the critical needs identified by the planning process into manageable and focused units. MAES and AES will direct their research focus through multi-state projects, REEport (formally CRIS) projects, and MAES competitive projects to align with national priority areas identified by USDA-NIFA. The six initiatives and the associated key, major outcome of each are:

Global Food Security & Hunger: Agriculture and food production will be sustainable and profitable and produce a safe, abundant, affordable, and accessible food supply.

Climate Change: Individuals and communities will become stewards to manage the environment for the mutual benefit of people, ecosystems, wildlife, natural resources, and economic interests. The research will focus on finding sustainable means to adapt to climate change and mitigate its impacts.

Sustainable Energy: New, science-based, sustainable energy technologies, such as biofuels and other renewable and alternative energy sources will contribute to Maryland and the nation's energy independence.

Childhood Obesity: Youth and families will make informed decisions about their health, finances, food, and overall well-being.

Food Safety: Maryland's food supply is abundant and safe through home and community food production and safe food handling, producers' use of Good Agricultural Practices (GAP), and literacy from farm-to-consumer to reduce food-borne illnesses.

Family & Community Resiliency: Improve human capacity to achieve desired community outcomes and be prepared to respond to uncertainties of economics, health, climate, and security. 4-H Youth Development programs will emphasize leadership development, independent thought and action, and community concern, as well as life skills development to produce a self-sufficient and resilient adult.

In 2013-2014, UME and AES will begin the process for developing new strategic plans. The process will allow both to sharpen their program focus and ensure that the needs of Maryland residents are met more effectively.

Estimated Number of Professional FTEs/SYs total in the State.

| Year | Extension | | Research | |
|------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| 2014 | 85.0 | 15.0 | 54.0 | 14.0 |
| 2015 | 85.0 | 15.0 | 54.0 | 15.0 |
| 2016 | 90.0 | 15.0 | 54.0 | 15.5 |
| 2017 | 90.0 | 15.0 | 54.0 | 15.5 |
| 2018 | 0.0 | 0.0 | 0.0 | 15.5 |

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel
- Expert Peer Review

2. Brief Explanation

Extension Faculty Reviews:

The merit review process for UME faculty occurs annually when the faculty member is formally evaluated by the Program Leader (Assistant Director). The AGNR Program Leader evaluates AGNR Educators and Specialists; FCS Program Leader, the FCS Educators and Specialists; and the 4-H Program Leader, the 4-H Educators and Specialists. Input is obtained from the County Extension Director (CED) or Area Extension Director (AED). Emphasis is placed on program impacts and the difference made to constituents and the residents of Maryland during the preceding 12 months. Each faculty member is evaluated on individual merit. Documents used for the merit review are approved Individual Extension Plan (IEP), Curriculum Vitae, MCERS reports, and Teaching Effectiveness Summary. Extension Specialists housed in academic departments are also reviewed by their respective Program Leaders and input is given to the Department Head on those faculty members' performance review.

Research Faculty Reviews:

All research faculty have a departmental home, and while there are subtle differences between the departments, they all have a peer-review system wherein assigned faculty or a faculty committee review the annual performance criteria of each faculty member and assign a merit ranking. These criteria, from a research perspective are evaluated, in general, on grantsmanship, publications, the quality of the journal (based on a citation index), research graduate student training, and invited and/or contributed scientific talks and seminars. These are also the same criteria that are used to evaluate promotion and tenure decisions. The peer committee recommendations are reported to the respective department chair who provides his/her input and then provides a final ranking. This process is followed for tenured, tenure-track, and research faculty appointments.

Programmatic Reviews:

Programmatic reviews are conducted at the departmental level at the request of the dean, associate dean, and/or department chair. They generally range in the five-to-ten year cycle. These reviews are conducted by a panel of external reviewers from prestigious departments, institutions, or federal agencies that have similar departmental or agency diversity in programmatic issues. Individual programs are rarely reviewed independently but within the context of how they fit in the mission of the college and department.

Project Reviews:

All research projects funded through MAES and AES undergo both internal and external review. There is an internal review of federal projects by at least two faculty with knowledge of the discipline, a review by the associate dean for research and associate director for MAES or dean/research director in the case of AES, and USDA. The one exception is that MAES offers an internal competitive grant program for faculty within the college and UMES to afford preliminary research findings that increases competitiveness for these faculty to be successful in competing for competitive grants such as AFRI (formerly NRI) and other funding sources. The panel evaluations are a set of standardized criteria such as clarity of objectives, relationship to college's mission, quality of proposed research, deliverables, etc. Currently, this process is conducted for Hatch funding only. Plans are being considered for the same internal process for McIntire-Stennis and Animal Health and Disease funding as well.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

Global Food Security and Hunger: Maryland crop and livestock producers are confronted with numerous challenges that can affect their ability to produce an abundant food supply and maintain profitability. The areas of emphasis for this program will focus on the 1.25 million acres of grain crops, 75,000 acres of vegetable and fruit crops, and 260,000 acres of forage crops and pasture acreage by improving animal and crop production efficiency and land management in the program areas of nutrient management, integrated pest management, environmentally and economically sustainable production, and grain marketing. In addition, AES will address issues with technology of personal protective clothing for pesticide applicators.

Climate Change: Maryland has heavily urbanized, densely populated regions as well as agriculturally diverse and forested areas which are all sensitive to forces impacting the Chesapeake Bay and other natural resources. Each of Maryland's diverse ecosystems (e.g., agriculture, forestry, urban, wetlands, aquatic, etc.) provides services for its habitats, thus research and education programs pertaining to the sustainable interaction with these ecosystems is envisioned and promoted by all UM entities. Natural resource education of adults, youth, and under-served communities will help to promote environmental awareness and responsible decision making, increase scientific literacy and interest of youth in science and math, and foster behavioral changes that can help communities approach a more sustainable lifestyle.

Sustainable Energy: Recognizing the state and nation's needs for energy independence through biofuels and other alternative energy sources, UM plans to build program expertise in this area over the next five years. Currently, we have faculty who work on devising efficient methods such as anaerobic digestion to convert animal waste into bioenergy and high-efficiency combustion of wood for heating. In addition, faculty are focusing on bioenergy production from algae, switchgrass, sorghum, sudangrass, and sorghum x sudangrass hybrids.

Childhood Obesity: Healthy eating habits along with regular physical activity have an important role in weight control and overall health. Despite the proven benefits of these healthy habits, the CDC State Indicator Report for Maryland shows that less than 16% of adults report eating the recommended daily servings of both fruits and vegetables. Unfortunately, the statistics for adolescents are worse, with only 11% reporting daily consumption of the recommended amounts. Finding ways to increase fruit and vegetable consumption is key to improving health and well-being. Since lifelong dietary patterns begin in childhood, focusing on children, and those who feed children, is a logical focus of research and education on nutrition and health education interventions.

Food Safety: Many Americans are disconnected from the source of their food supply. It is important that consumers, especially youth, develop an understanding of where food comes from so that they can gain a greater appreciation of food safety issues in a global economy. MAES and AES supported research will focus on food safety and human health through both basic and applied research. MAES will focus on the genomics in plant breeding and testing the product in real world conditions at its research centers. MAES and AES are also fostering research on food safety from gate to the consumer and provide quantitative risk analysis on the exposure of food to bacterial and parasitic infections. UME's Food Smart

Impact Team will focus on programming to help Maryland residents become educated consumers who can make informed decisions about buying, storing, and preparing food to maximize health and safety; about use of locally grown, fresh food; through home and community food production; and safe handling practices. In addition, a focus will be on helping fruit and vegetable producers understand the need for and adopt Good Agricultural Practices (GAP).

Family & Community Resiliency: To address community and family pressures, UME will have a focused program to improve the well-being and resiliency of individuals, families, communities and businesses through creating a diverse pool of trained people for the workforce, including scientists and others who understand science; engage residents in financial management education to increase financial literacy and security and increase youth and adults' ability to make both short- and long-term decisions regarding credit, debt and spending.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Research and educational programs will be directed to increase efficient, healthy, and sustainable food production for the population including the under-served and under-represented. With efficient production, food prices can be controlled, thus making healthy and nutritious food available to residents despite their socio-economic status. Two programs in Maryland (both at UMCP and UMES) specifically address and will continue addressing issues related to hunger and food security of under-served and under-represented populations: The Food Stamp & Nutrition Education (FSNE) program and the Expanded Food & Nutrition Education Program (EFNEP). The Small Farm Program at UMES works to improve the standard of living and increase the farm income of small, economically and socially disadvantaged farmers through better financial planning, resource management and access to information and technology. Maryland's urban agriculture programs, including Grow It, Eat It!, reach out to under-served youth and adults in the urban centers. The expansion of Annie's Project throughout the state will help to insure the financial health of small farm, female operators through increased financial literacy. These educational programs will be accompanied by research projects that will focus on nutrient and water management in Greenhouse settings under controlled climate conditions. Research is being focused to produce products that are healthy and sustainable. Also, MAES disseminates the research findings to the general public, including under-served populations, by having multiple open houses in its research and education centers, as well as the annual University of Maryland Agricultural Day.

3. How will the planned programs describe the expected outcomes and impacts?

Global Food Security and Hunger: Increases in: agricultural literacy in urban and rural areas to develop residents' understanding of the food system; the sustainability and profitability of agriculture, forestry, and green industries through sustainable environmental practices; agricultural profitability and sustainability through the development of alternative enterprises and value-added products; Maryland's food system to match local production with market demand; the use and affordability of locally grown, fresh food through local market promotion and community gardens; and, a decrease in the loss of agricultural land while enhancing (promoting) value of agriculture land and open space in rural and urban areas. Research programs coordinated through MAES and AES will focus on environmentally and economically sustainable food production, thus insuring food security and helping minimize hunger. Examples of these research and extension improvement projects are: Advanced Technologies for the Genetic Improvements of Poultry, Improving Economic and Environmental Sustainability in Tree-Fruit Production through changes in Rootstock Use, and, Improving the Sustainability and Availability of Livestock and Poultry Production in the United

States.

Climate Change: Improved water quality as related to agriculture, forests, and developed lands and sustainable management of aquatic, forest, wildlife, soil and air resources. MAES and UME will conduct programs such as Nutrient Management, Drainage Design and Management to Improve Water Quality, Use of Beneficial Microorganisms to enhance Green Industries, Characterization and Mechanisms of Plant Responses to Ozone in the US, etc. that will have outcome in terms of both adaptation to and mitigation of Climate Change. MAES, through support from the Northeast Experiment Station Directors, hosted a one-day climate change forum in 2011 where scientists from state institutions in the Northeast and federal agency scientists attended and discussed the needed research and education needs related to climate change. The Northeast Experimental Station Directors, including Maryland, are working toward forming an understanding and joint research and education program (with Eastern Canadian institutions) on climate change adaptation and mitigation.

Sustainable Energy: Diversified energy sources and improved energy conservation and efficiencies. MAES is supporting Multi-State projects at the present time that encourage sustainable production in a bioenergy environment. We are planning to develop research and extension programs to pursue economically and environmentally sustainable bioenergy production in the State of Maryland. Faculty at MAES and AES are looking at the development of efficient methods to use bio-waste such as poultry litter, aquatic waste, feedstock, switch grass, etc. to produce alternate energy. Methods for fuel production from plant biomass, animal waste, and algae are being investigated. It is envisioned that outcomes of these research and education programs can help to convert the waste that is otherwise a pollutant to the water systems into a valuable product.

Childhood Obesity: Youth will have increased consumption of fruits and vegetables following adoption of system changes in schools for availability of healthy food choices; youth and families gain awareness, knowledge or skills regarding healthy eating and physical activity; teachers and youth leaders acquire and use basic food gardening knowledge and skills; Growing Healthy Habits curriculum implemented in schools, after-school programs, and 4-H clubs.

Food Safety: Increase in safe food handling practices; use of Good Agricultural Practices (GAP) by fruit and vegetable producers in Maryland; integration of organic practices; and, Maryland residents know how to purchase, store, handle and prepare locally grown, fresh foods. MAES supports a multi-state project titled, "Post-harvest Biology of Fruits" that supports storage life, quality, and flavor of fruits.

Family & Community Resiliency: Urban and rural communities improve the infrastructure and the environment to diversify their personal, civic, economic, and social bases without undermining their assets; increase the economic viability of Maryland communities by encouraging partnerships to support a well-educated and diverse workforce through life-long learning opportunities; and, provide support for new and expanding business enterprises through professional and collaborative assistance in marketing and business development plans and programs.

4. How will the planned programs result in improved program effectiveness and/or

The UM challenge areas (the six major programs in this POW) represent focused, major programmatic initiatives that UM will direct resources to accomplish. These impact areas are a broad-based method of dividing the critical needs identified by the planning process into manageable units. Key outcomes are established within each impact area. UME's impact

leadership teams have been formed, which are made up of field-based Extension Educators, researchers, Extension Specialists, and Faculty Extension Assistants, who will work together to provide overall statewide leadership for programmatic efforts. Impact teams develop action plans for each of the impact areas and are responsible for collectively achieving the goals, measuring the impacts using suitable evaluation methods and tools, and reporting findings to stakeholders. Impact teams are linked to each other through common target and primary audiences served, the topics and subjects taught, and outcomes and impacts achieved. Impact leadership teams will develop signature programs that are replicable, measurable, and recognized at the state and national levels. Similarly, MAES has established a "Faculty Research Council" that will help guide and identify our research vision compatible with the national programs in NIFA's identified challenge areas. This will also be accomplished with MAES' competitive grants program and strategic participation in the multi-state Projects.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey specifically with non-traditional groups
- Survey of selected individuals from the general public

Brief explanation.

To inform this Plan of Work, the following strategies were used: 1) A statewide survey of UME customers, including their satisfaction level with services and programs they have accessed and what other programs they would like to see offered that would help them meet their needs; 2) analysis of secondary data for Maryland, including data from the U.S. Census, USDA National Agricultural Statistics, Maryland Departments of Planning, Agriculture, Natural Resources, Economic Development, and Maryland Department of Health and Mental Hygiene (and many more); 3) environmental scanning at the national, regional, state, and local levels; 4) the strategic planning processes of the University of Maryland, the College of Agriculture and Natural Resources (AGNR), UME, the University of Maryland Eastern Shore and the School of Agricultural and Natural Sciences (SANS). The MAES goals were reflected in the AGNR strategic plan through heavy participation by the research faculty in developing the plan. Also, MAES and AES research faculty seek input from other researchers through state, regional, national, and international conferences and workshops in which they participate. The UME strategic planning process drew upon the expertise of approximately 150 UME Educators, Specialists, and administrators. UME field-based educators solicit feedback from local Extension Advisory Councils and other stakeholder groups. Survey work with all groups participating in programs is performed on a regular basis to assess needs.

In the fall of 2012, a new strategic planning cycle started for UME. Through this process, listening sessions will be conducted across all Maryland counties and the City of Baltimore. In

addition, the new 2010 Census data will be reviewed for a complete understanding of Maryland demographics. In addition, key informant interviews will be conducted with both internal and external stakeholders.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

Input from Maryland's residents will be solicited through local and statewide advisory councils. While UME has had county level Extension Advisory Councils (EACs) for several years, during the next five years increased emphasis will be on supporting these Councils and making sure that communication happens in consistent, two-way patterns using multiple methods (face-to-face meetings, social networking, and email). Instruments for soliciting feedback will continue to be translated to Spanish and used in applicable situations.

The College of Agriculture and Natural Resources utilizes a Dean's Leadership Council consisting of a broad cross-section of agricultural industry leaders to provide input on major directions for the College's research, teaching and extension agenda. The Advisory Council meets periodically to discuss rising issues in the State. MAES has established a "Faculty Research Council" and has formed research teams around vital topics such as Sustainable Bioenergy, Watershed sustainability and climate change, nutrition and health, Food safety and security, genomics and biotechnology, etc. that will provide a platform for scientists to debate the integrated research and extension programs. These groups will hold meetings and will be central in attracting other faculty to join.

The administrative officers of the Maryland Agricultural Experiment Station and UME sit on and attend a wide array of committees with the State's agricultural leaders. Such continuous contact with the agricultural leadership including the Maryland Secretaries of Agriculture, Natural Resources, and Environment provides additional contact to keep research and education issues examined by the research and extension in the State's two land grant universities current. The groups include the Maryland Agricultural Commission, the Maryland Grain Producers Association, the Delmarva Poultry Industry, the Southern Maryland Agriculture Commission, the Maryland Association of Soil Conservation Districts and many other similar groups. Again, research and extension faculty discuss priority topics with other scientists and specialists through many platforms, including electronic (e.g., webinars), symposia, and workshops.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Survey of the general public
- Survey specifically with non-traditional groups
- Meeting specifically with non-traditional individuals
- Survey specifically with non-traditional individuals
- Meeting with invited selected individuals from the general public

Brief explanation.

A new strategic planning cycle for UME will begin in 2013 and continue into early 2014 that will result in a new strategic plan. During this planning cycle, listening sessions will be held across every county and the City of Baltimore with stakeholder groups. MAES will continue collecting CRIS, REEport, and multi-state project progress reports including publications in refereed journals and conference proceedings that speak about the quality of research. Instruments for soliciting feedback will continue to be translated to Spanish and used in applicable situations.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities
- Other (Strategic Plan Development)

Brief explanation.

Constituent input will be utilized in a variety of ways to include:

- the budget process, particularly at the local level;
- identification of emerging issues through understanding the most critical needs that can be addressed by educational programs;
- re-directing Extension & Research programs by understanding critical needs and defining new priorities;
- in staff hiring to recruit and employ the best professionals available to affect change in an ever-changing society;

- in action programs as we work in communities to affect positive change and to set priorities for impacting the future.

V. Planned Program Table of Content

| S. No. | PROGRAM NAME |
|--------|---------------------------------|
| 1 | Global Food Security and Hunger |
| 2 | Climate Change |
| 3 | Family & Community Resiliency |
| 4 | Sustainable Energy |
| 5 | Childhood Obesity |
| 6 | Food Safety |

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

2. Brief summary about Planned Program

The University of Maryland Extension's (UME), the Maryland Agricultural Experiment Station's (MAES) at College Park, and the Agricultural Experiment Station at UMES key expected outcome over the next five years is that agriculture and food production will be sustainable and profitable and produce a safe, abundant, affordable, and accessible food supply.

Attaining this key outcome requires farms to survive and be productive in a time when growth and development place stress on the amount of farm land available for production. According to the USDA-NASS 2007 Census of Agriculture, the number of Maryland farms has increased by 5% to 12,834 farms, while land in farming has decreased by 1% since the last Census in 2002. To slow down development and keep Maryland farms solvent, alternative crops and markets will be investigated. UME will be involved in local and regional efforts to assist agricultural and natural resource entrepreneurs. Research coordinated through MAES and AES on crop and animal breeding, specialty crops, market analysis, economic sustainability, and policy analysis is being sought to respond to some of these issues. Research conducted through MAES, AES, and UME helps to generate vital and required information to increase productivity using genomics, breeding, and adaptation of alternate crops with economic and environmental sustainability.

Insect, disease, weed, nematodes, invasive species, and cultural plant problems have the potential to cause economic and plant material loss in Maryland. Improvement of diagnostic skills through the IPM Program, management of diseases, and increased efficiency in animal and crop production through research and education are keys to insure high food production in Maryland. Additionally, AES will address issues with technology of personal protective clothing for pesticide applicators. The alternative crops and enterprises program, including organic crop production and certification, ethnic and specialty crop production, cover crop use, high tunnel crop production, and small fruit production, will play a significant role in Maryland farmers' effectiveness and efficiencies.

Animal agriculture is the largest component of Maryland agriculture based on value of production. To ensure long-term sustainability and profitability, it is critical to conduct research and educate producers about evolving Best Management Practices (BMPs) such as bio-security, quality assurance, nutrition, health, food safety, marketing, breeding, and aquaculture.

Awareness and education of biosecurity practices are important for the agricultural community. Knowledge inquiry through research projects of MAES, AES, and educational programs through UME will be targeted to Extension and Research faculty; industry personnel; producers; farm employees; allied industry professionals; and state government employees.

Agricultural literacy of Maryland residents will be a primary focus. Many are disconnected from the source of their food supply. UME will focus effort on making sure that consumers, especially youth, develop an understanding of where food comes from so that they can gain a greater appreciation of food issues in a global economy. Recent "Grow it-Eat it" programs developed for urban communities is on-line with this mandate and it is gaining a great community acceptability and momentum in Maryland.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---------|--|-----------------|-----------------|----------------|----------------|
| 102 | Soil, Plant, Water, Nutrient Relationships | 10% | 10% | 15% | 0% |
| 205 | Plant Management Systems | 10% | 10% | 10% | 0% |
| 216 | Integrated Pest Management Systems | 15% | 10% | 10% | 0% |
| 301 | Reproductive Performance of Animals | 0% | 0% | 0% | 33% |
| 302 | Nutrient Utilization in Animals | 0% | 0% | 0% | 24% |
| 311 | Animal Diseases | 10% | 10% | 10% | 0% |
| 503 | Quality Maintenance in Storing and Marketing Food Products | 5% | 10% | 5% | 0% |
| 511 | New and Improved Non-Food Products and Processes | 0% | 0% | 0% | 10% |
| 601 | Economics of Agricultural Production and Farm Management | 10% | 10% | 10% | 0% |
| 602 | Business Management, Finance, and Taxation | 10% | 10% | 10% | 0% |
| 604 | Marketing and Distribution Practices | 10% | 10% | 10% | 0% |
| 608 | Community Resource Planning and Development | 10% | 10% | 10% | 0% |
| 704 | Nutrition and Hunger in the Population | 10% | 10% | 10% | 0% |
| 723 | Hazards to Human Health and Safety | 0% | 0% | 0% | 33% |
| | Total | 100% | 100% | 100% | 100% |

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

According to the 2007 USDA-NASS Agriculture Census, Maryland has over 2 million acres of farmland and 1.454 million acres of land that is used for crop production. Maryland crop and livestock producers are confronted with numerous challenges that can affect their profitability. Among the challenges are appropriate pest and parasite management practices for a wide range of insects, diseases, and weeds; utilizing nutrients and animal health products in a manner that minimizes non-point source pollution of the state's water resources; managing water in an environmentally responsible manner; attaining profitability for livestock and crop commodities that experience constant price fluctuation while

input costs mostly increase; and, adjusting to an era that envisions agricultural producers to be both consumers and producers of energy--all while being environmentally responsible. The costs of energy will continue to be a primary concern in production agriculture.

Even in a state with many readily available resources such as Maryland, there continues to be individuals, families, and children who do not have enough food to eat. A significant number of children go to bed hungry on a daily basis, with the free or reduced-price lunch they consume at school often their major source of sustenance. Food deserts--residential communities where little or no food is available in an accessible distance--contribute to hunger issues, as well as poor nutrition and childhood obesity.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Interest in alternative crops/enterprises will continue.
- There will be continued cooperation of public agencies and private organizations.
- There will be continued pressure on traditional farming practices, both economically and environmentally.
 - Input costs such as energy, seed, and fertilizer will be a challenge for all producers.
 - The green industry will continue to grow and there will continue to be a growing market for plant materials.
 - Maryland agricultural land will continue to face development pressures.
 - Commodity prices will remain weak relative to production costs.
 - There will be an increasing demand for locally produced products and an increasing demand for organic and other more naturally produced products.
 - Producers need marketing assistance and are interested in getting more money for the products.
 - The number of Food Stamp recipients and eligibles will continue to increase as long as unemployment remains high, resulting in increasing levels of food security for families and individuals.
 - EFNEP and FSNE programs will continue to focus on food security as a priority outcome for its limited income audiences.
 - Adequate funding will continue.

2. Ultimate goal(s) of this Program

Agriculture and food production will be sustainable and profitable and produce a safe, abundant, affordable, & accessible food supply by increasing agricultural literacy in urban and rural areas to develop youth and adults' understanding of the food system; sustainability and profitability of agriculture, forestry, and green industries through sustainable environmental practices; agricultural profitability and sustainability through the development of alternative enterprises and value-added products; the use and affordability of locally grown, fresh food through local market promotion & community gardens; decreasing loss of agricultural land while enhancing (promoting) value of agriculture land and open space in rural and

urban areas, and optimizing the Maryland food system to match local production with market demand.

Connecting locally grown produce, farmer's markets, and community gardens with food insecure families and individuals, resulting in decreased food insecurity and more healthful dietary intake.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| 2014 | 26.0 | 4.0 | 16.0 | 1.0 |
| 2015 | 28.0 | 4.0 | 16.0 | 1.0 |
| 2016 | 28.0 | 4.0 | 16.0 | 1.0 |
| 2017 | 28.0 | 4.0 | 16.0 | 1.0 |
| 2018 | 0.0 | 0.0 | 0.0 | 1.0 |

V(F). Planned Program (Activity)

1. Activity for the Program

- UME, MAES, and AES will have a combined focus to ensure that Maryland agriculture and food production will be sustainable and profitable and produce a safe, abundant, affordable, and accessible food supply.
- Research coordinated through MAES and AES on crop and animal breeding, specialty crops, market analysis, economic sustainability, and policy analysis will be performed, while UME will be involved in local and regional efforts to assist agricultural and natural resource entrepreneurs.
- Research conducted through MAES, AES, and UME will generate vital information to increase productivity using genomics, breeding, and adaptation of alternate crops with economic and environmental sustainability.
- Through UME's Impact Teams and MAES, and AES's research projects, the following planned program activities will be emphasized: IPM; Value Added & Specialty Crops; Grow It-Eat It; Annie's Project; Best Management Practices in Crop and Animal Agriculture; Technologies for the Genetic Improvement of Crops and Animals; Agronomic Fruit & Vegetable Production; Dairy Analysis; and Small/Beginning Farmers Program.
- On-line educational programs, field trials, twilight tours, seminars, workshops, on-farm research & demonstrations and individual farm consultations will be used to educate Maryland farmers, Agriculture industry professionals, Soil Conservation District personnel, USDA-NRCS conservationists and extension faculty.
- New research and technologies developed by the MAES and AES will be transferred via UME on-farm demonstrations and twilight tours.
- Training programs will be developed to improve nutrient management practices, IPM, diagnostic skills, identification and control of invasive species, water management practice improvements and reductions, biosecurity and animal health.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

| Direct Methods | Indirect Methods |
|---|---|
| <ul style="list-style-type: none"> ● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations ● Other 1 (eXtension.org) | <ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension ● Other 1 (Scientific Conf. & Publications) ● Other 2 (Multi-state Workshops) |

3. Description of targeted audience

- Food Stamp Recipients
- Limited Income Families
- School age youth on free or reduced-cost meals
- New immigrants
- Students
- Plant growers and Breeders
- Retailers
- Producers
- Female Farmers

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- IPM (Green Industry & Agronomic Crops): Fact sheets, short courses, workshops, field trials, twilight tours, curriculum, websites, grants awarded.
- Community Resource & Economic Development: Publications, seminars, workshops, grants and curriculum developed.
- Biosecurity, BMP's and Animal Health: In-service training, seminars, publications, grants, presentations, websites, research trials, and workshops.
- Pasture Management, Rotational Grazing & Dairy Analysis: Pasture walks, variety trials, in-service training, grants, publications, budgets, websites, farm analysis performed & workshops
- Grow It-Eat It: Number of workshops, publications and grants.
- Agronomic, Fruit & Vegetable Crop Production: Number of variety trails, twilight tours, seminars, workshops, publications, and grants.
- Small/Beginning Farmers and Annie's Project: Number of workshops, number of participants; publications, grants and new partnerships.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

| O. No | Outcome Name |
|-------|--|
| 1 | IPM (Green Industry & Agronomic Crops): Number of IPM scouts and producers that can identify threshold level; number of pest management programs; Number implementing research based recommendations; certification in Pesticide Safety; field trails. |
| 2 | Community Resource & Economic Development: Number of business people, advisory groups, development agencies, rural leaders and potential farmers interested in developing new AGNR businesses; Business and marketing plans developed; Number of Communities integrating UME information for land use decisions and improved growth management concepts; Pubs developed; Number of people downloading AGNR enterprise information from MREDC web site; and Regional collaborations. |
| 3 | Bio-security, BMPs and Animal Health: Number of educational seminars held for producers, allied industry personnel and government workers; number of producers implementing biosecurity and BMP measures; new training curriculum developed. |
| 4 | Farm Management & Agricultural Profitability: Number of farmers/livestock owners adopting best management practices; Number of farmers/livestock owners adopting rotational grazing strategies; Number farmers (Dairy, Beef, Equine, Sheep/Goats) increasing profitability as a result of these programs; new variety trails; Extension, NRCS and SWCD personnel trained; new practices (BMPs & rotational grazing) recommended; and number of dairy farmers implementing changes as a result of Dairy Analysis. |
| 5 | Home Food Production: Number of Master Gardeners trained; Number of people establishing new back yard gardens; number of new community supported agriculture (CSA) gardens established. |
| 6 | Agronomic, Fruit & Vegetable Crop Production: Number of producers attending programs, twilight tours and workshops; Number producers/growers developing basic diagnostic skills in identifying invasive insects, diseases and weeds; Number of producers who write and update their own nutrient management plan; Number of producers adopting production management practices that will improve their profitability; Number of producers who increase profitability; Number adopting field research practices dealing with improved crop varieties, invasive species, weeds and diseases; Number adopting methods to be more efficient in their water use in livestock and crop production. |
| 7 | Small/Beginning Farmers (Agronomic & Green Industry): Number of new farm enterprises established as a result of our programs; Number successfully completing Annie's Project; Number of women who have implemented change in their family farming operation after attending Annie's Project; Number of new/beginning farmers and Annie's Project graduates participating in additional UME AGNR programs, twilight tours and workshops; and number of farmers who become certified in nutrient management planning and/or pesticide safety. |

Outcome # 1

1. Outcome Target

IPM (Green Industry & Agronomic Crops): Number of IPM scouts and producers that can identify threshold level; number of pest management programs; Number implementing research based recommendations; certification in Pesticide Safety; field trails.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 2

1. Outcome Target

Community Resource & Economic Development: Number of business people, advisory groups, development agencies, rural leaders and potential farmers interested in developing new AGNR businesses; Business and marketing plans developed; Number of Communities integrating UME information for land use decisions and improved growth management concepts; Pubs developed; Number of people downloading AGNR enterprise information from MREDC web site; and Regional collaborations.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension

- 1890 Research

Outcome # 3

1. Outcome Target

Bio-security, BMPs and Animal Health: Number of educational seminars held for producers, allied industry personnel and government workers; number of producers implementing biosecurity and BMP measures; new training curriculum developed.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 311 - Animal Diseases
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 4

1. Outcome Target

Farm Management & Agricultural Profitability: Number of farmers/livestock owners adopting best management practices; Number of farmers/livestock owners adopting rotational grazing strategies; Number farmers (Dairy, Beef, Equine, Sheep/Goats) increasing profitability as a result of these programs; new variety trails; Extension, NRCS and SWCD personnel trained; new practices (BMPs & rotational grazing) recommended; and number of dairy farmers implementing changes as a result of Dairy Analysis.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 5

1. Outcome Target

Home Food Production: Number of Master Gardeners trained; Number of people establishing new back yard gardens; number of new community supported agriculture (CSA) gardens established.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 503 - Quality Maintenance in Storing and Marketing Food Products

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 6

1. Outcome Target

Agronomic, Fruit & Vegetable Crop Production: Number of producers attending programs, twilight tours and workshops; Number producers/growers developing basic diagnostic skills in identifying invasive insects, diseases and weeds; Number of producers who write and update their own nutrient management plan; Number of producers adopting production management practices that will improve their profitability; Number of producers who increase profitability; Number adopting field research practices dealing with improved crop varieties, invasive species, weeds and diseases; Number adopting methods to be more efficient in their water use in livestock and crop production.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems

- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 608 - Community Resource Planning and Development
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 7

1. Outcome Target

Small/Beginning Farmers (Agronomic & Green Industry): Number of new farm enterprises established as a result of our programs; Number successfully completing Annie's Project; Number of women who have implemented change in their family farming operation after attending Annie's Project; Number of new/beginning farmers and Annie's Project graduates participating in additional UME AGNR programs, twilight tours and workshops; and number of farmers who become certified in nutrient management planning and/or pesticide safety.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 311 - Animal Diseases
- 601 - Economics of Agricultural Production and Farm Management
- 602 - Business Management, Finance, and Taxation
- 604 - Marketing and Distribution Practices
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Urban sprawl and State Budgets)

Description

- If the economy and organizational appropriations change, the number of contacts could change, as well as program delivery methods. Public policy, government regulations, and natural disasters could alter planned research and Extension program direction and focus. State budget decreases and faculty retirements effect capacity.

- There continues to be pressure on the price of agriculture land for urban development and there is restrictive legislation in counties that impede agriculture enterprises.

- New housing developments keep moving further from the population centers into the rural areas of the state. Farmers not only must contend with an array of crop production challenges but, additionally, many of them must also be aware of the concerns of their new neighbors. Maryland is a state that has a citizenry that has a strong environmental conscience.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

- Benchmark data are being collected on Maryland's vegetable and fruit growers to determine the scope and use of Good Agricultural Practices.
- Survey of participants attending Grow It, Eat It! Master Gardener classes to determine extent of home garden food production.
- Survey of Grow It, Eat It! Network participants to determine extent of home garden food production.
- Pre- and post-test during teaching events, programs and demonstrations.
- Survey of Annie's Project past participants on practice and behavior changes in farm management practices.
- Survey of Maryland's small flock breeders to determine extent of enterprises and use of biosecurity practices.
- Survey of users of pest and pathogen identification cards to determine use of information to identify insects, diseases, and weeds.
- Survey of pesticide application and nutrient management practices of farmers receiving training through UME.
- Survey of fruit and vegetable growers to determine extent of production and profitability.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change

2. Brief summary about Planned Program

The University of Maryland Extension (UME), the Maryland Agricultural Experiment Station's (MAES) at College Park, and the Agricultural Experiment Station (AES) at UMES key outcome over the next five years is that individuals & communities will become stewards to manage the environment for the mutual benefit of people, ecosystems, wildlife, natural resources, & economic interests. In the next five years, Maryland will increase use of Best Management Practices (BMPs) to improve water, forestry, agriculture, and land quality; increase the adoption of BMPs that reduce inputs of nutrients into the environment; and, minimize environmental impact from agriculture through best management practices. Evaluating climate variability and ozone on plant response through research will be investigated.

Maryland has heavily urbanized, densely populated regions as well as agriculturally diverse and forested areas which are all sensitive to forces impacting the Chesapeake Bay and other natural resources. Natural resource education of adults, youth, and underserved communities will help to promote environmental awareness and responsible decision making, increase scientific literacy and interest of youth in science and math, and foster behavioral changes that can help communities approach a more sustainable lifestyle.

University of Maryland Extension, MAES, and AES are well situated to provide research, education, and outreach to a variety of audiences to help improve water quality, maintain viable natural resources, and reduce our footprint on the environment. With continued and new partnerships and stakeholder engagement, UME, MAES, and AES will address divergent critical issues and emerging needs that will improve the quality of Maryland waters and the management of our natural resources in light of climate variability.

3. Program existence : Mature (More than five years)

4. Program duration : Medium Term (One to five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|----------------|---|------------------------|------------------------|-----------------------|-----------------------|
| 102 | Soil, Plant, Water, Nutrient Relationships | 10% | 10% | 15% | 57% |
| 111 | Conservation and Efficient Use of Water | 10% | 10% | 5% | 0% |
| 112 | Watershed Protection and Management | 15% | 20% | 10% | 15% |
| 123 | Management and Sustainability of Forest Resources | 5% | 5% | 5% | 0% |
| 131 | Alternative Uses of Land | 10% | 5% | 5% | 0% |
| 132 | Weather and Climate | 0% | 0% | 0% | 10% |
| 133 | Pollution Prevention and Mitigation | 10% | 10% | 25% | 18% |
| 205 | Plant Management Systems | 15% | 10% | 10% | 0% |
| 216 | Integrated Pest Management Systems | 10% | 10% | 10% | 0% |
| 403 | Waste Disposal, Recycling, and Reuse | 5% | 10% | 15% | 0% |
| 608 | Community Resource Planning and Development | 10% | 10% | 0% | 0% |
| | Total | 100% | 100% | 100% | 100% |

V(C). Planned Program (Situation and Scope)**1. Situation and priorities**

Maryland, the fifth most densely populated state in the nation, is undergoing rapid changes in population growth and migration, land cover, community character, ecosystem stability, and economic diversity. State and U.S. Census Bureau estimates predict that Maryland's population will grow from approximately 5.5 million today to 6.5-7 million by 2030. Maryland has heavily urbanized, densely populated regions as well as agriculturally diverse and forested areas which are all sensitive to forces impacting the Chesapeake Bay and other natural resources. The anthropogenic and natural impacts on the environment are complex. In many Maryland waters and in the Chesapeake Bay, a challenge is to improve water quality and maintain viable natural resources. Studies have shown that ground and surface waters contain high levels of the nutrients nitrogen and phosphorus (N and P), sediments, and toxic contaminants, all of which adversely affect water quality, aquatic organisms, fisheries, and human health.

Poor water quality in the Chesapeake Bay and its tributaries leads to a decline in the health of the ecosystem. Oftentimes, problems come with sediment erosion, whether it is from construction, agriculture, deforestation, reduction of buffers or changes in land use. Loss of natural filters, for instance oyster reduction due to disease and overfishing, exacerbate water quality problems. Furthermore, management issues related to pest management, septic systems, lawn care, deforestation, air deposition (particulate matter, ammonia, vehicle emissions), and climate change also impact the stability of natural systems and the improvement of water quality.

Urban and suburban sprawl has led to the conversion of thousands of acres of our native landscape into developed lands, impervious surfaces, and home lawns or gardens. New educational strategies are needed that will first change the public's view of natural, agricultural, and developed areas to show how

2014 University of Maryland - Eastern Shore and University of Maryland Combined Research and Extension Plan of Work
 environmental and ecological system can be restored, protected, and better managed.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- By having better access to knowledge, research, and trends, communities and decision makers will make better land use decisions by understanding issues, options and impacts of certain types of growth management, land consumption patterns and economic and environmental impacts of growth.
- The green industry will continue to grow and pressure from heavy population will create the need for a green industry.
- The Water Quality Improvement Act will not be repealed, and nutrient management regulations will not change significantly.
- After residents understand the relationship between the pesticide use and the health of their environment, they will choose to reduce the use of harmful pesticides and fertilizers.
- Once homeowners understand how septic systems can degrade water quality and water quality can be improved through proper maintenance of existing systems, they will better maintain their existing systems and install new innovative systems.
- Rapid urbanization from population expansion is a given.
- Climate change will direct policy makers to make proper resources available in order to conduct research and extension programs on adaptation and mitigation practices.

2. Ultimate goal(s) of this Program

There will be improved water quality as related to agriculture, forests, and developed lands; there will be sustainable management of aquatic, forest, wildlife, soil, and air resources; and there will be diversified energy sources and improved energy conservation and efficiencies.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| 2014 | 16.0 | 3.0 | 11.0 | 2.5 |
| 2015 | 16.0 | 3.0 | 11.0 | 2.5 |
| 2016 | 16.0 | 3.0 | 11.0 | 2.5 |

| Year | Extension | | Research | |
|------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| 2017 | 16.0 | 3.0 | 11.0 | 2.5 |
| 2018 | 0.0 | 0.0 | 0.0 | 2.5 |

V(F). Planned Program (Activity)

1. Activity for the Program

- UME, MAES, and AES will have a combined focus to help producers plan and make decisions in adapting to changing environments, sustaining economic vitality, and taking advantage of emerging economic opportunities offered by climate change mitigation technologies.
- UME, MAES, and AES will also develop research and education programs that generate knowledge to develop agriculture systems that maintain high productivity in the face of climate changes and reduce greenhouse gas emissions.
- In an effort to meet these objectives, UME, MAES, and AES will develop research and action teams that will focus on: Alternative energy and biofuels; Aquatic resources; Biodiversity/ecosystem services; Energy conservation; Forest resources; Integrated Pest Management; Invasive and exotic species; Land use; Nutrient management; Recreational resources; Waste management; Waste utilization and resource recovery; Watershed restoration; and Wildlife resources.
- UME, MAES, and AES will conduct workshops, demonstrations, symposia, twilight tours, forums and research to educate producers, farmers and citizens about adapting management practices to benefit the environment and minimize climate change impacts.
- MAES, AES, and UME will develop and expand collaborative research and education programs with partners and stakeholder and develop new web based and media educational materials.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

| Direct Methods | Indirect Methods |
|--|--|
| <ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations | <ul style="list-style-type: none"> • Newsletters • TV Media Programs • Web sites other than eXtension • Other 1 (Scientific Conf. & Publications) • Other 2 (Multi-state Workshops) |

3. Description of targeted audience

- Maryland citizens;
- Master Gardeners and Naturalists;
- Land developer and owners;

- UME, MAES, and AES faculty;
- USDA-NRCS conservationists;
- Soil Conservation District personnel;
- MDA program staff;
- MDE program staff;
- Producers;
- Farmers;
- Nursery and Greenhouse industry personnel;
- Forest landowners;
- 4-H youth;
- County planning and zoning program staff;
- AGNR industry;
- Nonprofits;
- Appropriate state and municipal government officials;
- Primary and Secondary Science Teachers;
- Media; and
- Maryland homeowners.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Nutrient Management Planning, Waste Management Systems, Composting and Water Resources (Agronomic, Livestock & Green Industry): Short courses; Workshops; Twilight tours; Field days; Seminars; In-service training; Grants; Publications; and Websites.
 - Chesapeake Bay, Water Resources, Nutrient Management and Composting (Residential): Water Resources-Short courses; In-service training; Volunteers trained; and New relationships, policy & technology developed.
 - Management and Sustainability of Forest/Wildlife Resources (Forest landowners, Forest Industry and Loggers): Publications; Workshops; Distance Education Courses; Field trials; Demonstrations; Grants; and Web sites.
 - Alternative Crop Production: Workshops; Seminars; In-Service training programs; Variety trials; Field days; Twilight tours; Publications; Grants; and Participants in alternative/ethnic crop production programs.
 - Nursery & Greenhouse Crop Production: Workshops; Seminars; Twilight tours; Field days; Grants; In-service training programs; Web sites; Publications; and Producers attending educational programs.
 - Pesticide Safety Education: Workshops; Seminars; Demonstrations; Grants; Web sites; Publications; and Participants in educational/certification programs.
 - New Technologies-Using High Tunnels to Remain Competitive in a Global Market: Workshops; Field trials; Demonstrations; Twilight tours; Grants; Publications; and Participants in educational programs.
 - Master Gardener Program: Workshops; Seminars; Advanced training; Grants; Publications; and Participants in educational programs.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

| O. No | Outcome Name |
|-------|--|
| 1 | Nutrient Management Planning, Waste Management Systems, Composting and Water Resources (Agronomic, Livestock & Green Industry): Number of producers implementing nutrient management plans; plans written; Producers relate nutrient management to water quality; Producers trained in plan writing; Policy makers and farmers understand the scientific issues of land applied poultry litter and poultry stockpiles; Producers using compost technology. |
| 2 | Chesapeake Bay, Water Resources, Nutrient Management and Composting (Residential): Adoption of composting; Water wells tested; Septic tanks improved; Number of citizens adopting practices of landscape ecology and understanding the relationship among pesticides, poor septic systems and environmental health. |
| 3 | Management and Sustainability of Forest/Wildlife Resources (Forest Landowners, Forest Industry & Loggers): Number of forest landowners and loggers gain knowledge of forest stewardship and practices; Understand wildlife damage control measures; Forest Stewardship Plans implemented; and Master loggers trained. |
| 4 | Alternative Crop Production: Number of farmers growing new alternative crops; New farm enterprises; Farm markets selling new alternative crops and/or value added crops; and New varieties researched. |
| 5 | Nursery & Greenhouse Crop Production: Number of IPM scouts and producers that can identify threshold pest levels; Research based recommendations implemented, such as efficiency of water use and energy; Certification in pesticide safety; Field trials developed; Nutrient management plans developed; Growers that adopt sustainable practices that will improve crops with reduced losses; Growers implementing sustainable practices that reduce losses and reduce environmental impacts; and New crop varieties planted based on UME/MAES research. |
| 6 | Pesticide Safety Education (Agronomic & Green Industry): AGNR producers/farmers/applicators that are certified in pesticide safety; Pesticide safety practices implemented such as wearing a respirator, gloves and showering after application; Increase in knowledge of IPM techniques. |
| 7 | New Technologies in a Global Market: New high tunnels established; Producers who have implemented research based practices; New varieties established; Applied research- variety trials; Producers who have increased profitability as a result of installing high tunnels; Request for workshops, seminars and twilight tours; Producers who participate in USDA's high tunnel cost share program; and Cooperators in on-farm research projects. |
| 8 | Environmental Stewardship: Master Gardeners programs developed and delivered by MGs; Plant Clinics held; and MGs who participate in MD Master Naturalist Program. |

Outcome # 1

1. Outcome Target

Nutrient Management Planning, Waste Management Systems, Composting and Water Resources (Agronomic, Livestock & Green Industry): Number of producers implementing nutrient management plans; plans written; Producers relate nutrient management to water quality; Producers trained in plan writing; Policy makers and farmers understand the scientific issues of land applied poultry litter and poultry stockpiles; Producers using compost technology.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 2

1. Outcome Target

Chesapeake Bay, Water Resources, Nutrient Management and Composting (Residential): Adoption of composting; Water wells tested; Septic tanks improved; Number of citizens adopting practices of landscape ecology and understanding the relationship among pesticides, poor septic systems and environmental health.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 133 - Pollution Prevention and Mitigation
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 3

1. Outcome Target

Management and Sustainability of Forest/Wildlife Resources (Forest Landowners, Forest Industry & Loggers): Number of forest landowners and loggers gain knowledge of forest stewardship and practices; Understand wildlife damage control measures; Forest Stewardship Plans implemented; and Master loggers trained.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 205 - Plant Management Systems
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 4

1. Outcome Target

Alternative Crop Production: Number of farmers growing new alternative crops; New farm enterprises; Farm markets selling new alternative crops and/or value added crops; and New varieties researched.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 132 - Weather and Climate
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 5

1. Outcome Target

Nursery & Greenhouse Crop Production: Number of IPM scouts and producers that can identify threshold pest levels; Research based recommendations implemented, such as efficiency of water use and energy; Certification in pesticide safety; Field trials developed; Nutrient management plans developed; Growers that adopt sustainable practices that will improve crops with reduced losses; Growers implementing sustainable practices that reduce losses and reduce environmental impacts; and New crop varieties planted based on UME/MAES research.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 132 - Weather and Climate
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 6

1. Outcome Target

Pesticide Safety Education (Agronomic & Green Industry): AGNR producers/farmers/applicators that are certified in pesticide safety; Pesticide safety practices implemented such as wearing a respirator, gloves and showering after application; Increase in knowledge of IPM techniques.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 7

1. Outcome Target

New Technologies in a Global Market: New high tunnels established; Producers who have implemented research based practices; New varieties established; Applied research- variety trials; Producers who have increased profitability as a result of installing high tunnels; Request for workshops, seminars and twilight tours; Producers who participate in USDA's high tunnel cost share program; and Cooperators in on-farm research projects.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 8

1. Outcome Target

Environmental Stewardship: Master Gardeners programs developed and delivered by MGs; Plant Clinics held; and MGs who participate in MD Master Naturalist Program.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 123 - Management and Sustainability of Forest Resources
- 133 - Pollution Prevention and Mitigation
- 205 - Plant Management Systems
- 216 - Integrated Pest Management Systems
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Populations changes (immigration, new cultural groupings, etc.)
- Other (funding)

Description

Weather; Federal, State and County funding; Number of extension faculty; Grants awarded; Costs of energy; and Federal, State and County policies.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

- Evaluation studies will focus on measuring improved water quality as related to agriculture, forests, and developed lands; sustainable management of aquatic, forest, wildlife, soil, and air resources; and diversified energy sources and improved energy conservation and efficiencies.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Family & Community Resiliency

2. Brief summary about Planned Program

UME will provide expert programs in the areas of community and economic development, family asset management, healthy homes, and youth development and training.

By 2013, it is estimated that 325 businesses, advisory groups, agencies, leaders, and government officials will actively participate in community and economic development programs and approximately 50 business and marketing plans will be developed. This will result in: increased capacity of communities for economic resiliency through entrepreneurship opportunities; 4-H enrollment of 85,000 youth through an increase in community clubs, after-school and special interest clubs, school enrichment programs, and day and overnight camping programs; increased knowledge and skills of youth and adults to develop entrepreneurial ventures; increased number of youth engaged in science, technology, engineering, and math (STEM) to develop work force skills and career paths; increased number of students entering college to study science, technology, engineering, and math (STEM).

Lack of financial literacy education for children and youth in the United States is prevalent (only 14% of teens have taken a personal finance class in school and 69% turned to parents for money management). However, it is evidenced that many are not prepared for their financial future. This concern is even worse for children and youth at risk as economically disadvantaged youth lack financial knowledge and access to appropriate financial socialization. UME will deliver the National 4-H curriculum, "Reading Makes Cents," across Maryland to increase young people's ability to make both short- and long-term decisions regarding credit, debt, spending and saving.

By 2013, more than 20,000 Maryland residents will participate in Healthy Homes education, resulting in increased awareness and the knowledge necessary to implement improvements that result in healthier built environments, including homes, workplaces, and schools; and, improved indoor air quality through reducing impact from lead paint, smoke, chemicals, radon, pests, and other poisons.

Youth, families and communities need access to community resources that offer high quality youth development experiences. Maryland 4-H creates high quality youth development opportunities for culturally diverse audiences that embrace the essential elements of 4-H and contribute to positive youth development for all children and youth.

Getting and using current, science-based health information to make informed health decisions is a challenge for families as well as communities. For nearly half of American adults, the challenge exceeds their health literacy capacity. One way to reduce the challenge is to increase individual literacy. Another is to change the environments in which people seek, receive and use the information. HealthSmart will work to integrate these two approaches to improve the percentage of health literate families and individuals, which will ultimately lead to more resilient families and communities.

As government and private sector resources that were once dedicated to accomplishing community goals diminish, the need to improve community leadership increases. More and more citizens are called upon to volunteer to provide community services. University of Maryland Extension has a unique opportunity to be a resource for these citizens to develop their leadership skills and improve participation in the governance of their school, community, town, or state.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---------|---|-----------------|-----------------|----------------|----------------|
| 703 | Nutrition Education and Behavior | 20% | 20% | 30% | 0% |
| 712 | Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins | 5% | 5% | 30% | 0% |
| 724 | Healthy Lifestyle | 0% | 20% | 20% | 0% |
| 801 | Individual and Family Resource Management | 20% | 0% | 0% | 0% |
| 804 | Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures | 5% | 5% | 0% | 0% |
| 806 | Youth Development | 50% | 50% | 20% | 0% |
| | Total | 100% | 100% | 100% | 0% |

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Maryland's economy is slowly recovering from the economic recession. The statewide unemployment rate has jumped to over 8%, an increase of almost 3% in one year, and the state budget has moved from surpluses to deficits. At the same time, the economic challenges created by falling tax revenues, infrastructure needs driven by the Base Re-alignment and Closing Act, the collapse in the housing market, an aging farming community, land-use conflicts, and shifting demographics are just a few of the more salient issues driving the complexity of effective community decision making in many counties. Even the wealthiest counties (Howard, Montgomery, Calvert, Charles, and Anne Arundel) are facing community development and quality of life issues related to lower tax revenues and problems related to deficiencies in public infrastructure.

Various surveys have shown that lack of financial literacy is wide spread among children, youth, and adults. About 60% are concerned about making financial ends meet. On average, Americans save less than 1% of their income while three out of four realize that they are not saving enough. One-third report that they do not have any savings. Typical baby boomers have about only \$1,000 in financial assets and 40% owe more than they own. At the end of 2008, the average household had \$8,329 in credit card debt. One-fourth admits that they are not paying all the credit bills on time. About 12% of households are delinquent in mortgage payments or are in foreclosures. One in every five mortgage holders has a home worth less than the mortgage on it.

According to the Points of Light Foundation (2005), there is a need to increase the number and improve the capacity of leaders to achieve desired community outcomes and be prepared to respond to

uncertainties of economics, health, climate, and society. As further indicated by the Maryland Youth Action Corps in 2005, communities are more sustainable when youth and adults are involved in leadership roles and civic engagement opportunities.

Research has shown that engaging community members in activities such as entrepreneurship and workforce readiness training can lead to healthy development and a sense of belonging to and contributing to, integration into the community. Having community members recognize their stake in the future can yield very positive results for given locales. Community members, who are successful workers and business owners in the workforce and owned businesses, lead to economic prosperity and community stability.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- The traditional rural economic development tools of available land and cheap labor no longer apply. Rural entrepreneurship and sustainable development of our rural landscapes hinge on utilizing technology, new partnerships with urban stakeholders and decision makers, and retaining our human resources by developing profitable and community-centric businesses.

- Communities value a well-trained workforce and will pursue opportunities to increase the skills levels of citizens, especially young people. A well-trained workforce benefits communities, increasing attractiveness for businesses to establish in a locale.

- Attracting successful businesses equips communities to be more sustainable, expanding their economic base.

- Training and education will result in stronger leadership and civic engagement.

- Increasing and building stronger and civically-engaged leaders will strengthen communities.

- Leadership can be defined in many ways and can be demonstrated by individuals, groups, and communities.

2. Ultimate goal(s) of this Program

Urban and rural communities will be empowered to improve the infrastructure and the environment to diversify the personal, civic, economic, and social bases without undermining assets. UME will contribute to the economic viability of Maryland communities by encouraging partnerships to support a well-educated and diverse workforce through life-long learning opportunities; new and expanding business enterprises through professional and collaborative assistance in marketing and business development plans and programs; and, enhanced decision making, advocacy, public service and public policy leading to positive community change. The number of leaders in communities will be increased; empowered leaders will be civically engaged; and, collaborative partnerships will result in sustainable communities. Families will achieve economic stability and resiliency and plan for future financial security.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| 2014 | 20.0 | 3.5 | 13.0 | 0.0 |
| 2015 | 20.0 | 3.5 | 13.0 | 0.0 |
| 2016 | 20.0 | 3.5 | 13.0 | 0.0 |
| 2017 | 20.0 | 3.5 | 13.0 | 0.0 |
| 2018 | 0.0 | 0.0 | 0.0 | 0.0 |

V(F). Planned Program (Activity)

1. Activity for the Program

- The traditional rural economic development tools of available land and cheap labor no longer apply. Rural entrepreneurship and sustainable development of our rural landscapes hinge on utilizing technology, new partnerships with urban stakeholders and decision makers, and retaining our human resources by developing profitable and community-centric businesses.
- Communities value a well-trained workforce and will pursue opportunities to increase the skills levels of citizens, especially young people. A well-trained workforce benefits communities, increasing attractiveness for businesses to establish in a locale.
- Attracting successful businesses equips communities to be more sustainable, expanding their economic base.
- Training and education will result in stronger leadership and civic engagement.
- Increasing and building stronger and civically-engaged leaders will strengthen communities.
- Leadership can be defined in many ways and can be demonstrated by individuals, groups, and communities.
- Identify existing resources and data that would feed into the needs and resources assessment regarding intentional engagement work within and around community development by a University System.
- Community mapping and resource assessment
- Define and develop, for community members to participate in, quality, research-based programs in economic development, agricultural and natural resources, family asset management, and youth development.
- Define and develop, for community members to participate in, quality events and opportunities, such as train-the-trainer educational experiences. These events would focus on building leadership, entrepreneurship, workforce readiness and Science, Technology, Engineering and Mathematics (STEM).
- Develop Webinars, fact sheets, seminars, workshops, entrepreneurial coaching, and meetings to support program efforts
- Develop leadership training workshops
- Identify, recruit, and develop emerging leaders
- Train leaders how to develop their own public actions on issues affecting their community
- Train leaders how to create space and venues for community residents to discuss public issues
- Delivery of signature programs that incorporate a leadership development/civic engagement component
- Contributions to eXtension.org Community of Practice focusing on Financial Security
- Implement "Reading Makes Cents" Curriculum on financial literacy for school-age youth

- Deliver Basic Financial Education for First Term Soldiers at Walter Reed
- Implement Financial Education Program for Geographically Dispersed Military Families
- Development of a Deployment Database of Resources for Military Families to support financial literacy and family resiliency topics
 - Development of a distance education counseling network for isolated and geographically dispersed military families
 - Financial education for University of MD faculty and staff
 - Financial Education for MSRP participants

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

| Direct Methods | Indirect Methods |
|---|--|
| <ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Other 1 (Distance Learning) • Other 2 (Community Partnerships) | <ul style="list-style-type: none"> • Public Service Announcement • Newsletters • Web sites other than eXtension |

3. Description of targeted audience

- Youth and adult residents of Maryland
- Collaborative partners
- County/City Extension Advisory Councils/Boards
- Community members including young people and adults.
- Community decision makers
- Businesses
- Transitional workforce
- Community decision makers
- Immigrants
- Limited resource individuals and families
- People engaging in Urban Agricultural Enterprises
- Businesses in the community
- First Term Soldiers
- Geographically dispersed military families
- Employees
- Retirement system participants

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Factsheets & publications, curricula, meeting with partners, in-services, workshops
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

| O. No | Outcome Name |
|-------|---|
| 1 | Nutrition: The number of individuals who demonstrate adoption of healthy eating practices based on the My Plate Dietary Guidelines for Americans, including the number who adopt or plan to: Choose a variety of colors of fruits and vegetables; choose high fiber foods; choose lower fat dairy products; choose smaller portions of foods; choose whole grain foods; read food labels before making purchase; make foods at home instead of buying convenience foods; plan meals before shopping at grocery store. |
| 2 | Food Safety: The number of individuals that indicate change in behavior related to good personal hygiene including hand washing, cooking foods adequately, avoiding cross contamination, keeping foods at safe temperature |
| 3 | Volunteer Development: The number of UME trained 4-H volunteers who provide leadership and guidance for 4-H youth development programs. |
| 4 | 4-H Clubs: The number of 4-H club leaders and volunteers who demonstrate an application of the essential elements of youth development and model experiential learning. |
| 5 | Youth Outreach: Teen and adult volunteers in after school and military partnership programs and youth enrolled. |
| 6 | Healthy Living: Read labels before using hazardous household chemicals; Identify potentially hazardous products that affect indoor quality; take steps to control humidity in homes; use safe practices with household products to improve indoor air quality. Health Literacy: increased awareness of how to access research-based health information; understand connection between health literacy and financial literacy. |
| 7 | Financial Literacy Education: An increase in basic financial literacy; An increase in ability to make both short- and long-term decisions regarding credit, debt, estate planning, spending and saving. |

Outcome # 1

1. Outcome Target

Nutrition: The number of individuals who demonstrate adoption of healthy eating practices based on the My Plate Dietary Guidelines for Americans, including the number who adopt or plan to: Choose a variety of colors of fruits and vegetables; choose high fiber foods; choose lower fat dairy products; choose smaller portions of foods; choose whole grain foods; read food labels before making purchase; make foods at home instead of buying convenience foods; plan meals before shopping at grocery store.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1890 Research

Outcome # 2

1. Outcome Target

Food Safety: The number of individuals that indicate change in behavior related to good personal hygiene including hand washing, cooking foods adequately, avoiding cross contamination, keeping foods at safe temperature

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1890 Research

Outcome # 3

1. Outcome Target

Volunteer Development: The number of UME trained 4-H volunteers who provide leadership and

guidance for 4-H youth development programs.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

Outcome # 4

1. Outcome Target

4-H Clubs: The number of 4-H club leaders and volunteers who demonstrate an application of the essential elements of youth development and model experiential learning.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

Outcome # 5

1. Outcome Target

Youth Outreach: Teen and adult volunteers in after school and military partnership programs and youth enrolled.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

Outcome # 6

1. Outcome Target

Healthy Living: Read labels before using hazardous household chemicals; Identify potentially hazardous products that affect indoor quality; take steps to control humidity in homes; use safe practices with household products to improve indoor air quality. Health Literacy: increased awareness of how to access research-based health information; understand connection between health literacy and financial literacy.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1890 Research

Outcome # 7

1. Outcome Target

Financial Literacy Education: An increase in basic financial literacy; An increase in ability to make both short- and long-term decisions regarding credit, debt, estate planning, spending and saving.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension
- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Description

- Limited funding, willingness of participants, engagement of community, lack of time, demographical changes in society, effective utilization of volunteers to supplement diminished workforce.
- Business development will be limited by financial support resource availability.
- National economic trends will impact available business startup capital.
- Various demographic or environmental features will enable a "better fit" for some businesses for specific communities.
- Diminishing budgets and credit crunches.
- Problems with access to farmland.
- Need for communities to have control of their own policies and development characteristics.
- Changing demographics.
- Global environmental and economic policies.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

1. Nutrition, Wellness and Prevention of Chronic Disease:

- Percentage of individuals who demonstrate adoption of healthy eating practices based on the MyPyramid and 2005 Dietary Guidelines for Americans, such as: Improved consumption of food group servings; Improved intake of selected nutrients; Improved behavior change related to decreased saturated and trans fat, sugar, and calories, or increased consumption/variety of fruits, vegetables, whole grains; Increased frequency of eating breakfast;
- Percentage of individuals who demonstrate adoption of increased time spent in physical activity practices by implementation of a personal plan to increase physical activity, such as increased time/frequency engaged in walking or other activities; Increased participation of individuals/family in

games or recreation that involve exercise; Reduction in time spent in sedentary activities, such as watching TV or playing video games; Percentage of participants that report a change in their diet behaviors over the course of a series of nutrition lessons (end-of-session evaluation); Number of participants who increased their physical activity

2. Food Safety:

- Percentage of individuals that indicate change in knowledge or awareness related to recognizing perishable foods, practicing good personal hygiene including proper hand washing, cooking foods adequately, avoiding cross-contamination, keeping foods at safe temperatures, or avoiding foods from unsafe sources.

3. Volunteer Development:

- Track increase of 4-H clubs, special interest, and school enrichment through training volunteers to deliver and manage programs.

4. Strengthening and expanding the 4-H Club Program:

- Develop and implement a self-assessment tool for measuring effectiveness of clubs; Assess enrollment trends and community club quality.

5. Youth Development Outreach to Underserved Youth and Communities in After school and Out of School Time:

- Information from needs assessment will identify assets, gaps and needs of current program efforts; 4-H educators and staff will report an increase in the number of after-school programs supported and number of youth involved; 4-H educators and staff will report an increase in the number of active duty and reserve military youth involved and enrolled in 4-H programs; Number of after-school and military partnerships initiated and sustained; Assess role of 4-H in statewide after-school arena; Degree to which adult and teen volunteers understand the eight essential elements of 4-H; Change in knowledge and/or attitudes of community members about issues that face military youth; Number of adult and teen volunteers providing 4-H programming in after-school and military settings; Youth self report in change of knowledge, aspirations, skills, and attitudes.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Sustainable Energy

2. Brief summary about Planned Program

Recognizing the state and nation's needs for energy independence through biofuels and other alternative energy sources, UME, MAES, and AES are trying to build program expertise in this area over the next five years. Currently, MAES has initiated a team of scientists who are developing research in the production of biofuels using animal waste, feedstock and algae. MAES, AES, and UME researchers will pursue economically and environmentally sustainable bioenergy production procedures.

3. Program existence : New (One year or less)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---------|---|-----------------|-----------------|----------------|----------------|
| 102 | Soil, Plant, Water, Nutrient Relationships | 0% | 0% | 0% | 32% |
| 112 | Watershed Protection and Management | 0% | 0% | 0% | 28% |
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants | 0% | 0% | 0% | 8% |
| 204 | Plant Product Quality and Utility (Preharvest) | 0% | 0% | 0% | 10% |
| 205 | Plant Management Systems | 0% | 0% | 0% | 8% |
| 206 | Basic Plant Biology | 0% | 0% | 0% | 7% |
| 403 | Waste Disposal, Recycling, and Reuse | 40% | 30% | 50% | 0% |
| 511 | New and Improved Non-Food Products and Processes | 0% | 0% | 0% | 7% |
| 601 | Economics of Agricultural Production and Farm Management | 60% | 70% | 50% | 0% |
| | Total | 100% | 100% | 100% | 100% |

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Maryland's Energy Administration's 2010 plan (<http://www.energy.state.md.us/>) states, "The Maryland

Energy Administration (MEA) has developed a four-pronged approach to promote affordable, reliable and clean energy using monies from the federal American Recovery and Reinvestment Act (ARRA) and the state Strategic Energy Investment Fund (SEIF). Specifically, MEA will offer incentives and resources directly to Maryland consumers, businesses and communities to (1) expand energy efficiency, (2) promote renewable generation, (3) finance clean energy innovation, and (4) provide consumers energy information." As part of Maryland's program, "Smart, Green, and Growing" initiative, these programs will help reduce household bills, create new green collar jobs, address global climate change, and promote energy independence.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Both federal and private emphasis for clean and sustainable energy will continue as we are faced with vital issues such as climate change, ecosystem health, and other pressures regarding fossil fuel.
- Funds will be available from Federal and State sources to establish research and extension programs on sustainable bioenergy.

2. Ultimate goal(s) of this Program

UME, MAES, and AES will contribute to the nation's energy independence by developing biomass used for biofuels and to produce value-added bio-based industrial products.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| 2014 | 5.0 | 1.0 | 4.0 | 6.0 |
| 2015 | 6.0 | 1.0 | 4.0 | 6.0 |
| 2016 | 6.0 | 1.0 | 4.0 | 6.0 |
| 2017 | 6.0 | 1.0 | 4.0 | 6.0 |
| 2018 | 0.0 | 0.0 | 0.0 | 6.0 |

V(F). Planned Program (Activity)

1. Activity for the Program

- Short course and training seminars for industry personnel and growers;
- Conduct basic and applied research in alternative fuel sources, energy saving techniques and recycling of green waste products;
- Contribute to trade and peer reviewed journal publications.

2. Type(s) of methods to be used to reach direct and indirect contacts

| Extension | |
|--|--|
| Direct Methods | Indirect Methods |
| <ul style="list-style-type: none"> • Education Class • Workshop • One-on-One Intervention • Demonstrations | <ul style="list-style-type: none"> • Newsletters • TV Media Programs • Web sites other than eXtension • Other 1 (Conferences) • Other 2 (Refereed Publications) |

3. Description of targeted audience

- Nursery, greenhouse, poultry growers and managers;
- In-state bioenergy industry;
- Research community at large.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- 1. Alternative Energy Options and Energy Conservation & Efficiency (Agronomic, Poultry, Dairy & Green Industry): Number of workshops, seminars & twilight tours; Publications; Grants; Extension faculty engaged in programs.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

| O. No | Outcome Name |
|-------|---|
| 1 | 1. Alternative Energy Options and Energy Conservation & Efficiency (Agronomic, Poultry, Dairy & Green Industry): Number of participants attending programs; Growers implementing new energy savings/conservation options; New energy systems installed. |

Outcome # 1

1. Outcome Target

1. Alternative Energy Options and Energy Conservation & Efficiency (Agronomic, Poultry, Dairy & Green Industry): Number of participants attending programs; Growers implementing new energy savings/conservation options; New energy systems installed.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 112 - Watershed Protection and Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 205 - Plant Management Systems
- 206 - Basic Plant Biology
- 403 - Waste Disposal, Recycling, and Reuse
- 511 - New and Improved Non-Food Products and Processes
- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Description

- Cost of fuel and electricity;
- Government incentives such as cost share programs and tax breaks;
- Environmental regulations; Economy;

- Availability of technology; and
- Demonstrated research effectiveness

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

- Pre and post-test of knowledge gained during educational event;
- Follow up surveys to capture on-farm implementation of new technology and/or BMPs;
- Tracking progress in research through faculty participation and presentation in scientific conferences and peer reviewed publications on bioenergy.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Childhood Obesity

2. Brief summary about Planned Program

Maryland families, youth and children will make informed decisions that result in the adoption and maintenance of healthy eating habits and physically active lifestyles that contribute to reduced childhood obesity, and ultimately prolonging lives as well as improving life quality. Overweight and obesity are the results of the interaction of multiple factors including individual behaviors. Many environmental factors promote increased food intake, unhealthful foods, and physical inactivity. Policy and environmental change initiatives that make healthy choices in nutrition and physical activity available, affordable, and easy to achieve, coupled with ongoing educational interventions targeted to specific audiences, will likely be the most effective strategy in combating obesity. Complex problems such as childhood obesity require complex, multi-faceted solutions that will ultimately become ingrained as a way of life in our society, and eventually result in a new reality for future generations.

In response to the serious health concerns that accompany Childhood Obesity, University of Maryland Extension (UME), through its Healthy Lifestyle program focus, will provide a comprehensive nutrition and physical activity education program for a culturally diverse audience consisting of school-age children, youth, adults, cafeteria workers, teachers, school staff, and childcare providers in school and community settings. Through training, classes, workshops, food demonstration sessions, and gardening, the healthy lifestyle team will offer programs that will include nutrition education, physical activity and other behavior change components that can improve obesity-related behaviors.

Exploring strategies for incorporating physical activity into the daily lives of children and youth where they live and play will also be a critical component in program success. Planned programs being developed through Impact Teams include Walk Across Maryland for Youth - a fitness education program.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|----------------|--|------------------------|------------------------|-----------------------|-----------------------|
| 701 | Nutrient Composition of Food | 10% | 10% | 10% | 10% |
| 703 | Nutrition Education and Behavior | 30% | 30% | 30% | 30% |
| 704 | Nutrition and Hunger in the Population | 30% | 30% | 30% | 30% |
| 724 | Healthy Lifestyle | 20% | 20% | 20% | 20% |
| 806 | Youth Development | 10% | 10% | 10% | 10% |
| | Total | 100% | 100% | 100% | 100% |

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Prevalence rates for overweight and obesity have reached epidemic proportion, globally and nationally. The epidemic affects all ages, gender, race, and ethnic groups. Obesity and overweight have been shown to increase the risk of developing serious chronic diseases such as coronary heart disease, hypertension, and diabetes. In 2008, only one state (Colorado) had a prevalence of obesity less than 20%. Thirty-two states had prevalence equal to or greater than 25%. Maryland's 2008 obesity rate was 26.0%. The rate of overweight among adults in Maryland was 63.3% in 2008.

Childhood obesity is also a serious health concern. Data from NHANES surveys (1976 through 1980 and 2003 through 2006) show that the prevalence of obesity in US has increased as follows: for children aged 2 to 5 years, prevalence increased from 5.0% to 12.4%; for those aged 6 to 11 years, prevalence increased from 6.5% to 17.0%; and for those aged 12 to 19 years, prevalence increased from 5.0% to 17.6%. In 2007, 29% of Maryland children ages 10 to 17 years were either overweight or obese.

The Youth Risk Behavior Survey of 2007 found that 69% of Maryland high school students did not meet the recommended levels of physical activity compared to 65% of US students. The same study also found that 84% of Maryland high school students did not attend physical education classes daily compared to 70% of US students.

University of Maryland Extension (UME) will provide comprehensive nutrition and physical activity education programs for a culturally diverse audience consisting of school-age children, youth, adult, cafeteria workers, teachers, school staff, and childcare providers in school and community settings that can improve obesity-related behaviors.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Resources will be available to develop and/or identify relevant curriculum and educate the audiences we intend to reach. Audiences, including Extension faculty, will be receptive to programs and have the time to commit.
- EFNEP and FSNE educators, as well as UME educators, will also implement programs designed to reduce childhood obesity.
- Other state Extension programs will have an interest and desire to partner with University of Maryland Extension in this program effort.

2. Ultimate goal(s) of this Program

The ultimate goal is to reduce childhood obesity through increased consumption of healthy foods and increased physical activity. Systems changes will occur that will result in youth having increased access to fresh fruits and vegetables based on the adoption of system changes in schools.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| 2014 | 9.0 | 1.5 | 5.0 | 0.5 |
| 2015 | 10.0 | 1.5 | 5.0 | 1.5 |
| 2016 | 10.0 | 1.5 | 5.0 | 2.0 |
| 2017 | 10.0 | 1.5 | 5.0 | 2.0 |
| 2018 | 0.0 | 0.0 | 0.0 | 2.0 |

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop/implement training for cafeteria/food service workers using Walk the Line curriculum.
- Workshops and professional development for Growing Healthy Habits, Farm-2-School, and Walk the Line.
 - Create effective materials and programs that meet standards of health literacy.
 - Investigate taste preference and trying new fruits and vegetable measures for statewide evaluation.
 - Educational programs for cafeteria and food service workers and school administrators.
 - Educational programs targeting pre-schoolers and their parents through train-the-trainer approach for child care and pre-school teachers.
 - Up For the Challenge curriculum implemented for school-age youth in 3 sites targeted to geographically dispersed military families/youth.
 - Contribute articles and expertise to eXtension.org Community of Practice for Food, Fun, and

Fitness

- Develop Social Marketing and Social networking strategies to engage target audiences in Healthy Living dialogue

Living dialogue

- Conduct applied research to inform educational program interventions.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

| Direct Methods | Indirect Methods |
|---|--|
| <ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • Demonstrations • Other 1 (Train-the-Trainer) • Other 2 (Social Networking) | <ul style="list-style-type: none"> • Public Service Announcement • Newsletters • Web sites other than eXtension |

3. Description of targeted audience

- School-age youth
- Parents of school-age youth
- Teachers
- Cafeteria/Food service workers
- School administration
- Providers of before and aftercare
- Limited Income Mothers and Children
- Food Stamp recipients
- Geographically dispersed military families

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Growing Healthy Habits: # workshops; # train-the-trainer sessions; # school gardens developed; # community gardens developed; # new partnerships to implement GHH.
- Walk The Line: # sessions conducted; # school cafeteria workers trained; # cafeterias participating
- Farm 2-School: # Sessions conducted; # schools participating; # farmers participating; # New partnerships developed.
- Eating Smart/Being Active: # youth served; # sessions; # supporting resources developed.
- Up For the Challenge: # sessions conducted; # youth reached; # teachers/afterschool providers trained; # schools implementing
- Strong Women, Healthy Hearts: # women completing program; # sessions conducted; # partnerships developed to implement program
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

| O. No | Outcome Name |
|-------|---|
| 1 | 1. Fruit & Vegetable Consumption: # youth planning to increase consumption of fruits and vegetables. |
| 2 | 2. Healthy Eating & Physical Activity: # of individuals and families who gain awareness, knowledge, or skills regarding healthy eating and physical activity |
| 3 | 3. Policy Change: # schools, businesses and organizations with increased awareness of needed systems changes that will positively impact intake of healthier foods. |
| 4 | 4. Systems Changes: # schools, businesses or organizations making systems changes to promote healthy lifestyles |
| 5 | 5. Physical Activity: # youth and adults including physical activity in daily routine at least three times weekly |

Outcome # 1

1. Outcome Target

1. Fruit & Vegetable Consumption: # youth planning to increase consumption of fruits and vegetables.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 2

1. Outcome Target

2. Healthy Eating & Physical Activity: # of individuals and families who gain awareness, knowledge, or skills regarding healthy eating and physical activity

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 3

1. Outcome Target

3. Policy Change: # schools, businesses and organizations with increased awareness of needed systems changes that will positively impact intake of healthier foods.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 4

1. Outcome Target

4. Systems Changes: # schools, businesses or organizations making systems changes to promote healthy lifestyles

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 5

1. Outcome Target

5. Physical Activity: # youth and adults including physical activity in daily routine at least three times weekly

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior

- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Description

Funding streams may divert attention in ways that are not currently considered.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

- Program evaluations will be implemented using a variety of techniques. A systematic approach will most often be utilized across the state to collect post/pre data via surveys to document intent to change and knowledge gain.
 - Follow-up surveys, questionnaires, or phone interviews will be utilized in some program-specific evaluations to document behavior changes over time.
 - If external funds are secured, research studies that will validate and document program impacts and effectiveness will be implemented.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

Many Americans are disconnected from the source of their food supply. It is important that consumers, especially youth, develop an understanding of where food comes from so that they can gain a greater appreciation of food safety issues in a global economy. This program will help participants become educated consumers who can make informed decisions about buying, storing, and preparing food to maximize health and safety. Marylanders will increase or improve:

- Food systems understanding (production; processing; distribution; access and selection)
- Use of locally grown, fresh food through support of local markets
- Home and community food production
- Safe food handling practices

More Marylanders are seeking food gardening information. In 2013-2018, more Marylanders will learn how to start a garden and grow some of their own food in home and community gardens. They will reduce chemical pesticide and fertilizer use in food garden and use sustainable practices to improve soil quality and protect water resources.

During the past 30 years there has been an increased incidence of food borne illness. Currently, one in four Americans suffers from food borne illness each year. Some foods, such as fruits and vegetables are often consumed raw or with limited preparation. It is important that producers and consumers practice safe food handling to decrease the burden of food borne illness. Commercial fruit and vegetable growers in Maryland will understand and adopt the use of Good Agricultural Practices (GAP)

MAES and AES will foster research projects that focus on food safety in terms of food ingredients through several projects such as engineering for food safety and quality, enhancing Maryland grown soft wheat consumption for health promotion, development of value added utilization for Maryland grown soybean varieties and functional foods, predictive modeling of Salmonella spp from processed poultry, determine quantity of E.Coli and Salmonella in organic compost uses as fertilizer, etc.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---------|---|-----------------|-----------------|----------------|----------------|
| 101 | Appraisal of Soil Resources | 0% | 0% | 0% | 15% |
| 205 | Plant Management Systems | 0% | 0% | 0% | 15% |
| 404 | Instrumentation and Control Systems | 5% | 5% | 5% | 0% |
| 501 | New and Improved Food Processing Technologies | 5% | 5% | 5% | 0% |
| 502 | New and Improved Food Products | 5% | 5% | 5% | 0% |
| 711 | Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources | 5% | 5% | 5% | 25% |
| 712 | Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins | 80% | 80% | 80% | 45% |
| | Total | 100% | 100% | 100% | 100% |

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Foodborne illness is a major and continuing public health problem in Maryland, and is also a concern with respect to bioterrorism, food security, and emergency preparedness. During the past 30 years there has been an increased incidence of food borne illness. Currently, one in four Americans suffers from food borne illness each year. Some foods, such as fruits and vegetables, are often consumed raw or with limited preparation. It is important that producers and consumers practice safe food handling to decrease the burden of food borne illness. Also, in light of other diseases such as colon cancer, diabetes, etc., biotechnology research is being envisioned to reduce the incidences of such disease by developing new varieties of grain (e.g., wheat and soybean) that contain high levels of beneficial biochemicals, such as antioxidants.

2. Scope of the Program

- In-State Extension
- In-State Research

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Participants will be receptive to receiving training and educational materials and will be willing to change their behaviors as appropriate and to share the information they receive.
- Growing concern about the safety of food supply will only heighten interest in this program area.
- The number of people interested in home food preparation and food preservation continues to increase, leading to an increased need for understanding basic food safety practices and principles.

- MAES and AES assumes that funding will be available to continue the important research projects relating to food safety to ingredients in the food that will minimize chances of certain human diseases.

2. Ultimate goal(s) of this Program

The food supply becomes safer and there is a lower incidence of foodborne illness in Maryland as documented by FoodNet surveillance data. Also, new varieties of grain will be developed such that they prevent diseases such as colon cancer, diabetes, etc. Ultimately, the population becomes healthier and there is a reduction in morbidity and mortality from foodborne pathogens.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|------|-----------|------|----------|------|
| | 1862 | 1890 | 1862 | 1890 |
| 2014 | 9.0 | 1.5 | 5.0 | 4.0 |
| 2015 | 10.0 | 1.5 | 5.0 | 4.0 |
| 2016 | 10.0 | 1.5 | 5.0 | 4.0 |
| 2017 | 10.0 | 0.0 | 0.0 | 4.0 |
| 2018 | 0.0 | 0.0 | 0.0 | 4.0 |

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop technical assistance programs for UME
- Develop and/or adapt food safety materials and resources for UME Educators
- Collaborate with local, regional, and national partners
- Develop safe food educational materials/ resources and disseminate USDA food safety materials to consumers and producers
 - Conduct trainings and workshops, including train-the-trainer workshops
 - Conduct evaluations
 - Promote and support Maryland Farm to School and other agricultural literacy programs
 - Conduct data analysis, needs assessments, environmental scans, and asset mapping
 - Network internally and externally with collaborators, partners, and affiliates
 - Raise community and stakeholder awareness of local food issues
 - Contribute to relevant eXtension Communities of Practice
 - Develop online food safety modules
 - Conduct social marketing awareness education focusing on food safety
 - Conduct basic and applied research to inform program development regarding food borne illnesses and beneficial and safe compounds in the food.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

| Direct Methods | Indirect Methods |
|---|---|
| <ul style="list-style-type: none"> ● Education Class ● Workshop ● Group Discussion ● Demonstrations | <ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● Web sites other than eXtension ● Other 1 (Conferences) ● Other 2 (Peer-Reviewed Publications) |

3. Description of targeted audience

- Consumers: Youth, adults, older adults
- Commercial: Fruit and vegetable producers
- Food service workers, childcare workers, community-based organizations
- Service agencies related to food production, promotion, consumption, protection, education

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- 1. Food Safety Practices: # training sessions; # trained; # courses developed; # publications; # Mass Media
 - 2. Good Agricultural Practices (GAP): # of fruit and vegetable farmers implementing Good Agricultural Practices; # of fruit and vegetable producers attending GAP training; # of GAP workshops, seminars, consultations.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

| O. No | Outcome Name |
|-------|--|
| 1 | 1. Food Safety Practices: Participants will gain basic food safety knowledge and skills, resulting in an intent to adopt the following: Follow the key safe food handling recommendations (clean; separate; cook; chill) <ul style="list-style-type: none"> -Wash hands before working with food -Clean food preparation utensils and surfaces -Wash fruits and vegetables before eating and preparing - Keep raw food/meat separate from ready to eat foods -Cook and chill food to safe temperature using a food thermometer -Store foods at a safe temperature using an appliance thermometer |
| 2 | 2. Good Agricultural Practices (GAP): Maryland's fruit and vegetable producers implement Good Agricultural Practices in their operations to prevent contamination and ensure a safe food supply. |

Outcome # 1

1. Outcome Target

1. Food Safety Practices: Participants will gain basic food safety knowledge and skills, resulting in an intent to adopt the following: Follow the key safe food handling recommendations (clean; separate; cook; chill)

- Wash hands before working with food
- Clean food preparation utensils and surfaces
- Wash fruits and vegetables before eating and preparing
- Keep raw food/meat separate from ready to eat foods
- Cook and chill food to safe temperature using a food thermometer
- Store foods at a safe temperature using an appliance thermometer

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension
- 1890 Research

Outcome # 2

1. Outcome Target

2. Good Agricultural Practices (GAP): Maryland's fruit and vegetable producers implement Good Agricultural Practices in their operations to prevent contamination and ensure a safe food supply.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 205 - Plant Management Systems
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Government Regulations
- Competing Public priorities

Description

Food supplies are always subject to natural disasters, which can then impact safety issues. Food safety issues are also compounded by the fact that the food supply system is now global and regulations across countries, industries, and other segments can vary significantly.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

- Benchmark data are being collected on Maryland's vegetable and fruit growers to determine the scope and use of Good Agricultural Practices.