2009 Prairie View A&M University Research Annual Report of Accomplishments and Results

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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: Animal Systems, Food Systems, and Plant and Environmental Systems. The Animal Systems research focuses on improving the scientific understanding of the physiological mechanisms affecting reproduction, growth and performance of farm animals - parimarily 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.Major proteins were identified with approximate molecular weights of 139.0 132.0, 96.7, 75.2, 61, 55.5, 41.6, 33, 22, 17.7, 16.9, 15.7 and 14.9 kDa of particular interest were a complex of low molecular weight (<20 kDa) proteins with isoelectric points between pH 4-7. These proteins have physical characteristics that are strikingly similar to bovine seminal plasma proteins known to mediate sperm &ndash oviduct interactions during estrus. MALI-TOF was used to identify these low molecular weight proteins. Analysis by the Protein Chemistry Laboratory at Texas A&M University is currently underway. Identification of key seminal plasma proteins that may be involved in sperm-oviduct binding may ultimately lead to tests that will allow limited resource farmers to predict, at an early age, the utility of goat sires used in animal production systems. The Food Systems working group focus efforts on issues of regional and national importance of enhancing food safety/quality and the related impacts on the quality of life. Critical issues facing the underserved population 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 enhancing the quality of food and food products, examine strategies for mitigating the transmission of natural foodborne pathogens, examine methods for the reduction of natural and introduced toxicants in foods and feed, examine nutrient quality enhancement of food and food products, examine mechanisms involved in nutrient utilization and diseases, evaluate strategies for minimizing the transfer of microbial pathogens during food handling, evaluate strategies for translating nutrition knowledge into better food selection. The Plant and Environmental Systems group works on a number of projects that are very important to the regional environment of the Texas Gulf Coast Prairie Wetland Ecosystems. Findings and results from the project 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 most important results gathered from the study indicated that redoximorphic features were found to be highest at Site 3 (the study hypothesis Wetland Boundary), as a result of increased concentration of iron related redoximorphic features. The study also identified that the highest concentration of iron and manganese related redoximorphic features decreased as the slope increased on the outer edge of the wetland. This observation corresponded with the decrease in annual soil moisture being present in the sloping soil located between the upland and the wetland. The current research is also focused on developing effective natural compounds and/or control methods for reducing and/or eliminating toxin-producing molds including Aspergillus flavus and Fursarium spp, as well as controlling pathogenic bacteria found in soil, such as Stapphylococcus sp, Enterobacter aerogenes, Salmonella sp. E. coli, and others.This research approach is at the molecular and cellular levels.This approach involves elucidation of the mode of action of the natural compound, as well as the genetic expressin of the targeted microorganisms in relation to their resistance to the controlling compound.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	54.0
Actual	0.0	0.0	0.0	44.8

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 and Development (VPRD) are taking additional steps in ensuring the merit process is effective.The VPRD re-established the University Committee on Research which provided valuable insights as well as provided 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.

Continuous contact with stakeholders, directly and indirectly, through a variety of means to invite their participation in a number of college activities. The college, which consist of the Academic Department, the Extension Program, and the Research Center, serve as the tripartite entity for the agricultural program at the University. Many of the activities of the College are integrated in nature which leverages the number 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 College maintains an external advisory committee which provides input and evaluation of programs targeted for excellence. The group 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 review of program provided by the USDA, 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 program of works. Additionally, project proposals were externally reviewed in order to ensure relevancy in addressing stakeholder needs.

Brief Explanation of what you learned from your Stakeholders

One of the lessons learned in the stakeholder process is that we must consider the perception of the stakeholders regardless of the reality and the practicality of their expectations. However, this process is useful in maintaining relevancy of the program as well as keeping the research program grounded in reality.

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	4265898

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	0	0	0	4265899
Actual Matching	0	0	0	1120264
Actual All Other	0	0	0	0
Total Actual Expended	0	0	0	5386163

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from				
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: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	16.2
Actual	0.0	0.0	0.0	11.5

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	1393276
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	295825
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 service area.

V(E). Planned Program (Outputs)

1. Standard output measures

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	275	825	240	330
Actual	200	500	200	300

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

Patent Applications Submitted

Year: 2009
Plan: 1
Actual: 1

Patents listed
Mora Gutierrez, Adela nd Gurin, Michael H. Nanoemulsion compositions and methods of use thereof. Patent Application Publication US 2007/0085058.
Mora Gutierrez, Adela and Gurin, Michael H. Bioactive complex compositions and methods of use thereof. Patent Application Publication. US 2007/0085059

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	8	
Actual	0	9	9

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

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

Year	Target	Actual
2009	8	5

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 obesity, food borne illnesses and other nutritionally related diseases. -Nutrition/exercise intervention programs leading to a reduction in obesity. -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.

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 obesity, food borne illnesses and other nutritionally related diseases. -Nutrition/exercise intervention programs leading to a reduction in obesity. -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.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	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
- Competing Public priorities
- 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)

1. Evaluation Studies Planned

- Retrospective (post program)
- Before-After (before and after program)
- During (during program)

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: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	21.6
Actual	0.0	0.0	0.0	12.3

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	1040477
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	707455
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 which 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 extend 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

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	550	275	40	330
Actual	300	250	100	200

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

Year: 2009
Plan: 0
Actual: 0

Patents listed
None.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	12	
Actual	0	5	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Increase in peer reviewed publications. Increase in competitive grants received by Faculty and Staff 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	Target	Actual
2009	12	5

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
2009	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 incidencies 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)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)

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 are 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 acclerate 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: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	16.2
Actual	0.0	0.0	0.0	9.6

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	1832146
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	116984
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

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	20	150	40	250
Actual	50	200	75	100

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

Year: 2009
Plan: 1
Actual: 0

Patents listed
None.

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2009	Extension	Research	Total
Plan	0	8	
Actual	0	5	5

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	Target	Actual

2009	8	5

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
2009	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)

1. Evaluation Studies Planned

- Retrospective (post program)
- During (during program)
- Other (Program Evaluation)

Evaluation Results

Evaluation results indicate program relevancy.

Key Items of Evaluation

The plant and environmental systems focus group are 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 acclerate the process of achieving results desired.