

**V(A). Planned Program (Summary)**

**Program # 3**

**1. Name of the Planned Program**

Crop and Forage Production

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%	20%	10%	0%
202	Plant Genetic Resources	10%	10%	10%	0%
204	Plant Product Quality and Utility (Preharvest)	20%	20%	20%	0%
211	Insects, Mites, and Other Arthropods Affecting Plants	0%	10%	0%	0%
212	Diseases and Nematodes Affecting Plants	10%	0%	10%	0%
213	Weeds Affecting Plants	10%	20%	10%	0%
215	Biological Control of Pests Affecting Plants	10%	20%	10%	0%
216	Integrated Pest Management Systems	30%	0%	30%	0%
	<b>Total</b>	100%	100%	100%	0%

**V(C). Planned Program (Inputs)**

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

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	75.0	5.0	85.0	0.0
<b>Actual Paid</b>	54.0	3.5	112.1	0.0
<b>Actual Volunteer</b>	0.0	20.0	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
726389	246126	3890864	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
726389	150407	7148707	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
6014183	0	12975168	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

**AgriLife Extension and AgriLife Research**

Provide training and program materials to County Extension Agents to conduct educational programs at the county level. Technical assistance was provided to agents by specialists in the area of result demonstrations and applied research. Provided 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.

The mid-1990s marked the beginning of an era when the first genetically modified cotton variety was developed. Since that time, biological advances in cotton seed have occurred at a rapid pace, making variety selection more difficult. The investment in the development of these traits and associated breeding programs has brought about a great change in the yield potential for cotton. With these investments in the development of cotton, we have the seen the seed market flooded with new varieties, most of which the farmer has had no experience. As the most important decision a grower makes is the selection of a cotton variety and transgenic traits AgriLife Extension responded to grower needs.

\* This new era of rapidly changing seed technology called for an expanded and more intensive cotton variety testing effort. With funding support from Plains Cotton Growers and the Texas State Support Committee -Cotton Inc., the Texas A&M AgriLife Extension Service began conducting intensive replicated cotton variety trials in producer-cooperator fields in 2000.

\* The partnership with industry -including funding, local leading producer-cooperators, and seed and technology companies provides added credibility to the large-plot variety evaluations. The testing results allow producers to compare production, quality and economic characteristics of selected varieties.

\* Given the increasing number of varieties that are available -more than 110 in 2011 -these results are invaluable to growers in their variety-selection decisions.

**Cooperative Extension Program**

Programs conducted by The Cooperative Extension Program at Prairie View A&M University focused on vegetable and fruit crop production and were geared towards the needs of small scale and limited resource farmers in an effort to improve their income and place formal barren land back into production. Programs focused on assisting producers better manage risk associated with producing small scale horticulture crops, namely Production Risk, Marketing Risk and Financial Risk.

**2. Brief description of the target audience**

**AgriLife Extension and AgriLife Research**

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.

**Cooperative Extension Program**

Our programs will assist a diverse audience, with emphasis on those who are underserved, hard to reach, and have limited social and economic resources to improve their quality of life; this will include farmers and ranchers, private land and forest owners, military veterans and their families.

**3. How was eXtension used?**

eXtension was not used in this program

**V(E). Planned Program (Outputs)**

**1. Standard output measures**

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	36548	2153642	1732	0

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

**Patent Applications Submitted**

Year: 2014  
 Actual: 4

**Patents listed**

ATTX961014-1R/Y  
 Clover, White, 'Neches'  
 COMPOSITIONS, ORGANISMS, SYSTEMS, AND METHOD FOR EXPRESSING A GENE PRODUCT IN PLANTS USING SCBV EXPRESSION CONTROL SEQUENCES OPERABLE IN MONOCOTS AND DICOTS  
 'Tamrun OL11' Peanut

**3. Publications (Standard General Output Measure)**

**Number of Peer Reviewed Publications**

2014	Extension	Research	Total
<b>Actual</b>	0	948	948

**V(F). State Defined Outputs**

**Output Target**

**Output #1**

**Output Measure**

- # of group educational sessions conducted.

<b>Year</b>	<b>Actual</b>
2014	1701

**Output #2**

**Output Measure**

- # of research-related projects.

<b>Year</b>	<b>Actual</b>
2014	213

**Output #3**

**Output Measure**

- # of one-on-one technical assistance/consultations.

<b>Year</b>	<b>Actual</b>
2014	600

**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.

## **Outcome #1**

### **1. Outcome Measures**

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

### **2. Associated Institution Types**

- 1862 Extension
- 1890 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	96

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

AgriLife Extension and Research:

Approximately 6 million acres of wheat is grown in Texas annually. It is produced for grain, grazing, or as a dual purpose (grazing/grain) crop, and has a major economic impact in the state. Local variety trials are important to test adaptation of new variety releases and compare them to established lines currently used by producers. New varieties can offer greater yield and more disease and insect resistance.

Cooperative Extension and Agricultural Research Center:

Texas lends itself to many sustainable alternatives because of its mild climate and long growing season. Fruit and vegetable crop productions have been suggested as agricultural alternatives that could improve the income situation of small-scale farmers who utilize Cooperative Extension. Many of these individuals are limited resource farmers seeking methods to improve their crop production potential and profitability. Studies have shown that low-input, alternative agriculture using alternative crops and environmentally friendly production practices will enhance productivity.

#### **What has been done**

AgriLife Extension and Research:

The Small Grains Extension Program coordinated 32 uniform wheat variety trials statewide in 2014. These trials were used to provide unbiased yield comparisons among common available varieties and experimental lines. In addition, seven uniform forage variety trials were conducted to test superior small grains species and varieties for forage production. Results of this work were

presented at 13 wheat educational meetings organized by county extension agents with 562 producers participating.

Cooperative Extension and Agricultural Research Center:

- \* Established Farmer Markets in Bowie, Smith, Houston and Waller Counties. Assist local producers in establishing local food group and in developing a Farmers Market Grant.
- \* Conducted grafted cucumber demonstration on campus and in Washington, Ft Bend, Smith, Bowie, and Waller Counties..
- \* Conducted Asian Melon Trials on campus to identify adaptable varieties and assist in developing commercial market.
- \* Conducted series of trainings on high tunnel construction and vegetable production with support of NRCS Equip cost share
- \* Conducted a series of eight beekeeping classes.
- \* Partnered with Texas AgriLife in conducting the Texas Strawberry Sustainability Initiative. One trial on campus as well as four producer trials.

## Results

AgriLife Extension and Research:

Superior wheat varieties yielded up to 16 bushels per acre more than commonly grown varieties. On average, superior wheat varieties produced 9 bushels more per acre than the commonly grown varieties. Utilizing a \$6 per bushel wheat price, a 9 bushel yield enhancement represents an increased gross profit potential of \$26 million for producers in the Central Texas Region alone. Survey results from educational programs showed knowledge on crop management and production increased by 81.4%, and intention to utilize recommended varieties and adopt recommended practices was 96.2%.

Cooperative Extension and Agricultural Research Center:

Agents report the total sales of local produced vegetables and fruits market through Farmer Markets topped \$63,500.00. As a result on the Drafted Cucumber, Asian Melon, and Strawberry projects a total of 18 new producers brought previously uncultivated land into production. Many were ten acres or less, but the production on these high value products made it feasible to make a profit.

A total of 12 producers that attended our workshops have been approved for NRCS cost shares to purchase High Tunnels. CEP Extension orchestrated a program where 9 of the tunnels were shipped on one truck, saving each producer over \$ 800.00 in shipping cost.

Beekeeping Classes were conducted to bolster the number of local bees in the area. 40 new hives in a three county area were established as a result of the program.

## 4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
202	Plant Genetic Resources
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases and Nematodes Affecting Plants

213	Weeds Affecting Plants
216	Integrated Pest Management Systems

## **Outcome #2**

### **1. Outcome Measures**

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

### **2. Associated Institution Types**

- 1862 Extension
- 1890 Extension
- 1862 Research

### **3a. Outcome Type:**

Change in Knowledge Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	98

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Crop (species) and cultivar selection are among the most important decisions a producer must make each year. Farmers rely on local and regional variety trials to identify the most adapted and productive plant materials for use in their production systems. Local trials demonstrate the adaptation of a cultivar for the specific growing conditions in the area. Regional assessments demonstrate the potential for particular cultivars to perform well across a much wider range of soil and environmental conditions. AgriLife coordinates variety trials for all the major agronomic crops in Texas and provides this information to growers to aid them in the selection process. These efforts help promote optimum yields and economic returns which will ensure long-term sustainability of production systems.

#### **What has been done**

In 2014, 28 on-farm cotton variety trials, known as RACE (Replicated Agronomic Cotton Evaluation) trials were conducted in South Texas, Blacklands, and Northern Rolling Plains. In addition, over 45 educational programs were conducted including regional, multi-county, and single-county events; designed to educate producers about the results of variety evaluations as well as important management practices that enhance crop quality and yields.

#### **Results**

Results for the RACE trials were compiled and made available at Cotton.tamu.edu, which typically gets over 250,000 site visits/year. The information is also available in a 40 page booklet that was distributed at producers meetings. Survey results from educational meetings showed producers knowledge about best management practices including variety selection, in-season management, and harvest aid management increased by 98%. Improved seed technology and variety testing efforts have led to significant improvements in both cotton lint quality and yields in the state. Since 2000, average yields per harvested acre have increased from 475 pounds to 670 pounds. The average annual benefit of improved technology and increased adoption by growers is estimated at over \$45 million annually in Texas, which has helped growers to partially offset sharp increases in production costs in recent years. For the ginning sector, the annual gain associated with varietal improvements, testing, and education supports approximately 2,100 jobs annually at cotton gins in the state. The value-added impacts associated with ginning the additional production were estimated at over \$150 million annually, and support 1,400+ jobs in ginning-related industries.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
202	Plant Genetic Resources
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Diseases 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

Drought conditions limited crop potential in some areas and may have impacted producer participation at some educational events. However, participation overall was consistent with historical activity and the total number of acres impacted was above average.

One of our most challenging problems continues to be addressing the diverse needs of our target audience and finding the resources to address these needs given our limited capacity.

## **V(I). Planned Program (Evaluation Studies)**

### **Evaluation Results**

Survey results clearly demonstrate that the combination of applied research and educational program delivery have major impacts on production adoption of practices, and ultimately on economic outcomes. With over 86% of producers reporting intention to adopt practices, the cumulative statewide impact of programs in cotton, wheat, corn, and grain sorghum exceeds \$250MM annually.

### **Key Items of Evaluation**