

V(A). Planned Program (Summary)

Program # 13

1. Name of the Planned Program

Crop and Forage Production Systems

Reporting on this Program

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%	
202	Plant Genetic Resources	10%		10%	
205	Plant Management Systems	20%		20%	
211	Insects, Mites, and Other Arthropods Affecting Plants	10%		10%	
212	Pathogens and Nematodes Affecting Plants	10%		10%	
213	Weeds Affecting Plants	10%		10%	
216	Integrated Pest Management Systems	30%		30%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	58.5	0.0	85.0	0.0
Actual Paid Professional	47.0	0.0	89.4	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
605657	0	3575921	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
605657	0	9582782	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
5182324	0	13595237	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

AgriLife Extension

Extension is the right hand of AgriLife Research in the development of viable field research and demonstrations on the farms and ranches of Texas producers. Our crop testing efforts include replicated field trials to demonstrate new genetics in corn, sorghum, wheat, peanut, sunflower, rice, cotton and minor crops such as guar, sesame, safflower and castor. Over 100 replicated field trials are initiated annually. Results are instantly available to producers at <http://varietytesting.tamu.edu>, which received 829,139 requests and 562,386 page downloads in 2012. Most crop varieties and hybrids have a short life, often as little as 3 usually not more than 5 years due to the rapid progress of technology in improved crops and forages. This ongoing testing and rapid reporting insures that Texas growers can take advantage of the best technology when selecting planting seed.

Specialists provide training and program materials to County Extension Agents to conduct educational programs at the county level. Technical assistance is provided to agents by specialists in the area of result demonstrations and applied research. Provide multi-county, regional and statewide educational programs via specialist faculty to various stakeholders. Coordinate and collaborate with state and federal agencies in crop and forage activities. Examples of coordinated research and Extension programming include:

Cotton root rot suppression

Cotton root rot (CRR) is a devastating disease in cotton planted on heavy textured, high pH soils common to the Southwest, reducing the yield of lint and cotton seed yields by tens of millions of pounds annually across Texas, New Mexico, and Arizona. The disease is caused by a persistent soil borne fungus, *Phymatotrichopsis omnivora*. To assess the scope of the problem, a survey was taken to determine the percent of infestation of fields and the economic impact of CRR on yields by surveying County Extension Agents and Extension Agents-IPM agents across Texas.

AgriLife Research

AgriLife Research has a broad and interdisciplinary group of scientists dedicated to crop improvement, development of sustainable production technologies, sustainable pest management procedures, plant breeding and studies which employ molecular tools to accelerate the incorporation of new findings in field crops and forages. These technologies range from the very basic to the very applied. AgriLife breeders annually release new varieties of cotton, wheat, oats, peanut and/or rice through commercial seed producers in the state. AgriLife breeders of sorghum and corn annually release new parent lines uniquely adapted to the biotic and abiotic stress endemic to Texas for use by commercial seed companies to

incorporate in hybrids released to the public.

2. Brief description of the target audience

The target audience for this program consists of agricultural producers who produce food, fiber, and forages in the state. Specific focus is on those commodities listed in the program overview. In addition, these programs are interpreted to the urban public through various methods.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	34373	1306516	2007	0

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

Patent Applications Submitted

Year: 2012

Actual: 3

Patents listed

* Stem-expressed promoter for Tissue-specific expression in monocot crops

* Stem-regulated, plant defense promoter and uses thereof in tissue-specific expression in monocots

*Enhancing expression of value-added genes by transgenic expression of tombuvirus-based P19 gene mutants

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	1150	1150

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of group educational sessions conducted.

Year	Actual
2012	1936

Output #2

Output Measure

- # of research-related projects.

Year	Actual
2012	223

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	% of crop and forage producers that adopt or plan to adopt best management practices to improved quality and profitability.
2	% of crop and forage producers that report increased knowledge of best management practices to improve quality and profitability.
3	Increased income (in millions) as a result of adoption of best practices in crop management.

Outcome #1

1. Outcome Measures

% of crop and forage producers that adopt or plan to adopt best management practices to improved quality and profitability.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

% of crop and forage producers that report increased knowledge of best management practices to improve quality and profitability.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Increased income (in millions) as a result of adoption of best practices in crop management.

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Based on the 5-year average cotton lint price of \$0.58/ lb (USDA-NASS), the economic loss to all Texas cotton farmers from CRR is over \$24 million annually (Table 1). Estimated losses for non-irrigated cotton farmers exceed \$15 million annually, and irrigated cotton farmers exceed \$8.5 million annually. Using a 5-year average cottonseed price of \$163/ton (USDA-NASS) results in an additional loss of nearly \$5 million annually occurs. The total economic impact (lint + seed) of CRR to Texas cotton producers equals over \$29.4 million annually. The economic impact of the 5-year average yield loss from CRR and September 2011 cotton lint prices (\$0.98/lb) and

cottonseed prices (\$375/ton) the total economic impact would exceed \$60 million dollars.

What has been done

AgriLife Research and Extension, working with an agricultural chemical company identified a treatment to an exceptionally devastating cotton disease, cotton root rot, which is caused by a persistent soil born fungus. We put in field trials and demonstrations across the state, educated producers and made them aware of a Section 18 label, which when used properly can control this pernicious disease, resulting in cotton yields averaging about 30% higher than in untreated cotton.

Results

In the development of treatments to reduce the damage to the Texas cotton crop from cotton root rot, nearly 100% of the farmers affected by the disease, which represents about 20% of the total state acreage, or about 1.2 million affected acres.

Cotton growers treated about 170,000 acres on the first year of the crisis exemption label. We do not have precise economic numbers, but it is estimated that farmers had increased income of more than \$1.5 million in 2012 and with this success; it could increase to as much as \$30 million annually in subsequent years.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
202	Plant Genetic Resources
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected 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.)

Brief Explanation

Natural disasters, the economy, and policy changes all have potential impact on these

efforts.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Cotton growers treated about 170,000 acres on the first year of the crisis exemption label. We do not have precise economic numbers, but it is estimated that farmers had increased income of more than \$1.5 million in 2012 and with this success; it could increase to as much as \$30 million annually in subsequent years.

Key Items of Evaluation

No additional findings to report.