# 2010 Prairie View A&M University Research Annual Report of Accomplishments and Results

**Status: Accepted**

**Date Accepted: 06/13/2011**

## I. Report Overview

### 1. Executive Summary

The Cooperative Agricultural Research Center (CARC) is the organizational unit responsible for coordinating agricultural research within the College of Agriculture and Human Sciences at Prairie View A&M University. The CARC, originally established as an agricultural experimental substation in 1947, coordinates research activities in three major areas: 1) Animal Systems; 2) Food Systems; and 3) Plant and Environmental Systems. The Animal Systems research group focuses on improving the scientific understanding of the physiological mechanisms affecting reproduction, growth and performance of farm animals - primarily grazing ruminants (cattle and goats). The reproductive biology group is studying molecular mechanisms responsible for pregnancy recognition and formation of the placenta in the ruminants. The poultry research group is studying effects of selenium on egg production and quality of laying hens fed cottonseed meal and the effects of Sel-Plex on neutralizing natural feed toxins in broiler rations along with synergistic effects of organic selenium and zinc on the aging process of old hens. The swine research group is studying effects of feeding oil based rations on genetically obese and lean pigs with project work focused on obesity through lipid protein expression in lean and obese animals with an overall goal to identify proteins that have significant roles in the development and maintenance of obesity. The Food Systems research group focuses efforts on issues of regional and national importance of enhancing food safety and quality and the related impacts on the quality of life. Critical issues facing the underserved populations - locally, nationally and globally involving the incidences of food borne illnesses and related diseases. The goals of this group are to: 1) increase the body of knowledge in the understanding of how to ensure that food products are safe; and 2) to increase the body of knowledge in the areas of quality and safety of meat, milk, and value-added products. Currently, work involves the following activities: 1) enhancing the quality of food and food products; 2) examining strategies for mitigating the transmission of natural food-borne pathogens; 3) examining methods for the reduction of natural and introduced toxicants in foods and feed; 4) examining nutrient quality enhancement of food and food products; 5) examining mechanisms involved in nutrient utilization and diseases; 6) evaluating strategies for minimizing the transfer of microbial pathogens during food handling; and 7) evaluating strategies for translating nutrition knowledge into better food selection. The Plant and Environmental Systems research group works on a number of projects that are very important to the regional environment of the Texas Gulf Coast Prairie. Findings and results from the projects have provided a positive impact to the biological and agricultural sciences community by adding to the knowledge base within the environmental monitoring, soil biology and ecology, redox chemistry, and seasonally wet and wetland soils arena. The plant biology group is studying optimized fat and cellulosic biomass accumulation in peanut through biotechnology and nucleotide-dependent reprogramming of mRNAs encoding acetyl coenzyme a carboxylase and lipoxygenase in relation to the fat contents of peanut. Also, impacts of biomass sorghum feedstock production on carbon sequestration and greenhouse gas emissions in the south central region. Additionally, the group is focused on DNA biomarkers for detecting nutritional conditions of agricultural soils that have the potential to reduce excessive runoff of nutrients used during crop growth. Grafting of chitosan and chitosan derivatives on single walled carbon nanotubes is directed toward agronomic and bioenvironmental applications.

**Total Actual Amount of professional FTEs/SYs for this State**

| Year: 2010 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 0.0 | 0.0 | 0.0 | 53.0 |
| Actual | 0.0 | 0.0 | 0.0 | 47.9 |

## II. Merit Review Process

### 1. The Merit Review Process that was Employed for this year

- Internal University Panel
- Combined External and Internal University Panel
- Combined External and Internal University External Non-University Panel

### 2. Brief Explanation

We engage a number of Merit/Peer Review processes. The Center, in conjunction with the Office of Sponsored Programs (OSP) and the Office of the Vice-President for Research (VPR) are taking additional steps in ensuring the merit process is effective. The VPR re-established the University Committee on Research that provides valuable insights as well as providing external reviews for project proposals.

## III. Stakeholder Input

### 1. Actions taken to seek stakeholder input that encouraged 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

**Brief explanation.**

Frequent contact with stakeholders, directly and indirectly, through a variety of means to invite their participation in a number of college activities. The college, which consists of the Academic Department (Agriculture, Nutrition and Human Ecology), the Cooperative Extension Program (CEP), and the Cooperative Agricultural Research Center (CARC), serve as the tripartite entity for the agricultural program at the University. Many of the activities of the College of Agriculture and Human Sciences (CAHS) are integrated in nature that leverages the number of contacts with Stakeholders.

**2(A). A brief statement of the process that was 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
- Open Listening Sessions
- Use Surveys
- Other (commodity organizations)

**Brief explanation.**

The CAHS maintains an external advisory committee that provides input and evaluation of programs targeted for excellence. The advisory committee assists with evaluating ongoing programs in the College, including academics, research, and extension. Additionally, the College engages in a number of activities which include participation in listening sessions, sponsored by the various interest groups which also included the Texas AgriLife Extension, Texas AgriLife Research, as well as a number of NGO's.

**2(B). A brief statement of the process that was 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 the general public (open meeting advertised to all)

**Brief explanation.**

Comments and feedback from various program activities were collected, synthesized and incorporated in program planning. Additionally, evaluations were conducted at all program activities where external audiences were included. Additional input was received through various reviews of the program provided by the USDA and other interest/commodity groups. We also engaged in a number of discussion activities with stakeholders and interest groups such as, Goat Producers, limited resource farmers as well as non-traditional audiences.

**3. A statement of how the input will be considered**

- To Identify Emerging Issues
- Redirect Research Programs
- In the Action Plans
- To Set Priorities

**Brief explanation.**

Input gathered from stakeholders was used when developing new project proposals and/or redirecting ongoing programs of work. Additionally, project proposals were externally reviewed in order to ensure relevancy in addressing stakeholder needs.

**Brief Explanation of what you learned from your Stakeholders**

Stakeholders provide an honest, realistic view of market conditions from the grassroots level

and their eye on the bottom line aids the research community toward relevant applications of science-based concepts. The Agricultural Field Day allows direct feedback from the local and regional producers who deal with market forces on an every day basis, no matter the climatic conditions.

## IV. Expenditure Summary

| 1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS) | | | |
|---|---|---|---|
| Extension | | Research | |
| Smith-Lever 3b & 3c | 1890 Extension | Hatch | Evans-Allen |
| 0 | 0 | 0 | 4606053 |

| 2. Totaled Actual dollars from Planned Programs Inputs | | | | |
|---|---|---|---|---|
| | Extension | | Research | |
| | Smith-Lever 3b & 3c | 1890 Extension | Hatch | Evans-Allen |
| Actual Formula | 0 | 0 | 0 | 3314122 |
| Actual Matching | 0 | 0 | 0 | 2287357 |
| Actual All Other | 0 | 0 | 0 | 0 |
| Total Actual Expended | 0 | 0 | 0 | 5601479 |

| 3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous | | | | |
|---|---|---|---|---|
| Carryover | 0 | 0 | 0 | 0 |

# V. Planned Program Table of Content

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

**Program # 1**

**1. Name of the Planned Program**

Food 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 |
|---|---|---|---|---|---|
| 501 | New and Improved Food Processing Technologies | | | | 10% |
| 502 | New and Improved Food Products | | | | 10% |
| 503 | Quality Maintenance in Storing and Marketing Food Products | | | | 10% |
| 701 | Nutrient Composition of Food | | | | 10% |
| 702 | Requirements and Function of Nutrients and Other Food Components | | | | 20% |
| 703 | Nutrition Education and Behavior | | | | 10% |
| 711 | Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources | | | | 20% |
| 712 | Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins | | | | 10% |
| | **Total** | | | | 100% |

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

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

| Year: 2010 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 0.0 | 0.0 | 0.0 | 15.3 |
| Actual | 0.0 | 0.0 | 0.0 | 12.0 |

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

| Extension | | Research | |
|---|---|---|---|
| **Smith-Lever 3b & 3c** | **1890 Extension** | **Hatch** | **Evans-Allen** |
| 0 | 0 | 0 | 1821376 |
| **1862 Matching** | **1890 Matching** | **1862 Matching** | **1890 Matching** |
| 0 | 0 | 0 | 379372 |
| **1862 All Other** | **1890 All Other** | **1862 All Other** | **1890 All Other** |
| 0 | 0 | 0 | 0 |

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

### 1. Brief description of the Activity

Conduct research activities centered around:
-Developing methods for enhancing the quality of food and food products.
-Examining strategies for mitigating the transmission of natural food borne pathogens.
-Examining methods for the reduction of natural and introduced toxicants (eg. antibiotics in milk and Salmonella) in foods and feed.
-Examining nutrient quality enhancement of food and food products.
-Examining mehancisms involved in nutrient utilization and diseases.
-Evaluating strategies for minimizing the tranfer of microbial pathogens during food handling.
-Evaluating strategies for translating nutrition knowledge into better food selection.

### 2. Brief description of the target audience

The primarily targeted audience are the underserved population living in the surrounding counties and the Northwest Houston Corridor.This population is dominated by Hispanics and African-Americans.Also, this area has been designated by the State of Texas as Prairie View A&M University's

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

### 1. Standard output measures

| 2010 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| **Actual** | 350 | 900 | 250 | 450 |

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

**Patent Applications Submitted**

Year: 2010
Actual: 1

**Patents listed**
Mora-Gutierrez, Adela and Gurin, Michael H. Bioactive complex compositions and methods of use thereof. U S Patent # 7780873. 2010.

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

**Number of Peer Reviewed Publications**

| 2010 | Extension | Research | Total |
|---|---|---|---|
| Actual | 0 | 2 | 2 |

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

**Output Target**

**Output #1**

**Output Measure**

- -Peer review publications. -External funding. -Workshops. -Presentations. -Graduate and undergraduate matriculation.

| Year | Actual |
|---|---|
| 2010 | 2 |

**V(G). State Defined Outcomes**

## V. State Defined Outcomes Table of Content

| O. No. | OUTCOME NAME |
|---|---|
| 1 | -Commercialization of methods/technologies for improving the quality, safety and use of food and food products for the reduction of food borne illnesses and other nutritionally related diseases. -Increase in the dissemination and use of research based information into newsletters and incorporation into extension and other programs leading to a reduction in nutrition related and food borne diseases and illnesses resulting from contaminated or unsafe food. |

**Outcome #1**

**1. Outcome Measures**

-Commercialization of methods/technologies for improving the quality, safety and use of food and food products for the reduction of food borne illnesses and other nutritionally related diseases. -Increase in the dissemination and use of research based information into newsletters and incorporation into extension and other programs leading to a reduction in nutrition related and food borne diseases and illnesses resulting from contaminated or unsafe food.

**2. Associated Institution Types**

- 1890 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

| Year | Quantitative Target | Actual |
|---|---|---|
| 2010 | 0 | 0 |

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

**Issue (Who cares and Why)**
The consuming public.

**What has been done**
Developed information briefs.

**Results**
Public awareness.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 501 | New and Improved Food Processing Technologies |
| 502 | New and Improved Food Products |
| 701 | Nutrient Composition of Food |
| 702 | Requirements and Function of Nutrients and Other Food Components |
| 703 | Nutrition Education and Behavior |
| 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

## V(H). Planned Program (External Factors)

### External factors which affected outcomes

- Appropriations changes
- Populations changes (immigration, new cultural groupings, etc.)
- Other (Program Direction)

### Brief Explanation

State funding to achieve matching requirement was not met. Competing priorities for use of funds. Refocusing of research priorities to reflect changing needs of stakeholders.

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

### Evaluation Results

### Key Items of Evaluation

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

**Program # 2**

**1. Name of the Planned Program**

Animal 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 |
|---|---|---|---|---|---|
| 301 | Reproductive Performance of Animals | | | | 10% |
| 302 | Nutrient Utilization in Animals | | | | 10% |
| 303 | Genetic Improvement of Animals | | | | 10% |
| 304 | Animal Genome | | | | 20% |
| 305 | Animal Physiological Processes | | | | 10% |
| 307 | Animal Management Systems | | | | 20% |
| 308 | Improved Animal Products (Before Harvest) | | | | 10% |
| 313 | Internal Parasites in Animals | | | | 10% |
| | **Total** | | | | 100% |

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

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

| Year: 2010 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 0.0 | 0.0 | 0.0 | 20.4 |
| Actual | 0.0 | 0.0 | 0.0 | 12.8 |

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

| Extension | | Research | |
|---|---|---|---|
| Smith-Lever 3b & 3c | 1890 Extension | Hatch | Evans-Allen |
| 0 | 0 | 0 | 557385 |
| 1862 Matching | 1890 Matching | 1862 Matching | 1890 Matching |
| 0 | 0 | 0 | 1849315 |
| 1862 All Other | 1890 All Other | 1862 All Other | 1890 All Other |
| 0 | 0 | 0 | 0 |

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

### 1. Brief description of the Activity

Applied and basic scientific research goals are as follows:

1. Determine the efficiency of farm animal production systems through a combination of best management practices and genetic enhancement.

a. Analyze the usefulness of various forage-based production systems and management practices for the Texas Gulf Coast. Maximize livestock productivity on small acreage using forage-based nutrient systems for livestock production.

2. Develop methods to improve reproductive efficiency of farm animals and improved conditions for growth and well-being.

a. Define endocrine and porcine mechanisms that regulate uterine receptivity and support conceptus growth, endometrial attachment and placentation. Identify proteins that carry the carbohydrate recognition molecules on the endometrium that promote stable cell-cell interactions and facilitate placentation.

c. Investigate factors involved in sperm attachment within the female reproductive tract and their relationship to fertility levels.

d. Utilize functional genomic approaches to understand the physiological mechanisms that influence reproduction, growth and efficiency of food producing animals.

e. Identify molecular markers for desirable traits, including disease and stress resistance.

### 2. Brief description of the target audience

While the University's service area extends throughout Texas and the world, the University's target service area includes the Texas Gulf Coast Region. This includes the surrounding counties and includes the rapidly growing residential and commercial area known as the Northwest Houston Corridor as noted in the original Texas Plan. Therefore, problems associated with agricultural production systems, including those that exist at urban-agricultural interfaces and impact stakeholders will be addressed.

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

### 1. Standard output measures

| 2010 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| **Actual** | 450 | 500 | 150 | 300 |

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

**Patent Applications Submitted**

Year: 2010

Actual: 0

**Patents listed**

None.

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

**Number of Peer Reviewed Publications**

| 2010 | Extension | Research | Total |
|---|---|---|---|
| Actual | 0 | 0 | 0 |

### V(F). State Defined Outputs

**Output Target**

**Output #1**

**Output Measure**

- Increase in peer reviewed publications. Increase in competitive grants received by Researchers in the Animal Systems Group. Increase in graduate student enrollment and matriculation in the Animal Science Program. We anticipate a 5% increase over the previous 5 year base line in each of these categories.

| Year | Actual |
|---|---|
| 2010 | 0 |

**V(G). State Defined Outcomes**

## V. State Defined Outcomes Table of Content

| O. No. | OUTCOME NAME |
|---|---|
| 1 | Improved reproduction efficiency and improved conditions for optimal growth and well-being of farm animals. Availability of resources (demonstration/test plots, hay and pastures, co-grazing site, etc.) for use by research scientists, graduate students and Extension personnel for research and teaching purposes. Availability of demonstrations using latest technology for research, demonstrations and teaching purposes for herd/farm record systems, animal identification, etc. applicable to small scale producers. A greater public understanding of the principles of animal behavior, animal responses to their environment, and the biology of reproduction and growth. Increased farm income and profitability by understanding production economics, profit margins and clarifying marketing channels and timing. A more competitive livestock industry in Texas. |

**Outcome #1**

**1. Outcome Measures**

Improved reproduction efficiency and improved conditions for optimal growth and well-being of farm animals. Availability of resources (demonstration/test plots, hay and pastures, co-grazing site, etc.) for use by research scientists, graduate students and Extension personnel for research and teaching purposes. Availability of demonstrations using latest technology for research, demonstrations and teaching purposes for herd/farm record systems, animal identification, etc. applicable to small scale producers. A greater public understanding of the principles of animal behavior, animal responses to their environment, and the biology of reproduction and growth. Increased farm income and profitability by understanding production economics, profit margins and clarifying marketing channels and timing. A more competitive livestock industry in Texas.

**2. Associated Institution Types**

- 1890 Research

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

| Year | Quantitative Target | Actual |
|---|---|---|
| 2010 | 0 | 0 |

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

**Issue (Who cares and Why)**
The producers of farm animals.

**What has been done**
Genetic enhancement and parasite control.

**Results**
Genetic improvement and reduction in the incidences of parasite outbreaks.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 301 | Reproductive Performance of Animals |
| 302 | Nutrient Utilization in Animals |
| 303 | Genetic Improvement of Animals |
| 304 | Animal Genome |

| | |
|---|---|
| 305 | Animal Physiological Processes |
| 307 | Animal Management Systems |
| 308 | Improved Animal Products (Before Harvest) |
| 313 | Internal Parasites in Animals |

**V(H). Planned Program (External Factors)**

**External factors which affected outcomes**

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

**Brief Explanation**

Changes in competing priorities combined with decline in human capital. Additional constraints include physical facilities and laboratory equipment.

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

**Evaluation Results**

Activities engage the continuous evaluation and feedback from participants and stakeholders. Additional input is received through extension personnel who maintain ongoing contact throughout the state with producers and/or interest groups.

**Key Items of Evaluation**

The animal system focus group is currently working on a number of relevant animal reproductive issues. However, resource constraints, primarily human capital, have limited the outcome at this point. Projections, however, for the future include the addition of new staff that will enhance the human capital capacity of the group. This will increase the ability of the group to accelerate the process of achieving results desired.

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

**Program # 3**

**1. Name of the Planned Program**

Plant and Environmental 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 |
|---|---|---|---|---|---|
| 102 | Soil, Plant, Water, Nutrient Relationships | | | | 10% |
| 103 | Management of Saline and Sodic Soils and Salinity | | | | 10% |
| 104 | Protect Soil from Harmful Effects of Natural Elements | | | | 10% |
| 112 | Watershed Protection and Management | | | | 10% |
| 131 | Alternative Uses of Land | | | | 10% |
| 132 | Weather and Climate | | | | 10% |
| 133 | Pollution Prevention and Mitigation | | | | 10% |
| 201 | Plant Genome, Genetics, and Genetic Mechanisms | | | | 10% |
| 202 | Plant Genetic Resources | | | | 10% |
| 206 | Basic Plant Biology | | | | 10% |
| | **Total** | | | | 100% |

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

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

| Year: 2010 | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| Plan | 0.0 | 0.0 | 0.0 | 17.3 |
| Actual | 0.0 | 0.0 | 0.0 | 8.6 |

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

| Extension | | Research | |
|---|---|---|---|
| **Smith-Lever 3b & 3c** | **1890 Extension** | **Hatch** | **Evans-Allen** |
| 0 | 0 | 0 | 935361 |
| **1862 Matching** | **1890 Matching** | **1862 Matching** | **1890 Matching** |
| 0 | 0 | 0 | 58670 |
| **1862 All Other** | **1890 All Other** | **1862 All Other** | **1890 All Other** |
| 0 | 0 | 0 | 0 |

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

### 1. Brief description of the Activity

1. Newsletters.
2. Publications (journals, articles).
3. Abstracts.
4. Presentations (scientific conferences, workshops, seminars).
5. digital media (video, MP3 JPEG, GIFF) of project work.
6.Audio (recordings, radio, TV excerpts).

### 2. Brief description of the target audience

One-on-one interaction in field and lab project areas will highlight the research efforts.Extension is the end product of the integrated work within the research, teaching, and extension model.

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

### 1. Standard output measures

| 2010 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| **Actual** | 150 | 250 | 100 | 200 |

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

**Patent Applications Submitted**

Year: 2010

Actual: 2

**Patents listed**

Cuero, Raul. Versatile antimicrobial agent TAMUS-2316. US Serial No. 12/288,818. 2009.
Cuero, Raul. A UV Blocker molecule. US Serial No. 61/143,995. 2009.

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

**Number of Peer Reviewed Publications**

| 2010 | Extension | Research | Total |
|---|---|---|---|
| Actual | 0 | 6 | 6 |

### V(F). State Defined Outputs

**Output Target**

**Output #1**

**Output Measure**

- Increase peer-review publications, presentations, abstracts, and competitive grants. Increase graduate student enrollment and matriculation in the program. We anticipate a 5% increase over the previous 5 year base line in each of these categories.

| Year | Actual |
|---|---|
| 2010 | 6 |

**V(G). State Defined Outcomes**

## V. State Defined Outcomes Table of Content

| O. No. | OUTCOME NAME |
|---|---|
| 1 | -Research results highly valued by stakeholders -Increased recognition of the program - Increased interest in the program by students wishing to matriculate in the program - Enhanced attraction of external funding |

**Outcome #1**

**1. Outcome Measures**

-Research results highly valued by stakeholders -Increased recognition of the program -Increased interest in the program by students wishing to matriculate in the program -Enhanced attraction of external funding

**2. Associated Institution Types**

- 1890 Research

**3a. Outcome Type:**

Change in Condition Outcome Measure

**3b. Quantitative Outcome**

| Year | Quantitative Target | Actual |
|---|---|---|
| 2010 | 0 | 0 |

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

**Issue (Who cares and Why)**
Environmental interest groups including the USDA, the Texas Department of Agriculture and Texas Parks & Wildlife.

**What has been done**
Wetlands delinations, new techniques of biocontrol and new systems of bioremediations.

**Results**
Better understanding of ecosystem interactions.

**4. Associated Knowledge Areas**

| KA Code | Knowledge Area |
|---|---|
| 102 | Soil, Plant, Water, Nutrient Relationships |
| 103 | Management of Saline and Sodic Soils and Salinity |
| 104 | Protect Soil from Harmful Effects of Natural Elements |
| 112 | Watershed Protection and Management |
| 131 | Alternative Uses of Land |
| 132 | Weather and Climate |
| 133 | Pollution Prevention and Mitigation |
| 201 | Plant Genome, Genetics, and Genetic Mechanisms |
| 202 | Plant Genetic Resources |

206 Basic Plant Biology

## 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

### Brief Explanation

Changing climatic factors combined with changing demographics leading to increasing competing uses of the land. The emerging rural urban interface increases the need for relevant outcomes. However, competing needs for internal resources hampers the ability to address all competing needs in a timely manner. More effective planning and enhanced resource capacity will ensure better results in future activities.

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

### Evaluation Results

Evaluation results indicate program relevancy.

### Key Items of Evaluation

The plant and environmental systems focus group is currently working on a number of relevant plant and environmental quality issues. However, resource constraints, primarily human capital, have limited the outcome at this point. Projections, however, for the future include the addition of new staff that will enhance the human capital capacity of the group. This will increase the ability of the group to accelerate the process of achieving results desired.