

Agronomic Crop Systems

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V(A). Planned Program (Summary)

1. Name of the Planned Program

Agronomic Crop Systems

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms	0%	0%	12%	
205	Plant Management Systems	50%	50%	62%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%	5%	3%	
212	Pathogens and Nematodes Affecting Plants	5%	5%	16%	
601	Economics of Agricultural Production and Farm Management	40%	40%	7%	
Total		100%	100%	100%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2008	Extension		Research	
	1862	1890	1862	1890
Plan	57.9	10.9	49.0	0.0
Actual	86.0	8.0	61.7	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c 1501293	1890 Extension 452333	Hatch 1149839	Evans-Allen 0
1862 Matching 5803541	1890 Matching 452333	1862 Matching 9974814	1890 Matching 0
1862 All Other 293000	1890 All Other 0	1862 All Other 1554912	1890 All Other 0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

The Extension portion of this plan was implemented via the Innovation-Decision Process (Rogers, 1995). It is important to conduct the agronomic crop systems programs in this way because producers of various row crops, in various locations in the state are in different stages of this process for the array of research-based practices. Based on needs assessments conducted by Extension Specialists, the following practices will be targeted:

•conservation-tillage •planting insect-tolerant crops •planting herbicide-tolerant crops •spaying crops with foliar fungicide to manage disease •using recommended varieties of soybeans or corn (based on UT field trial results)

Knowledge: Newspaper articles, radio programs, websites and newsletters were used to build awareness of UT Extension resources and practices for more profitable production. Mass media also highlighted pests and pesticides in a timely manner.

Persuasion: Farm visits and group meetings were used to showcase practices.

Decision: Group meetings and classes were held in which Extension specialists taught detailed instruction to producers.

Implementation: On-farm demonstrations were conducted, particularly in the 31 West Tennessee counties, to highlight research-based practices. Integrated research and extension efforts were conducted, such as test plots in most West Tennessee counties.

Confirmation: Farm visits and telephone calls assisted producers to continue use of the practices, respond to environmental factors, and realize greater profits.

From a research perspective, molecular, marker-assisted and traditional breeding techniques are used to develop genetic lines and varieties of corn, soybeans, tobacco, and wheat which are adapted, high-yielding, and disease-resistant. Varieties of these crops and cotton are evaluated in replicated field research plots at our Research and Education Centers and with producer cooperators in selected counties. Likewise, cropping systems research addressing tillage systems and rotation schemes are conducted to develop production system information.

We conduct surveillance for exotic and invasive organisms using both conventional and molecular technologies. We research the effects of biological, cultural and chemical control technology for efficacy and effect on productivity of cropping systems under study. We search for new organisms to use in integrated control programs for pests and diseases of those agronomic systems that are predicted to be in danger of severe damage from new, emerging, and re-emerging pests and diseases.

Economic data are developed from field experiments on agricultural experiment stations, through surveys of producers, and through simulation modeling. Data are analyzed using standard methods for estimating yield response functions, budgeting, optimization techniques, risk analysis procedures, simulation modeling, and other methods of economic analysis as appropriate.

2. Brief description of the target audience

The primary audience for this program was Tennessee row crop producers, and the secondary audience was the professionals, business owners/cooperatives, and government officials who serve them.

V(E). Planned Program (Outputs)**1. Standard output measures****Target for the number of persons (contacts) reached through direct and indirect contact methods**

	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Year	Target	Target	Target	Target
Plan	10000	15000	1000	0
2008	65844	400000	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted**

Year Target

Plan: 0

2008: 2

Patents listed

B. Oppert, J.L. Jurat-Fuentes, J. Fabrick, C. Oppert. 2008. Novel cadherin receptor for potentiating Bt biopesticides. Patent application.

Armel, G.R. and W. Hong. 2008. Herbicidal mixtures. World Patent Application, WO073369

3. Publications (Standard General Output Measure)**Number of Peer Reviewed Publications**

	Extension	Research	Total
Plan	0	28	
2008	20	40	0

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

Number of exhibits displayed to promote awareness and participation in this planned program.

Year	Target	Actual
2008	10	10

Output #2**Output Measure**

Number of research-based publications distributed as part of this program.

Year	Target	Actual
2008	2000	2424

Output #3**Output Measure**

Local/regional research presentations, workshops, media releases.

Not reporting on this Output in this Annual Report

Output #4**Output Measure**

National/US level research presentations, workshops.

Not reporting on this Output in this Annual Report

Output #5**Output Measure**

Yield gain resulting from regional soybean breeding, tenths of bushels per acre per year.

Not reporting on this Output in this Annual Report

Output #6**Output Measure**

DNA-based Asian Soybean Rust early detection program for Tennessee soybean acreage, acres protected. (Lamour)

Year	Target	Actual
2008	{No Data Entered}	1000000

V(G). State Defined Outcomes

O No.	Outcome Name
1	Annual tons of soil erosion prevented due to adopting conservation-tillage encouraged by the availability of herbicide-resistant seed for cotton production in Tennessee.
2	Acres of herbicide-resistant cotton in Tennessee encouraged by the adoption of conservation tillage.
3	Farm operators with sales over \$10K using TAES economic research in decisions.
4	Row Crops Production: Number of participants who implemented one or more management practices based on data provided by UT (e.g., conservation tillage, plant population, growth retardants, IPM strategies, disease and weed control).
5	Row Crops Production: Number of producers, farm workers and other ag professionals who received pesticide certification, recertification and pesticide safety training.
6	Row Crops Production: Number of participants who improved their income by following the recommended best management practices for crop production, including plant pest management.
7	Tennessee soybean production increase attributable to breeding, bushels per year.
8	Adoption rate of bioactive natural products in place of conventional pesticide on cotton, driven by organic cotton price premium.
9	Improving Corn Production
10	Molecular mechanisms for plant defense.
11	Enhanced-nutrition soybeans.
12	Economical use of fertilizers and lime.
13	Agronomic crop variety testing and information dissemination.
14	Skip-row cotton planting to reduce costs.
15	Optimum soybean variety selection for disease and nematode resistance.
16	Foliar fungicides for higher wheat yields.
17	Creation of Genetic and Genomic Tools.
18	Identification of glyphosate-resistant Palmer amaranth.
19	Characterizing the Insect Gut Healing Response.
20	Mycorrhizae: Plant and Soil Protection.
21	Sprayer Drift Reduction.
22	Statistical Analysis Tools For Research Data.

Outcome #1

1. Outcome Measures

Not reporting on this Outcome for this Annual Report

2. Associated Institution Types

3a. Outcome Type:

3b. Quantitative Outcome

Year	Quantitative Target	Actual
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3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
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V(H). Planned Program (External Factors)

External factors which affected outcomes

Natural Disasters (drought, weather extremes, etc.)

Economy

Competing Programmatic Challenges

Brief Explanation

In some cases, intellectual property issues prevent fully discussing progress at this time.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

After Only (post program)

Retrospective (post program)

Other (Third-Party)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}