

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

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## I. Report Overview

### 1. Executive Summary

This annual report provides an overview of the Florida A&M University (FAMU) planned research programs during 2010. As in previous years, the annual report for the FAMU Extension Program was prepared jointly with the University of Florida and is therefore not covered in this report. However, because of the integrated nature of some of the research and extension activities, it is inevitable that some extension activities especially those that are driven by research faculty will also be reported here. Furthermore, the research, extension and teaching programs continue to forge strong integrated linkages to ensure effective delivery of the mission. During 2010, the planned programs continued to address a range of critical issues and needs identified by stakeholders. The cooperative partnerships between FAMU and its stakeholders and cooperators including: state and federal agencies, industry and non-governmental entities were further enhanced. Among some of the key stakeholders and cooperators engaged were: Florida Department of Agriculture and Consumer Services, Florida Farm Bureau, Florida Grape Growers Association, Florida Goat Producers, Florida Fruit and Vegetable Growers, Tall Timbers (an environmental group), North Florida Small Farmers Cooperative, the US Department of Agriculture - Agricultural Research Service and Animal and Plant Health Inspection Service, and many other entities. FAMU's research program was organized around five programmatic areas which address critical issues at the state and national levels as follows: Viticulture and Small Fruits Research, Preserving Water Quality of North Florida Watersheds, Strategic Research for the Management of Invasive Pest Species, Rural Development and Statewide Goat Research and Bioenergy Research. A summary of the activities and results from each program is provided below.

**Viticulture and Small Fruits Research Program:** The Viticulture and Small Fruits Research Program is an active partner in promoting the grape industry within the state. The program is implemented by the Center for Viticulture and Small Fruit Research which conducts a wide range of research projects to address industry needs and concerns, and provides service to help stakeholders in the industry. The Center also conducts research in blackberries and evaluates non-traditional small fruits for North Florida. The faculty is involved in statewide extension and outreach activities as well as in teaching and training graduate and undergraduate students. During 2010, research efforts were focused in the following areas: development of new and improved grape cultivars for Florida, screening for fruit rot, downy mildew and crown gall diseases in muscadine grapes, evaluation of germplasm for disease resistance in Florida hybrid bunch grapes, identification of best management practices for Florida grapes and small fruits, identification of genetic markers of viticultural importance and, proteins and metabolites relating to disease tolerance and important physiological functions of grapes, evaluation of water stress/drought on biochemical and molecular changes in grapes, evaluation of triploids and tetraploids for development of seedless muscadine grapes, development of disease and virus free explants of muscadine and bunch grapes for the clean vine project, development of new value-added products from grapes and small fruits and evaluation of non-traditional small fruits for North Florida. The program was also actively involved in extension activities, including organization of field days and seminars and workshops for grape growers and general public. During 2010, 18 papers were published. In addition, 7,199 hybrid seedlings from the breeding program were produced, at least 6 genes were identified and 17 hybrid selections of seedlings. The program also continued contributing to the teaching program through support of graduate and undergraduate student research and training.

**Preserving Water Quality of North Florida Watersheds:** The major goal of the Center for Water and Air Quality is to protect, preserve and improve the quality and the quantity of water resources in Florida. The current research in the center include: soil erosion, nutrient movement and aquatic fauna under irrigated and non-irrigated conditions in the Apalachicola River watershed funded through the Evans-Allen Program; Hydrology of isolated wetlands in the Apalachicola National Forest, funded through the Forest Service; an NASA-funded project on developing Best Management Practices model in the Suwannee River Basin in Florida; and, an EPA grant to develop an environmental education program for the coastal areas of the Gulf of Mexico. The faculty in the Center has been quite successful in securing external grant support. Many of these awards came from non-USDA sources. During 2010, the center faculty was awarded three Capacity Building Grants, two in research and one in teaching. Additionally, one of the faculty members received an NSF grant to study the movement of particulate matter under controlled fire conditions in North Florida Forests. We have leveraged our formula funds to obtain additional support from various agencies including, NSF, NASA, EPA and in-kind support from the Florida Department of Agriculture, Florida Department of Environmental Protection and NRCS. During the summer term, NRCS provided internships for several undergraduate students. Currently, we have 2 graduate and 6 undergraduate students receiving training in soil, water and natural resource areas. All of the students are African-Americans, except one. Thus, the Center is instrumental in increasing the pool of minority students in agriculture and natural resources. During 2010, the Center hosted 6 speakers, who presented talks on various water related issues. Two workshops were conducted for the public-at-large, one on the climate change and another on the best management practices in agriculture. Recently, the Center was recognized as one of the Centers of Excellence for Watershed Management by the environmental Protection Agency, Region 4. Faculty and students made presentations at the Agronomy Society, Soil and Water Conservation Society, American Society of Agricultural and Biological Systems Engineering and the National Water Quality Meeting. Publication wise, the Center faculty published 4 refereed papers, 2 extension type publications and 3 brochures for public-at-large. A quarterly newsletter entitled, "The Flow" was posted on the website and hard copies were sent to our stakeholders. The Center provided soil and water Analysis facilities to: stakeholders, extension, FAMU faculty and students.

Research accomplishments in the second year of the Evans-Allen funded project on the Apalachicola watershed study included: installation of Mesh-bags at the study site in Marianna, Florida (Mears Farm) to measure soil erosion and nutrient loss under fallow-peanut-cotton rotation. Using differential GPS technology, the micro topography of the farm was recorded. The study illustrates that information of soil redistribution (transported within the field) and soil loss (transported out of a field) can be obtained in a relatively large field scale under unobstructed natural runoff conditions by the mesh-bag method. This kind of approach is helpful in understanding the soil erosion processes in a field and facilitate relevant modeling effort. The observed low diversity of the mayfly, stonefly and caddisfly fauna in Wilson Mill Creek compared to the Sweetwater Creek is indicative of a system that is impaired.

**Strategic Research for the Management of Invasive Pest Species:** Research under the planned program, 'Strategic Research for the Management of Invasive Pest Species' is implemented by the Center for Biological Control. The Center's research is focused in two key areas: management of invasive alien species (IAS), and development of integrated pest management. The Center's focus on these two areas recognizes that an effective approach for dealing with IAS requires a multi-pronged, approach that emphasizes prevention in the first instance. Should alien invasive species gain entry, then emphasis switches to early detection and eradication, and as a last resort, management. Therefore the strategic research on IAS cuts across the spectrum from prevention to management and restoration, with a particular focus on the following: Offshore pest mitigation, development of ecologically based management of invasive insect pests and weeds; Development of electronic diagnostic tools and resources (Expert Information Systems) for insect identification; Assessment of the economic impact of IAS and improving the safety of biological control. In addition to the Evans-Allen funds, the program of work is also supported through other grants from NIFA and cooperative agreements with APHIS and ARS. The Center is also

actively involved in training undergraduate students. During 2010, the Center hosted 10 graduate and 5 undergraduate students, who are intimately involved in the research activities. Center faculty also participated in several training workshops and other extension led activities.

During 2010 the work funded under the Evans-Allen program was focused on two core areas: offshore research on high risk species and onshore management of established invasive species. Supplemental activities focused on the assessment of risks and benefits of biological control agents and development of Expert Information Systems. Offshore research focused on generation of data on, surveillance, monitoring, biology, ecology and management of the three high risk pest threats (*Planococcus minor*, *Planococcus lilacinus* and *Rhyncophorus ferrugineus*) in Trinidad, Dominican Republic, and Curacao and Aruba. The research on *P. minor* in Trinidad was completed. Most notable however is the fact that the pest was discovered in Florida in 2010. The data generated in Trinidad is now proving critical in advising mitigation measures which are being considered by USDA-APHIS and state authorities. Extensive surveys to document the mealybug fauna in the Dominican Republic were completed during the summer of 2010. The material collected is now being analyzed to ascertain which species are present and their pest status, and natural enemy interactions. Studies on *R. ferrugineus* were continued in Aruba and Curacao. In 2010, this pest was also discovered in California again highlighting the importance of the pre-emptive work on high risk pest threats. Studies to generate data on, surveillance, monitoring, biology, ecology and management of the pest are continuing. As part of the offshore pest mitigation efforts, project faculty were also involved in capacity building efforts in Ecuador through training on insect identification. Other research focused on host-mediated competition among insect herbivores mainly the tortoise beetle *Gratiana boliviana*, an introduced biological control agent, via induced resistance on tropical soda apple (TSA) *Solanum viarum*, a serious invasive weed in southeastern US was completed. As part of a new collaborative project funded through USDA NIFA, studies were initiated to assess the impacts of the integrated use of a new herbicide and a naturalized hydrilla mining midge. As part of the efforts to develop Expert Information Systems to support identification of potential invasive pest threats, one of the keys focusing on weevils of economic importance was beta tested. The key is now undergoing final revision based on the feedback from the beta testing, prior to release.

**Rural Development and Statewide Goat Research:** The Rural Development and Statewide Goat Research Program provides science based research information to rural communities as well as limited resource citizens of urban communities. The program works with community based as well as faith based organizations to provide scientific findings of current issues to these communities. The research findings are aimed for use by extension personnel to provide community relevant programs and services. During 2010, the program was focused on community development, asset building, hunger, homelessness and climate change. Specifically, Focus groups were held in Port St. Joe, Florida with individuals from the Millview community. Participants had an opportunity to identify resources that would or could be used to address environmental toxins in the community. In addition, an environmental education curriculum was developed in collaboration with community based organizations and university personnel. This curriculum may be used across the life span to develop a community driven process of preserving the environment. Focus groups were also conducted in Apalachicola with individuals from the sea food industry along with community leaders to look at the impact of sea level rise on the sea food industry as well as the relationship and/or effect it had on the local economy. Participants in these meetings were able to see how decisions that they made would impact other areas in their county. Each of the programs/activities provided opportunities in those targeted audiences to improve their acquisition of services and or facilitate their engagement with their respective audiences. In addition, grass roots community based organizations and universities to be engaged.

**Bioenergy Research Program:** During 2010, the BioEnergy Research Program carried out integrated activities that linked closely with both extension and teaching. Research activities involved feedstock development and conversion processes. The educational component of the BioEnergy research has developed programs for students and our primary stakeholders, the limited resources land owners. As for

the University Extension activities, workshops were conducted where hundreds of participants were provided with the latest information on biodiesel production. Feedstock currently under evaluation are hardwood tree species, halophytes, algae and Camelina. They are currently being evaluated in both the greenhouse and the field. Several accessions of these feedstocks are presently being tested and necessary data are being collected. Students training is also an important aspect of the Bioenergy Group vision and presently several undergraduate and graduate students are being trained in microbial processing and feedstock development. These students will form the next generation of green workers, from which state and federal agencies can recruit. We have also secured additional funding and collaborations with private entities, which are committed to advancing BioEnergy research at Florida A&M University.

**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	22.0
Actual	0.0	0.0	0.0	21.0

**II. Merit Review Process**

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

- Internal University Panel
- External University Panel
- External Non-University Panel
- Expert Peer Review
- Other (Review by Stakeholders )

**2. Brief Explanation**

In order to ensure maintenance of a high quality and accountability of its research program, FAMU has implemented a revised process for the review and monitoring of research projects funded under the Evans-Allen program. Project ideas are developed from the bottom up, with ideas being generated by individual or groups of faculty in response to stakeholder needs. Center Advisory Councils play an important role in identifying priorities. Project ideas fall within the priority areas identified in the university's strategic plans. Additionally, the project ideas are also linked to priority areas for USDA and/or the state of Florida. Full proposals are developed by faculty/unit leader teams and once completed these are subjected to a peer review process. The main objective of the process is to assure quality, scientific merit, feasibility and impact of the proposed research. The review process proceeds through a series of steps. First, a preliminary review of the proposed research is made by the Research Director and discussions are held with the Principal Investigators regarding the relevance and the impact of the research on stakeholders. This is followed by a comprehensive review by three or more subject matter specialists including at least one external reviewer. The internal reviewers are drawn from among CESTA faculty while external reviewers may be drawn from among 1890 and 1862 scientists, CARET representatives, commodity associations, extension workers and other stakeholders. Comments or suggestions made for improvement of the proposal are then incorporated into the revised proposal. Planned programs are monitored through annual evaluation which will include review by Center Advisory Councils as appropriate. During 2010,

planned programs were reviewed by the different Center Advisory Councils. In addition, the programs were discussed with different stakeholder groups such as the Florida Viticulture Advisory Council Meeting and at the annual meetings of the Florida Grape Growers Association.

### **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
- Survey of traditional stakeholder groups
- Survey specifically with non-traditional groups
- Other (Contact traditional under -served clientele)

#### **Brief explanation.**

Given the wide scope of FAMU's stakeholders, a broad based approach was taken to solicit their input through planned events, unscheduled activities and personal contacts. The primary links with stakeholder groups were maintained through specific research programs/centers. Thus, each of the three main research centers maintained an active Advisory Council, which typically comprised of representatives of key stakeholder groups. Thus the Advisory Council of the Center for Viticulture and Small Fruits comprises representatives from commodity groups such as the Florida Grape Growers Association, North Florida/Georgia Chestnut Growers Association and the Florida Viticulture Advisory Council. Other representatives come from private industry including wineries and processed fruit manufacturers as well as state agencies and other collaborators. For the Center for Water and Air Quality, the Council is made up of representatives from water management districts as well as federal and state agencies. The Advisory Council of the Center for Biological Control includes representatives from Florida Farm Bureau, Florida Nursery Growers Association, several federal including USDA ARS and USDA APHIS, and state agencies (Florida Department of Agriculture and Consumer Services and Florida Fish and Wildlife Commission), FAMU Extension, University of Florida and Pest Management Industry. Advisory Councils generally met at least once during a year, which provided an important formal mechanism for provision of inputs from stakeholders. Other planned events included field days, growers meetings, and listening sessions several of which were held during the year, mailings of the program Newsletters and direct contact through the mail, email or telephone. To ensure participation by a wide range of stakeholders, such events were widely promoted through various media. Both traditional and nontraditional stakeholders were encouraged to participate in the planning process.

#### **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
- Open Listening Sessions
- Needs Assessments
- Use Surveys

#### **Brief explanation.**

The linkage with FAMU's extension and teaching programs was critical in this process. Different

approaches were used to identify individuals and groups who represent FAMU's stakeholder base. This included a review of census data and specific consultations with state agencies, commodity associations/groups, farm bureau, county extension agents, CARET representatives, nonprofit public advocacy groups, and environmental organizations who were requested to provide names of individuals and groups who might benefit from FAMU's programs. Small farmers and underserved groups were identified by the University's field staff, paraprofessional workers and the extension personnel. Field days, on-farm demonstrations and other activities were also used to identify the stakeholders. The faculty and research administrators participated in several statewide meetings and workshops held by the Florida Department of Agriculture and Consumer Services, Florida Department of Environmental Protection and other organizations. One of the major outcomes of such meetings was to identify the potential stakeholders and individuals who could serve as members of the advisory committees for various research programs. Input from stakeholders is solicited through a variety of ways, including direct consultation, participation in advisory committees, surveys and listening sessions.

**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 traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting with invited selected individuals from the general public
- Other (Through county extension agents)

**Brief explanation.**

Stakeholder input was collected continuously through informal and formal consultations. This included on and off campus meetings with various commodity groups. These activities were coordinated with FAMU's extension program in order to avoid duplication and ensure maximum synergy. For instance, meetings with the Florida Grape Growers were held on the campus where research results were presented and stakeholder input was requested. Input was also solicited through stakeholder representation in specific center/program Advisory Councils. Surveys were also conducted with both traditional and non-traditional stakeholder groups. Information was also gleaned from various published reports.

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

- In the Budget Process
- To Identify Emerging Issues
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities
- Other (College -wide strategic plan)

**Brief explanation.**

Stakeholder input was used in overall program assessment, planning and resource allocation. Thus the input was used determining the direction and emphasis of the entire research program including modifying existing projects, but also in identifying new issues that needed to be addressed and hiring of new staff. The input was also factored in the development/revision of college, and center/program strategic plans, and thus guided the development of extra mural grants and other complimentary activities.

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

Inputs from stakeholders confirmed that the following issues were still of critical concern: 1) development of small farmer specialty crops such as grapes, small fruits and vegetables 2) water quality and quantity, 3) invasive alien species and biosecurity, 4) rural development and development of small ruminant production, 5) development of bioenergy opportunities especially for small farming systems, and 6) climate change as a cross cutting issue.

IV. Expenditure Summary

<b>1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)</b>			
<b>Extension</b>		<b>Research</b>	
<b>Smith-Lever 3b &amp; 3c</b>	<b>1890 Extension</b>	<b>Hatch</b>	<b>Evans-Allen</b>
0	0	0	1976232

<b>2. Totaled Actual dollars from Planned Programs Inputs</b>				
<b>Extension</b>			<b>Research</b>	
	<b>Smith-Lever 3b &amp; 3c</b>	<b>1890 Extension</b>	<b>Hatch</b>	<b>Evans-Allen</b>
<b>Actual Formula</b>	0	0	0	1367706
<b>Actual Matching</b>	0	0	0	1367706
<b>Actual All Other</b>	0	0	0	1513763
<b>Total Actual Expended</b>	0	0	0	4249175

<b>3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous</b>				
<b>Carryover</b>	0	0	0	0



## V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Viticulture and Small Fruit Research - Global Food Security and Hunger
2	Preserving Water Quality of North Florida Watersheds - Climate Change
3	Strategic Research for the Management of Invasive Pest Species - Global Food Security and
4	Rural Development and Statewide Goat Program - Climate Change
5	Bioenergy Research - Sustainable Energy
6	Public Health Entomology, Research and Education

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

**Program # 1**

**1. Name of the Planned Program**

Viticulture and Small Fruit Research - Global Food Security and Hunger

**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				25%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants				25%
205	Plant Management Systems				50%
	<b>Total</b>				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	1.0	0.0	6.0
Actual	0.0	0.0	0.0	6.0

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	224572
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	224572
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	1513763

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

1. Brief description of the Activity

The Center for Viticulture and Small Fruit Research conducts a wide range of research projects to address

industry needs and concerns, and provides service to help stakeholders in the industry. The Center also conducts research in blackberries and evaluates non-traditional small fruits for North Florida. The faculty is involved in statewide extension and outreach activities as well as in teaching and training graduate and undergraduate students. Research was conducted in the following areas:

- Development of new and improved grape cultivars for Florida.
- Screening for fruit rot, downy mildew and crown gall diseases in muscadine grapes
- Evaluation of germplasm for disease resistance in Florida hybrid bunch grapes.
- Identification of best management practices for Florida grapes and small fruits.
- Identification of important viticulture genetic markers.
- Identification of proteins and metabolites relating to disease tolerance and important physiological functions of grapes.
  - Identification of constraints in sugar metabolism in muscadine grapes
  - Evaluation of differential gene expression to determine disease tolerance in muscadine and Florida hybrid bunch grapes.
  - Evaluation of the effects of water stress/drought on biochemical and molecular changes in grapes.
  - Evaluation of triploids and tetraploids for development of seedless muscadine grapes.
  - Development of disease and virus free explants of muscadine and bunch grapes for the clean vine project.
  - Development of new value-added products from grapes and small fruits.
  - Evaluation of non-traditional small fruits, blackberries and raspberries for North Florida.
  - Evaluated chestnuts for North Florida.

Extension and outreach activities included:

- Student training, community service and youth development.
- Seminars and workshops for grape growers and general public.
- Grape Growers Field Day and Grape Harvest Festival
- Technical advice and services to grape growers, processors and small farmers.

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

The primary stakeholders and target audience were:

- Grape growers and processors in Florida and neighboring states.
- Grape nurseries
- Small minority farmers and chestnut growers in Florida and neighboring states.
- Graduate and undergraduate students working in viticulture and small fruit.

The secondary stakeholders and target audience are:

- Hobbyists and homeowners with grapes and small fruits
- Home winemakers.

Florida nurseries.

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

### **1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2000	2000	200	300

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

**Patent Applications Submitted**

Year: 2010

Actual: 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
Actual	5	13	18

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

**Output Target**

**Output #1**

**Output Measure**

- Research and Extension publications; Grant proposals submitted and funded; Dissemination of results to stakeholders; Training of graduate and undergraduate students. Increasing the number of grape growers in Florida over the 2010 base long term measure  
Not reporting on this Output for this Annual Report

**Output #2**

**Output Measure**

- Hybrid seedlings from breeding program

Year	Actual
2010	7199

**Output #3**

**Output Measure**

- Advanced hybrid selections of seedlings

Year	Actual
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2010 17

**Output #4**

**Output Measure**

- Genetic markers evaluated and genes identified.

<b>Year</b>	<b>Actual</b>
2010	6

**Output #5**

**Output Measure**

- Workshops, seminars and conferences.

<b>Year</b>	<b>Actual</b>
2010	8

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

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	1. Continued industry growth - increased in new vineyards and wine production in the state 2. Greater interest in Florida grapes and small fruits: more visits from the general public, high school students and local farmers to the Center. 3. Faculty productivity: increased in research publication and professional presentations at national and international meetings. 4. New muscadine and bunch grape cultivars. 5. New gene discovery. 6. Graduate students training: students will undertake more challenging research projects and will be better prepared for advanced degree training.
2	Public and stakeholder participation at workshops, field days, seminars and grape harvest festival.

### **Outcome #1**

#### **1. Outcome Measures**

1. Continued industry growth - increased in new vineyards and wine production in the state 2. Greater interest in Florida grapes and small fruits: more visits from the general public, high school students and local farmers to the Center. 3. Faculty productivity: increased in research publication and professional presentations at national and international meetings. 4. New muscadine and bunch grape cultivars. 5. New gene discovery. 6. Graduate students training: students will undertake more challenging research projects and will be better prepared for advanced degree training.

Not Reporting on this Outcome Measure

### **Outcome #2**

#### **1. Outcome Measures**

Public and stakeholder participation at workshops, field days, seminars and grape harvest festival.

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

- 1890 Research

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

Change in Condition Outcome Measure

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

<b>Year</b>	<b>Quantitative Target</b>	<b>Actual</b>
2010	{No Data Entered}	2500

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

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

Small farmers, Florida grape growers and processors are directly impacted by FAMU's viticulture and small fruit program. The Center's research is geared towards addressing industry/stakeholders need. Increased vineyard acreage has helped wineries to increase wine production.

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

New knowledge on vineyard, value-added products, and small fruit management are being shared with stakeholders which has helped to increase productivity and farm income through extension and outreach activities. New gene discoveries are facilitating the breeding program at the Center.

### Results

Greater public awareness of Florida grapes, wines and non traditional small fruits.  
Increased sale of Florida wines.  
Increased faculty productivity in research output and grant procurement.  
Greater graduate student interest in viticulture and small fruit research.  
FAMU as the leader in warm climate grape (muscadine and Florida bunch hybrid) research.

## 4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant 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

#### Brief Explanation

The current regulations require that the sale of Florida wines be conducted through a licensed distributor. This requirement restricts the ability of Florida wineries, particularly the small wineries, to market their wines directly to consumers except on-premise sales. Small wineries are often unable to pay for the services of distributors. Sale of Florida wines through the internet is also restricted and appears to have a negative impact on small wineries.

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

#### Evaluation Results

The evaluation results indicated that the program is achieving satisfactory progress with regards to its plan of work. The faculty were productive in terms of publishing their research in reputable journals and participation in scientific meetings. They were also successful in procuring external grants from various agencies to further support their research.

#### Key Items of Evaluation

None.



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

**Program # 2**

**1. Name of the Planned Program**

Preserving Water Quality of North Florida Watersheds - Climate Change

**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				35%
111	Conservation and Efficient Use of Water				35%
133	Pollution Prevention and Mitigation				30%
	<b>Total</b>				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	5.0
Actual	0.0	0.0	0.0	5.0

**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	538311
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	538311
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**

The activities during the second year of the project included: Project personnel meetings to plan for the second year of implementation of the study; selection of a suitable site representing typical soil type,

cropping system and management (Mears Farm in Marianna, Florida); continue collection of historic land-use data in the watershed and at the study site; installation of four Mesh-bags experiments to measure soil erosion; collection of soil and water samples; and continued monitoring of aquatic insects in two major streams in the watershed.

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

The target audience for the project include: crop producers in the Apalachicola River basin, small and limited resource farmers, extension personnel and environmental organizations.

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

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	75	80	30	30

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

**Patent Applications Submitted**

Year: 2010

Actual: 1

**Patents listed**

Mesh-bag method to measure soil erosion.

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

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Actual</b>	2	3	5

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

**Output Target**

**Output #1**

**Output Measure**

- Research and extension-type publications Grant Proposals Submitted and Funded  
Dissemination of Results to Stakeholders Training of Graduate and Undergraduate Students  
Not reporting on this Output for this Annual Report

**Output #2**

**Output Measure**

- Inventory of land use/land cover patterns in the Apalachicola River Basin

<b>Year</b>	<b>Actual</b>
2010	1

**Output #3**

**Output Measure**

- Data on soil erosion and nutrient loss under fallow condition at the study site

<b>Year</b>	<b>Actual</b>
2010	4

**Output #4**

**Output Measure**

- Baseline aquatic insects data on two major water streams in the basin

<b>Year</b>	<b>Actual</b>
2010	2

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

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Reduction in the amount of agriculture runoff into groundwater; Adoption of program recommendations for improving water quality; Preservation of Florida's water resources; Improved environmental stewardship; Better understanding of aquatic fauna; Well-trained graduate and undergraduate students in soil and water sciences.
2	Information on changing land-use patterns in the Apalachicola River basin
3	Comparison of soil erosion measurements by the Mesh-bag method and the simulation results of RUSLE (the Universal Soil Loss Equation)

**Outcome #1**

**1. Outcome Measures**

Reduction in the amount of agriculture runoff into groundwater; Adoption of program recommendations for improving water quality; Preservation of Florida's water resources; Improved environmental stewardship; Better understanding of aquatic fauna; Well-trained graduate and undergraduate students in soil and water sciences.

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Information on changing land-use patterns in the Apalachicola River basin

**2. Associated Institution Types**

- 1890 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	8

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

**Issue (Who cares and Why)**

The Apalachicola River Basin is a part of the greater Apalachicola-Chattahoochee- Flint Basin comprising almost 20, sq miles spread in three states: Georgia, Alabama and Florida. The water demands have dramatically increased in the watershed due to: growing population around Atlanta, increase in irrigation acreage in mid-Georgia and marine and fisheries need in Florida. An inventory of land use pattern will assist the decision makers in maintaining water sustainability in the region. Agriculture being the major user of the water resources, it is imperative that we better understand the future demand for water.

**What has been done**

We are collecting land-use data generated by various state agencies within the tri-state area and identifying the information gaps.

**Results**

We have developed land-use/land cover maps of the watershed.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
111	Conservation and Efficient Use of Water

#### Outcome #3

##### 1. Outcome Measures

Comparison of soil erosion measurements by the Mesh-bag method and the simulation results of RUSLE (the Universal Soil Loss Equation)

##### 2. Associated Institution Types

- 1890 Research

##### 3a. Outcome Type:

Change in Knowledge Outcome Measure

##### 3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	4

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

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

The results of this study will generate quality field erosion data, which is valuable to scientific conservation policy and decision makers and farmers, because quality field soil erosion data is scarce and is urgently needed for reliable soil erosion models. Such models are the basis for soil and water conservation evaluations. A true field soil erosion data is of interest to farmers because they can judge for themselves the effects of a conservation practice.

###### What has been done

We surveyed and generated detailed landscape micro topographic (contour) map of the 163 acre Mears Farm in Marianna, Florida (peanut and cotton rotation). We conducted 4 experiments using mesh bags to study the redistribution of eroded soil and associated nutrient loss during rain events. Soil loss and soil redistribution amounts were calculated.

###### Results

We have generated detailed micro topographic maps of the study areas. According to the topo maps, we classified the areas in four erosion classes. The background information is critical to the mesh-bag method.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships

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

### **External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)

### **Brief Explanation**

The mesh-bags that were accidentally plowed over in 2009 were reinstalled in 2010.

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

### **Evaluation Results**

The study illustrates that information of soil redistribution (transportation within a field) and soil loss (transported out of a field) can be obtained in a relatively large field scale under unobstructed natural runoff conditions by the mesh-bag method, which was employed in this study. Evaluation of the aquatic fauna study shows that low diversity of aquatic insects in freshwater streams indicates possible impairment of the water body.

### **Key Items of Evaluation**

No key items of evaluation to report during this time period.

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

**Program # 3**

**1. Name of the Planned Program**

Strategic Research for the Management of Invasive Pest Species - Global Food Security and Hunger

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants				50%
215	Biological Control of Pests Affecting Plants				50%
	<b>Total</b>				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	4.0
Actual	0.0	0.0	0.0	4.0

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	244105
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	244105
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

**Offshore research:**Offshore research on three high risk species (Planococcus minor, Planococcus lilacinus and Rhyncophorus ferrugineus) was carried out in Trinidad, Dominican Republic, and Curacao and Aruba with a view to generate data on biology, ecology and control.



**Tropical soda apple (TSA):** Studies were conducted to determine if previous feeding by Tortoise beetle, *Gratiana boliviana* a biological control agent of Tropical Soda apple (a serious invasive weed) had adverse effects to beet army worm and thrips, resulting in reduced oviposition, preference for induced foliage and decreased performance and survival on induced foliage.

**Biological Control of Hydrilla verticillata:** A preliminary survey of of the upper 1.5 miles of the river of the Wacissa Springs Group was conducted by canoe. A subjective scale of 0-3 was used with 0 indicating hydrilla undetected and 3 completely choked. Cultures of hydrilla were established in the lab from Wacissa Big Blue Spring, Wacissa #2 and Garner Spring. Lab colonies of the stem mining midge, *Cricotopus lebetis* (Diptera: Chironomidae) were also established.

**Expert information systems:** Lucid software is being used to develop and deploy electronic identification tools and resources for selected taxa and commodities.

**Benefits and risks of biological control agents:** Studies were conducted to assess the effectiveness of risk communication activities during the permitting process for entomophagous biological control agents.

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

The target audience include: federal and state biosecurity agencies, farmers, extension workers and pest management specialists.

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

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	150	300	50	100

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

**Patent Applications Submitted**

Year: 2010

Actual: 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Actual</b>	3	4	7

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

**Output Target**

**Output #1**

**Output Measure**

- Electronic identification tools, strategic plans for the management of high risk invasive pests, effective biological control for specific pests, accurate prediction of potentially invasive pests, and publications. Training of graduate and undergraduate students.

<b>Year</b>	<b>Actual</b>
2010	0

**Output #2**

**Output Measure**

- Electronic identification tools.

<b>Year</b>	<b>Actual</b>
2010	1

**Output #3**

**Output Measure**

- Strategic plans for the implementation of biological control against high risk invasive pests.

<b>Year</b>	<b>Actual</b>
2010	1

**Output #4**

**Output Measure**

- Knowledge base on target high risk invasive species developed.

<b>Year</b>	<b>Actual</b>
2010	3

**Output #5**

**Output Measure**

- Presentations at professional or grower meetings.

<b>Year</b>	<b>Actual</b>
2010	10

**Output #6**

**Output Measure**

- Major workshops or conferences organized.

<b>Year</b>	<b>Actual</b>
2010	1

**Output #7**

**Output Measure**

- Training of graduate and undergraduate students.

<b>Year</b>	<b>Actual</b>
2010	11

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

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	More effective strategies for the identification, prevention or management of invasive species; More efficient production and greater profitability; Greater implementation of integrated pest management; Development of better pest identification tools; Reduction in spread of invasive species; Well-trained graduate and undergraduate students in the management of native and non-native pests.

**Outcome #1**

**1. Outcome Measures**

More effective strategies for the identification, prevention or management of invasive species; More efficient production and greater profitability; Greater implementation of integrated pest management; Development of better pest identification tools; Reduction in spread of invasive species; Well-trained graduate and undergraduate students in the management of native and non-native pests.

**2. Associated Institution Types**

- 1890 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	100	0

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

**Issue (Who cares and Why)**

{No Data Entered}

**What has been done**

{No Data Entered}

**Results**

{No Data Entered}

**4. Associated Knowledge Areas**

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants

**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 Programmatic Challenges

**Brief Explanation**

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

**Evaluation Results**

**Key Items of Evaluation**

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

**Program # 4**

**1. Name of the Planned Program**

Rural Development and Statewide Goat Program - Climate Change

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources				25%
132	Weather and Climate				15%
307	Animal Management Systems				10%
803	Sociological and Technological Change Affecting Individuals, Families, and Communities				30%
805	Community Institutions, Health, and Social Services				20%
	<b>Total</b>				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	4.0
Actual	0.0	0.0	0.0	4.0

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	245348
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	245348
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**

The Rural Development and Statewide Goat Research Program provides science based research information to rural communities as well as limited resource citizens of urban communities. The program works with community based as well as faith based organizations to provide scientific findings of current issues to these communities. The research findings are aimed for use by extension personnel to provide community relevant programs and services. During 2010, the program was focused on community development, asset building, hunger, homelessness and climate change. Specifically, Focus groups were held in Port St. Joe, Florida with individuals from the Millview community.

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

The target audience shall consist of grass roots community based organizations, faith based organizations and youth in rural communities as well as minority and low wealth urban neighborhoods.

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

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	150	300	125	150

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

**Patent Applications Submitted**

Year: 2010

Actual: 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Actual</b>	2	1	3

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

**Output Target**

**Output #1**

**Output Measure**

- Increase in economic returns to small farmers, research and extension publications, grant proposals and funded dissemination of results to stakeholders, and training of graduate and undergraduate students.

Not reporting on this Output for this Annual Report



**Output #2**

**Output Measure**

- Number of focus groups convened

<b>Year</b>	<b>Actual</b>
2010	2

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

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Adoption of sustainable production practices for goat producers; Improved quality of life for rural families; Increased economic returns for small farmers, and well-trained graduate and undergraduate students.
2	Improved environmental stewardship
3	Improved procedures and techniques for preserving natural resources and conservation.
4	Improved financial assets for local communities.

### **Outcome #1**

#### **1. Outcome Measures**

Adoption of sustainable production practices for goat producers; Improved quality of life for rural families; Increased economic returns for small farmers, and well-trained graduate and undergraduate students.

Not Reporting on this Outcome Measure

### **Outcome #2**

#### **1. Outcome Measures**

Improved environmental stewardship

Not Reporting on this Outcome Measure

### **Outcome #3**

#### **1. Outcome Measures**

Improved procedures and techniques for preserving natural resources and conservation.

Not Reporting on this Outcome Measure

### **Outcome #4**

#### **1. Outcome Measures**

Improved financial assets for local communities.

Not Reporting on this Outcome Measure

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

#### **External factors which affected outcomes**

- Economy
- Government Regulations

#### **Brief Explanation**

External factors include but are not limited to vulnerability of small farm goat producers to high start up cost, marketing conditions and demand for animals, feed, and medical costs, food processing and food safety regulations. Programs on rural issues may be affected by state and federal regulations, reduced funding, and changing needs of an aging population.

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

**Evaluation Results**

**Key Items of Evaluation**

No items identified.

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

**Program # 5**

**1. Name of the Planned Program**

Bioenergy Research - Sustainable Energy

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
204	Plant Product Quality and Utility (Preharvest)				50%
205	Plant Management Systems				40%
511	New and Improved Non-Food Products and Processes				10%
	<b>Total</b>				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	1.0
Actual	0.0	0.0	0.0	2.0

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	115370
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	115370
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

Research activities involved feedstock development and conversion processes. The feedstocks that were

evaluated included hardwood tree species, halophytes, algae and Camelina. The evaluation included both greenhouse and field studies. Outreach activities were also coordinated with extension especially on biodiesel production.

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

Limited resource farmers and graduate and undergraduate students.

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

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	50	250	100	200

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

**Patent Applications Submitted**

Year: 2010

Actual: 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
Actual	0	5	5

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

**Output Target**

**Output #1**

**Output Measure**

- 1. Graduates 2. Publications 3. Workshops  
Not reporting on this Output for this Annual Report

**Output #2**

**Output Measure**

- Number of species evaluated for potential development as feedstocks.

**Year Actual**

2010 3

**Output #3**

**Output Measure**

- Extra mural funding to support bioenergy research.

<b>Year</b>	<b>Actual</b>
2010	3

**Output #4**

**Output Measure**

- Number of graduate and undergraduate students provided experiential learning opportunity.

<b>Year</b>	<b>Actual</b>
2010	4

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

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	1. Produce graduates in the agricultural sciences 2. Produce graduates with adequate knowledge in bioenergy 3. Establish demonstration projects at the research farm in Quincy, FL
2	Farmers adopt new plant feedstocks.



**Outcome #1**

**1. Outcome Measures**

1. Produce graduates in the agricultural sciences 2. Produce graduates with adequate knowledge in bioenergy 3. Establish demonstration projects at the research farm in Quincy, FL

Not Reporting on this Outcome Measure

**Outcome #2**

**1. Outcome Measures**

Farmers adopt new plant feedstocks.

**2. Associated Institution Types**

- 1890 Research

**3a. Outcome Type:**

Change in Knowledge Outcome Measure

**3b. Quantitative Outcome**

Year	Quantitative Target	Actual
2010	{No Data Entered}	20

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

**Issue (Who cares and Why)**

Energy security is a concern for all. Limited resource farmers need opportunities to enhance their livelihoods. Provision of alternative opportunities for increasing small farm profitability is important.

**What has been done**

We have secured additional funding from private entities to conduct research on Camelina as a potential biofuels feedstock. We have entered into an agreement with several farmers association, which will help us identify potential participants in the COOP program. We have developed training programs for limited land owners.

**Results**

Biofuels feedstocks are currently being evaluated in the greenhouse and on our experimental research farm in Quincy, Florida. Training materials for limited land owners have been developed. A website where pertinent information will be made readily available is currently being developed.

**4. Associated Knowledge Areas**

**KA Code    Knowledge Area**

204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
511	New and Improved Non-Food Products and Processes

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

##### **External factors which affected outcomes**

- Economy
- Competing Programmatic Challenges

##### **Brief Explanation**

Due to a reduction on state funding, fewer graduate and undergraduate students have received training this year. We have received countless inquiries from students looking for experiential learning in the area of bioenergy, unfortunately we could not support them.

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

##### **Evaluation Results**

##### **Key Items of Evaluation**

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

**Program # 6**

**1. Name of the Planned Program**

Public Health Entomology, Research and Education

**V(B). Program Knowledge Area(s)**

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
721	Insects and Other Pests Affecting Humans				100%
	<b>Total</b>				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	2.1	0.0	3.0
Actual	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
0	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
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

This program was not funded during FY2010.

2. Brief description of the target audience

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

**1. Standard output measures**

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	0	0	0	0

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

**Patent Applications Submitted**

Year: 2010

Actual: 0

**Patents listed**

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

**Number of Peer Reviewed Publications**

2010	Extension	Research	Total
<b>Actual</b>	0	0	0

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

**Output Target**

**Output #1**

**Output Measure**

- Research on non-chemical control methods and development of more target-specific and effective pesticide application techniques with less environmental impact; reduction in quantity of insecticides applied for public health arthropod control; increase clientele usage of research and extension products; increase graduate student training.  
Not reporting on this Output for this Annual Report

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

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	To achieve and maintain such levels of arthropod control as will protect human health and safety and foster quality of life of the people, promote the economic development of the state, and facilitate the enjoyment of its natural attractions by reducing the number of pestiferous and disease-carrying arthropods. This will be accomplished in a manner consistent with protection of the environmental and ecological integrity of all lands and waters throughout the State.

**Outcome #1**

**1. Outcome Measures**

To achieve and maintain such levels of arthropod control as will protect human health and safety and foster quality of life of the people, promote the economic development of the state, and facilitate the enjoyment of its natural attractions by reducing the number of pestiferous and disease-carrying arthropods. This will be accomplished in a manner consistent with protection of the environmental and ecological integrity of all lands and waters throughout the State.

Not Reporting on this Outcome Measure

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

**External factors which affected outcomes**

- Appropriations changes

**Brief Explanation**

This program was not funded during 2010 due to appropriation changes.

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

**Evaluation Results**

**Key Items of Evaluation**