# 2010 Florida A&M University Research Plan of Work

**Status: Accepted**
**Date Accepted: 06/29/09**

## I. Plan Overview

### 1. Brief Summary about Plan Of Work

Florida is one of the fastest growing states within the United States, currently ranking fourth in population growth after California, New York and Texas. Most of this growth is taking place in the major urban areas of the state. However,agriculture plays a very significant role in Florida's economy and remains a viable force to-date. Florida agriculture is diverse as well as unique in nature in terms of farm size, crops, and economic investments. It represents a complex group of industries that produce a wide variety of food crops, livestock, vegetables, fruits, ornamental horticulture, forestry, aquaculture, and related agricultural commodities.The changing demographics of the state and the consequent needs of our stakeholders dictate that we develop appropriate research programs which would address such issues. The small farmer in Florida is experiencing difficulties because of the rising cost of inputs, marginal profits, land costs and the loss of land to development. Recent trends in the overall economy of the nation have placed many small farmers in a situation of extreme economic stress. Florida A&M University's (FAMU) research programs are particularly geared for applicability to smaller part-time or limited resource farmers. Sixty percent of Florida's farms fit the definition of a "small farm," which makes FAMU's mission particulary crucial in enhancing the overall economy of the state. Special attention was paid to the needs of small farmers in the proposed Plan of Work for Florida A&M University for the period 2010-2014.

The Plan of Work was prepared after receiving inputs from various sources through surveys, interviews, and direct contacts with stakeholders. The identified needs were matched with the scientific expertise available at FAMU, plans were developed and the available resources were then approriated accordingly. The major areas of need included: Viticulture and Small Fruits, Water Quality and Quantity, Control of Pests (especially, biological control), Alternative Enterprises and Niche Crops, and certain Rural Development Issues. Further details are provided for each of these planned programs in this document.

**Estimated Number of Professional FTEs/SYs total in the State.**

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2010 | 0.0 | 0.0 | 0.0 | 22.0 |
| 2011 | 0.0 | 0.0 | 0.0 | 22.0 |
| 2012 | 0.0 | 0.0 | 0.0 | 22.0 |
| 2013 | 0.0 | 0.0 | 0.0 | 22.0 |
| 2014 | 0.0 | 0.0 | 0.0 | 22.0 |

## II. Merit Review Process

### 1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

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

**2. Brief Explanation**

Florida A&M University has a well established process in place to review and monitor the quality and the accountability of its research program. In addition to the reviewers mentioned above, the proposed research will be monitored through annual evaluation of faculty's planned program; potential impact on stakeholders; presentation and publication of scientific findings; annual report of accomplishments; and periodic CSREES reviews.

## III. Evaluation of Multis & Joint Activities

**1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?**

Florida basically has three distinct agroclimatic regions. The Southern part of Florida produces ornamentals, nursery crops, vegetables, tropical fruits and aquaculture commodities; the Central part has extensive citrus crops, animals, row crops and small enterprises; the Northwest Panhandle area, where Florida A&M University is located, has farmers involved in a mix of enterprises including: cattle, goats, tomatoes, peppers, grapes, sugarcane, peanuts and other speciality crops. Therefore, the needs of stakeholders are different for these three regions. Since most of the farmers in the Panhandle area are small producers, FAMU concentrates on their needs and through the proposed plan will try to address their concerns. The main issue is to enhance the economic returns for producers in this area. Research on this aspect will include: Grape production, meat goats, tomato and peppers, bioenergy crops and other alternate crops. The quality of life for rural residents, water quality and other environmental issues such as invasive and biting insects are major concerns. Hence, planned research programs address these issues.

**2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?**

Florida A&M University (FAMU), an 1890 Land-Grant university, has traditionally worked with the under-served and under-represented groups involved in agriculture and rural development. FAMU's Research Programs are developed in close association with its extension component. The planned programs are geared toward meeting the identified needs of small/limited resource farmers. Research is proposed for developing information on niche crops, alternate enterprises and value-added products, which would enhance the economic returns for small producers. The proposed research on rural issues will help in identifying the needs of under-served, elderly and other rural residents and the ways in which local and state agengies are meeting such needs.

**3. How will the planned programs describe the expected outcomes and impacts?**

Expected outcomes of the planned program include: greater profitability and productivity for North Florida agricultural producers, better crop production and management information, better animal production and management information, reduced costs, enhanced environmental stewardship, reduced use of chemicals (fertilizers and pesticides) and further integration of research, teaching and extension programs.

Potential Impacts include: Better informed grape and vegetable growers, more acreage of grapes and vegetables, healthy animals and reduced cost of production, adoption of "Best Management Practices", availabiltiy of new niche crops, novel biological control agents, better environmental conditions, improved bioenergy conversion processes, and well trained undergraduate and graduate students.

**4. How will the planned programs result in improved program effectiveness and/or efficiency?**

The planned program will be annually reviewed to redirect and realign the efforts to ensure that it remains effective and efficient. Available resources (federal, state, private), will be allocated based on the identified needs and priorities. By incorporating the stakeholder issues and implementing the recommendations made by the program advisory council, it is evident that the resources will be used where they are needed. Also, the four research centers (Center for Biological Control, Center for Viticulture and Small Fruit Research, Center for Water and Air Quality and Public Health, Entomology, Research and Education Center) within the Agricultural Research Program (at FAMU) bring a number of scientists together to address a certain issue. This tends to be more effective in solving problems.

## IV. Stakeholder Input

**1. Actions taken to seek stakeholder input that encourages their participation**

- Survey specifically with non-traditional groups
- Survey of traditional stakeholder groups
- Targeted invitation to traditional stakeholder groups
- Use of media to announce public meetings and listening sessions
- Other (Contact traditional under -served clientele)
- Targeted invitation to non-traditional stakeholder groups

**Brief explanation.**

Input from stakeholders will be sought from multiple sources and at different levels. Various stakeholder groups such as: Florida Grape Growers Association, Florida Meat Producers, Farm Bureau, Florida Fruit and Vegetable Association, Florida Nursery Growers Association, CARET representatives, Florida Water Management District representatives, Florida Mosquito Control Association and others will be contacted and encouraged to respond to a formal survey requesting their input to identify needed research. Follow-up discussions will be held concerning the existing research program priorities and how Florida A&M University's research programs are and will be addressing stakeholder's needs. The Research Advisory Group will provide input regarding the relevancy of the program. A show-and-tell event (Research Forum) will be held on the campus to encourage stakeholder participation and facilitate interaction with researchers. The College will also hold several other public events during the year to gather information from stakeholders. Each of the planned program areas have established advisory councils to help them develop, implement and monitor research.

**2(A). A brief statement of the process that will be 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 Surveys
- Open Listening Sessions
- Use Advisory Committees
- Needs Assessments

**Brief explanation.**

Attempts will be made to include as many diverse groups as possible. Special attention will be paid to the under-served clientele such as low income farmers, minority groups and small-scale producers. Field days will be very useful in identifying the stakeholder groups. Input will also be sought from the extension workers in identifying the stakeholders. Listening sessions at commodity group meetings will be helpful in formulating needs assessments.

**2(B). A brief statement of the process that will be 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**

- Other (Through county extension agents)
- Meeting with traditional Stakeholder groups
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Survey of traditional Stakeholder groups
- Meeting with the general public (open meeting advertised to all)

**Brief explanation**

Stakeholder input will be collected throughout the year in informal and formal meetings and a College -wide strategic plan. Meetings wil be held on the campus where research results will be presented and stakeholders' input will be requested.

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

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

**Brief explanation.**

Input received from stakeholder groups will be incorporated into individual planned programs as well as the total Plan of Work. Research priorities and specific recommendations/action items will be developed from the proceedings of the college advisory council. Planned programs will be designed to address the identified needs and the budgets will be prepared accordingly. Seed money will be provided for the identified emerging issues.

# V. Planned Program Table of Content

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

**Program #1**

**1. Name of the Planned Program**

Viticulture and Small Fruit Research

**2. Brief summary about Planned Program**

The Center for Viticulture and Small Fruit Research conducts a wide range of research projects and provides service that is helping the viticulture industry to become a viable industry. Research projects are being conducted to address industry needs and concerns. They range from conventional breeding to identifying genetic markers for fruit quality and nutraceutical properties, disease resistance, and other important physiological characteristics. The Planned Program is geared towards developing new and improved muscadines and bunch grapes for wine and fresh fruit. The Center also conducts research on small fruits such as blackberries, raspberries and non traditional fruits to evaluate their suitability for North Florida. A research project is currently underway to try and develop new raspberry cultivars with low chilling requirements for Florida. The viticulture faculty is also actively involved in graduate and undergraduate student training. The faculty members are involved in teaching graduate and undergraduate courses in the College of Engineering Sciences, Technology and Agriculture. All faculty members in the Center are involved in Extension and outreach activities to assist the grape growers, small farmers and the general public. Outreach activities included: field days, harvest festival, workshops, vineyard visits, and problem solving.

**3. Program existence :** Mature (More then five years)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## 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% | | 25% |
| 203 | Plant Biological Efficiency and Abiotic Stresses Affecting Plants | | 25% | | 25% |
| 205 | Plant Management Systems | | 50% | | 50% |
| | **Total** | | 100% | | 100% |

## V(C). Planned Program (Situation and Scope)

**1. Situation and priorities**

The Florida Legislature recognized that Florida ‘s natural resources: land, climate, and human resources provide ample opportunities to sustain a viable viticulture industry. As the second largest wine consuming state in the nation, Florida has the distinct economic advantage an incentive to develop the grape and wine industry into an alternative enterprise. Wine tax revenue exceeds $120 million annually. For the viticulture industry to continue to grow, there is a need to address the challenges faced by the Florida grape and wine industry. Some of the challenges are: improved bunch grape cultivars that are disease tolerant for red wine, seedlessness in muscadine grapes, new high value nutraceutical products, best management practices to enhance production and minimize cost of production, improved enological techniques for processing and blending Florida wines, and the availability of disease free planting materials for Florida growers. The Center is also evaluating selected non traditional small fruits and brambles to determine their economic potential as alternative enterprises for small farmers in North Florida.

**2. Scope of the Program**

- Integrated Research and Extension
- In-State Extension
- In-State Research

## V(D). Planned Program (Assumptions and Goals)

**1. Assumptions made for the Program**

The Florida Legislature does not provide an appropriation to the Center to conduct its research and statewide extension work. Limited funds are allocated through the Evans-Allen program but they are inadequate to cover all operating expenses and do not meet the needs of the various research programs in the Center. All operating expenses of current research projects are funded by grants from the USDA, FDACS, VAC, Florida Grape Growers Association, and NSF, but no funds have been provided for faculty employment. It is assume that within the next five years, the Center will receive the necessary funds to recruit and employ the following core faculty:

- Enologist – to conduct wine and value-added, and nutraceutical research.
- Pomologist – conduct research on breeding and orchard management of small fruits.
- Extension Viticulturist - to conduct statewide extension and outreach work.
- Plant Pathologist – to conduct research on diseases of grapes and small fruits.
- Entomologist – to conduct pest management research for grapes and small fruits.
- Biological Scientist – to work on the Genomic Analysis Systems and Electron Scanning Microscope.

**2. Ultimate goal(s) of this Program**

The Center becomes a scholastic center of excellence for research and learning that is renowned for:

- Graduate and undergraduate student training and development.
- Research productivity in warm climate grapes and non traditional small fruits.

- The Center continues to be the leader for warm climate grape research and becomes a center of excellence for grape and small fruit research in the nation and accomplished the following:
- Development of new and improved grape cultivars for fresh fruit and wine for the Florida grape and wine industry.
- Development of a new low chill raspberry cultivar for Florida. • Development of a seedless muscadine grape cultivar for the fresh fruit industry. • Developed and identified non traditional fruits for North Florida farmers. • Identified and patented new genetic markers of economic importance.

Identified new high value nutraceutical products from grapes and small fruits.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2010 | 0.0 | 1.0 | 0.0 | 6.0 |
| 2011 | 0.0 | 1.0 | 0.0 | 6.0 |
| 2012 | 0.0 | 1.0 | 0.0 | 6.0 |
| 2013 | 0.0 | 1.0 | 0.0 | 6.0 |
| 2014 | 0.0 | 1.0 | 0.0 | 6.0 |

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

### 1. Activity for the Program

- Research projects and studies
- Research reports and publications
- Research presentations at professional meetings
- Extension meeting, workshops and seminars for growers
- Graduate and undergraduate student training
- Field day and grape harvest festival
- Participation in grape growers' activities
- High school student interaction and recruitment

### 2. Type(s) of methods to be used to reach direct and indirect contacts

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| ● Demonstrations<br>● Workshop<br>● Group Discussion<br>● Other 1 (Field Days)<br>● One-on-One Intervention<br>● Education Class | ● Newsletters<br>● Web sites<br>● Public Service Announcement<br>● Other 1 (Newspapers) |

### 3. Description of targeted audience

- Grape growers in general and Florida grape growers in particular.
- Small limited resource farmers.
- Minority farmers.
- Consumers and households with grapes and small fruits.
- Processors and wineries.
- Extension personnel.

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

### 1. Standard output measures

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

| | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| Year | Target | Target | Target | Target |
| 2010 | 350 | 200 | 100 | 100 |
| 2011 | 350 | 300 | 200 | 200 |
| 2012 | 400 | 400 | 300 | 300 |
| 2013 | 500 | 500 | 500 | 500 |
| 2014 | 500 | 500 | 500 | 500 |

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

**Expected Patent Applications**

**2010 :**1 **2011 :**1 **2012 :** 1 **2013 :** 1 **2014 :** 1

**3. Expected Peer Review Publications**

| Year | Research Target | Extension Target | Total |
|---|---|---|---|
| 2010 | 6 | 0 | 6 |
| 2011 | 6 | 1 | 7 |
| 2012 | 6 | 1 | 7 |
| 2013 | 6 | 1 | 7 |
| 2014 | 6 | 1 | 7 |

## V(H). State Defined Outputs

**1. Output Target**

- 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

**2010 :**30 **2011 :**40 **2012 :**50 **2013 :**50 **2014 :**50

## V(I). State Defined Outcome

| 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. |

**Outcome #1**

**1. Outcome Target**

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. Outcome Type :** Change in Knowledge Outcome Measure

| **2010 :** 50 | **2011 :** 60 | **2012 :** 70 | **2013 :** 70 | **2014 :** 70 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1890 Research

**4. Associated Knowledge Area(s)**

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 205 - Plant Management Systems

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

**1. External Factors which may affect Outcomes**

- Competing Programmatic Challenges
- Economy
- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes

**Description**

Main external factors would be: infestation of insect/disease/pests; unfavorable weather conditions, declining demand for the products.

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

**1. Evaluation Studies Planned**

- After Only (post program)
- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

**Description**

The evaluation studies will be conducted during and after the implementation of planned program. Progress made on each of the goals will be determined annually and appropriate modifications in the plan will be made to achieve proposed goals at the end of the plan.

**2. Data Collection Methods**

- Sampling
- Telephone
- Mail
- Case Study
- Structured

**Description**

The data collection will depend on the type of the study. The experimental studies will follow standard statistical procedures. The marketing and consumer studies will employ survey techniques. Yield related studies will depend on the sampling.

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

**Program #2**

**1. Name of the Planned Program**

Preserving Water Quality of North Florida Watersheds

**2. Brief summary about Planned Program**

Center for Water Quality at Florida A&M University was established to protect, improve and conserve the quality and the quantity of Florida's water resources. It promotes interdisciplinary research and provides experiential learning opportunities for undergraduate and graduate students. Four graduate and five undergraduate students are currently involved in various faculty research projects and will continue for the next planned FY.

Program areas include: Nutrient cycling in wetlands; Biological assessment of water quality; Alleviation of water quality problems and nutrient management; watershed modeling; and, rural water issues. Collaborations have been established with state and private organizations to undertake joint research projects in water quality and related areas. Such organizations include: Natural Resource Conservation Service, Florida Department of Agriculture, Riverkeeper, Tall Timbers, National Estuarine Research Reserve and others.

Planned programs will focus on the Apalachicola River Basin in North Florida. The watershed for this river extends into Georgia with a total area of 19,000 sq miles. Studies will be conducted on effects of soil erosion and nutrient loss from agricultural landscapes in the watershed on water quality. Work on bio-assessment of fresh water streams in the basin will continue. It supplements the physical and chemical parameters of water quality. A grant from the USDA Forest Service will enable us to study several ephemeral ponds in the Apalachicola National Forest and understand the role of such water bodies in the forest ecosystem. A grant from NOAA will be used to disseminate the environmental education and water quality information to high school teachers in six riparian counties of the Apalachicola River.

**3. Program existence :** New (One year or less)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

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

**1. Program Knowledge Areas and Percentage**

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---|---|---|---|---|---|
| 111 | Conservation and Efficient Use of Water | | | | 25% |
| 112 | Watershed Protection and Management | | | | 25% |
| 133 | Pollution Prevention and Mitigation | | | | 25% |
| 136 | Conservation of Biological Diversity | | | | 25% |
| | **Total** | | | | 100% |

## V(C). Planned Program (Situation and Scope)

### 1. Situation and priorities

Rapid growth of urban areas and agricultural enterprises in recent years has increased pressure on water resources and wetlands environments in North Florida. The region is now confronted with water quality problems, as well as water quantity issues, because of prolong drought conditions in the South. The reservoirs are at record low levels, while demand for water from urban areas, agriculture and the industry continues to increase. Among many factors, accelerated soil erosion, nutrient loss and changing land-use patterns are of major concern in sustaining environmentally sound agriculture. In North Florida, where Florida A&M University is located, the Apalachicola River Basin and its watersheds are vulnerable due to diminishing in- stream flow and many non-point sources of pollution in the watershed. It has also adversely affected the biodiversity and the ecosystem services within the region. Hence, there is an immediate need to develop a comprehensive plan to mitigate such water quality and quantity problems and understand the long-term consequences of any further deterioration of the watershed due to climatic changes or human activities.
The planned program priorities include: Study of changes in the land-use pattern in the watershed; Quantification of rain- and irrigation-induced soil erosion and nutrient movements in the selected experimental sites of the Apalachicola Basin (North Florida and South Georgia) that represent variations in soil, crop and managements; Assessment of the effects of soil erosion and nutrient loss on water quality of streams and estuaries; and, Biomonitoring of fresh water streams feeding into the river systems.

### 2. Scope of the Program

- In-State Research

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

The assumptions include: study of the watershed will lead to better management practices for agricultural landscapes; Enhanced soil and water conservation in North Florida; Preservation of biodiversity and ecosystem services and better use of natural resources.

### 2. Ultimate goal(s) of this Program

The ultimate goal of the program is to develop a comprehensive watershed study for the Apalachicola River System that would assist in developing better management practices and enhance soil and water conservation of agricultural landscapes.

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

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2010 | 0.0 | 0.0 | 0.0 | 5.0 |
| 2011 | 0.0 | 0.0 | 0.0 | 6.0 |
| 2012 | 0.0 | 0.0 | 0.0 | 7.0 |
| 2013 | 0.0 | 0.0 | 0.0 | 7.0 |
| 2014 | 0.0 | 0.0 | 0.0 | 7.0 |

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

### 1. Activity for the Program

This program is planned for five years. In the first year, we will classify land use and agricultural acreages in the Basin using remote sensing and GIS technology. Experimental sites that represent soil types, cropping systems and managements will be selected in the watershed area. Experiments will be conducted to assess soil erosion and nutrient loss in the experimental sites for the next three years using the mesh-bag method that was developed at Florida A&M University. In the fifth year, the experimental results will be used to calibrate and improve the prediction models. To generate biotic indices for the water bodies

in the Basin, several sampling sites will be established. At each site, aquatic insect and habitat data will be collected using BioRecon method. The generated indices will be used in predicting water quality of fresh water streams.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

| Extension | |
|---|---|
| **Direct Methods** | **Indirect Methods** |
| • Demonstrations<br>• Group Discussion<br>• Workshop | • Public Service Announcement<br>• Web sites<br>• Newsletters |

**3. Description of targeted audience**

The targeted audience include: Residents in six riparian counties adjoining Apalachicola River (Gulf, Calhoun, Jackson, Gadsden, Liberty and Franklin), agricultural producers in North Florida, natural resource extension specialists, forest land owners, researchers and students.

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

**1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

| | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| Year | Target | Target | Target | Target |
| 2010 | 50 | 60 | 50 | 50 |
| 2011 | 60 | 60 | 50 | 50 |
| 2012 | 75 | 70 | 60 | 50 |
| 2013 | 75 | 70 | 60 | 50 |
| 2014 | 75 | 70 | 60 | 60 |

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

**Expected Patent Applications**

**2010 :** 1 **2011 :** 1 **2012 :** 1 **2013 :** 1 **2014 :** 1

**3. Expected Peer Review Publications**

| Year | Research Target | Extension Target | Total |
|---|---|---|---|
| 2010 | 7 | 2 | 9 |
| 2011 | 7 | 2 | 9 |
| 2012 | 8 | 2 | 10 |
| 2013 | 8 | 2 | 10 |
| 2014 | 9 | 2 | 11 |

## V(H). State Defined Outputs

**1. Output Target**

- Research and extension-type publications Grant Proposals Submitted and Funded Dissemination of Results to Stakeholders

Training of Graduate and Undergraduate Students

| | | | | |
|---|---|---|---|---|
| **2010** 50 | **2011** 60 | **2012** 60 | **2013** 60 | **2014** 0 |

## V(I). State Defined Outcome

| 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 stewerdship; Better understanding of aquatic fauna; Well-trained graduate and undergraduate students in soil and water sciences. |

**Outcome #1**

**1. Outcome Target**

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 stewerdship; Better understanding of aquatic fauna; Well-trained graduate and undergraduate students in soil and water sciences.

**2. Outcome Type :** Change in Knowledge Outcome Measure

| **2010 :** 50 | **2011 :** 50 | **2012 :** 60 | **2013 :** 60 | **2014 :** 0 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1890 Research

**4. Associated Knowledge Area(s)**

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

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

**1. External Factors which may affect Outcomes**

- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)
- Appropriations changes
- Government Regulations
- Competing Programmatic Challenges

**Description**

The Water Quality Program being an environmentally sensitive program may be affected by several external factors. The chief among them: changes in land-use pattern, state environmental regulations, climatic conditions including extreme shifts due to hurricanes, draining of wetlands, extent of cooperation received from producers, etc.

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

**1. Evaluation Studies Planned**

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)

**Description**

Scientific papers and presentations, extension-type publications, dissemination of results, information provided to stakeholders, adoption of recommended practices.

**2. Data Collection Methods**

- Structured
- Other (Experimental Studies)
- Sampling
- Observation
- Mail
- Tests

**Description**

Data on the land - use change in the watershed will be collected for a period of five years. This will be used in preparing a comprehensive map.

Field studies will be conducted to determine soil erosion and nutrient loss under rain- and irrigation regime for various scenarios.

Sampling sites will be established for collecting aquatic insects from fresh water streams.

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

**Program #3**

**1. Name of the Planned Program**

Strategic Research for the Management of Invasive Pest Species

**2. Brief summary about Planned Program**

Invasive alien species (IAS) are a major threat to agriculture and the environment, in Florida and across the nation. In order to mitigate the threats, concerted action along with the continuum from prevention of imminent threats to management of established species is required. This project takes a multipronged approach focusing on the one hand on development of relevant tools and technologies, and the other generating data that will enhance our knowledge of biological control and invasions in general.

**3. Program existence :** New (One year or less)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## 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% |
| | **Total** | | | | 100% |

## V(C). Planned Program (Situation and Scope)

**1. Situation and priorities**

Invasive alien species (IAS) are a major threat to agriculture and the environment (GAO, 2006; Pimentel et al. 2005). In recent years, at least 10 alien arthropod species have become established in Florida annually. In order to mitigate the threats, concerted action along the continuum from prevention of imminent threats to management of established species is required. This five-year research project takes a multipronged approach focusing on the one hand, development of relevant tools and technologies, and the other, generating data that will enhance our knowledge of biological control and the invasion process in general. This work will be implemented by the Center for Biological Control at Florida A&M University which was established in 1998 as a unique partnership between FAMU, ARS and APHIS. The main priorities for the proposed work include: development of expert information systems, offshore research on high risk IAS, research on invasion patterns, and assessment of the benefits and risks of biological control agents.

**2. Scope of the Program**

- In-State Research
- Multistate Research

## V(D). Planned Program (Assumptions and Goals)

**1. Assumptions made for the Program**

Invasive species will continue to pose a major threat to agriculture and the environment and tools developed through the project will be utilized by the relevant stakeholders. The Center for Biological Control will continue to receive support from ARS

and APHIS, in addition to funding through the Evans-Allen Program. ARS has placed three entomologists on the campus to work closely with the University scientists.

**2. Ultimate goal(s) of this Program**

The goal of the project is to mitigate the impact of invasive species through the development of relevant tools and technologies, and generation of data that will enhance prevention or management efforts, especially biological control.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2010 | 0.0 | 0.0 | 0.0 | 4.0 |
| 2011 | 0.0 | 0.0 | 0.0 | 4.0 |
| 2012 | 0.0 | 0.0 | 0.0 | 4.0 |
| 2013 | 0.0 | 0.0 | 0.0 | 4.0 |
| 2014 | 0.0 | 0.0 | 0.0 | 4.0 |

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

**1. Activity for the Program**

Expert information systems: Lucid software will be used to develop and deploy electronic identification tools and resources for selected taxa and commodities. Offshore research: We will conduct offshore research on selected high risk species to generate data on biology, ecology, and control. Invasive Patterns: Together with empirical data generated from teh offshore research, we will utilize existing databases on interceptions and establishments to test various hypotheses about invasions. Benefits and risks of biological control agents: We will work with cooperators to assess the benefits and risks of fungal and arthropod biological control agents. A database containing data on host range of different natural enemy taxa will be developed.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

| Extension | |
|---|---|
| Direct Methods | Indirect Methods |
| • Group Discussion<br>• Workshop<br>• Demonstrations<br>• Education Class | • Newsletters<br>• Public Service Announcement<br>• Web sites |

**3. Description of targeted audience**

The target audience include: federal and state biosecurity agencies, small-scale farmers, extension workers, and biological control scientists/entomologists.

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

**1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

| | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| Year | Target | Target | Target | Target |
| 2010 | 200 | 225 | 75 | 50 |
| 2011 | 250 | 325 | 75 | 50 |
| 2012 | 300 | 400 | 100 | 50 |
| 2013 | 350 | 400 | 100 | 50 |
| 2014 | 350 | 400 | 100 | 50 |

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

**Expected Patent Applications**

**2010 :**0 **2011 :**1 **2012 :** 1 **2013 :** 1 **2014 :** 1

**3. Expected Peer Review Publications**

| Year | Research Target | Extension Target | Total |
|---|---|---|---|
| 2010 | 5 | 2 | 7 |
| 2011 | 6 | 3 | 9 |
| 2012 | 6 | 3 | 9 |
| 2013 | 7 | 3 | 10 |
| 2014 | 7 | 3 | 10 |

## V(H). State Defined Outputs

**1. Output Target**

- 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.

**2010 :**50 **2011 :**60 **2012 :**60 **2013 :**60 **2014 :**60

## V(I). State Defined Outcome

| 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 Target**

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. Outcome Type :** Change in Knowledge Outcome Measure

| **2010 :**100 | **2011 :** 150 | **2012 :** 150 | **2013** 200 | **2014 :**200 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1890 Research

**4. Associated Knowledge Area(s)**

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 215 - Biological Control of Pests Affecting Plants

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

**1. External Factors which may affect Outcomes**

- Economy
- Appropriations changes
- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)
- Competing Programmatic Challenges
- Government Regulations

**Description**

The major external factors which may affect the outcomes of the planned program include: unfavorable weather conditions which may cause high infestation of insect pests, lack of effective biological control agents, prevelance of natural enemies of identified biological control agents, sagging economy, reduction in funding of current and planned research studies.

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

**1. Evaluation Studies Planned**

- Time series (multiple points before and after program)
- Before-After (before and after program)
- During (during program)

**Description**

Feedback will be sought from stakeholders regarding use and effectiveness of knowledge generated by the center including impact of published material and electronic tools. A research timetable along with measureable outcomes will help guide field and lab studies. The advisory council will evaluate the outcomes of research on an annual basis.

**2. Data Collection Methods**

- Mail
- Observation
- Tests
- Sampling
- Structured

**Description**

The data will be collected through specific structured and semi-structured surveys and an assessment of impact of knowledge generated from the research such as citations of center publications. Review of outputs/impacts by expert technical advisory committee and other peers including stakeholders.

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

**Program #4**

**1. Name of the Planned Program**

Rural Development and Statewide Goat Research

**2. Brief summary about Planned Program**

The goal of the Rural Development and Statewide Goat Research program at Florida A&M University (FAMU) is to enhance the social and economic well being of rural and small farm communities through research that facilitates policy decision-making, education and outreach. The planned research program was developed in close consultation with the Cooperative Extension Service at the University. Many of the planned program areas overlap with outreach activities provided by extension services and faculty with joint extension appointments. Extension programs have helped to identify the specific needs. The program will focus on leadership, community development, asset building, natural resources and food systems preservation to enhance the well being of rural communities in Florida. As an alternative enterprise to enhance asset building and food systems preservation, goat production and research will provide a profitable and sustainable source of income to small farm communities. The planned program will continue through research, education and outreach to improve the competitive position of small goat producers in Florida and improve the over-all well being of rural residents and small farm communities.

**3. Program existence :** New (One year or less)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## 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% |
| 307 | Animal Production Management Systems | | | | 10% |
| 311 | Animal Diseases | | | | 10% |
| 502 | New and Improved Food Products | | | | 10% |
| 601 | Economics of Agricultural Production and Farm Management | | | | 30% |
| 803 | Sociological and Technological Change Affecting Individuals, Families and Communities | | | | 20% |
| | **Total** | | | | 100% |

## V(C). Planned Program (Situation and Scope)

**1. Situation and priorities**

The Rural Development and Statewide Goat Program at Florida A&M University is truly an integrated effort. Many activities will be planned to benefit stakeholders and others. These are: Goat field days, workshops to train goat producers, research studies, field demonstrations, visits to producers' farms, developing publications, and working with small and limited resource farmers. Florida's rapid growth in the central and southern part of the state has caused migration to and from small rural communities of north Florida. Some communities are facing a deterioration of wages, lost jobs and a growing income gap when compared to urban areas and the national average. This results in a smaller work force, and less capacity for community wide economic growth. Most of the small farms in FAMU's service area do not produce enough income to sustain families. Therefore, these small farms are now operated by part-time farmers. The rural areas have a much higher population of older people and their needs are unique in terms of assistance programs. The priorities is this program are: increasing small farmers' income through alternative enterprises such as goat production, assisting rural families/elderly in improving their quality of life and bringing them into mainstream America.

**2. Scope of the Program**

- In-State Extension
- Integrated Research and Extension
- In-State Research

## V(D). Planned Program (Assumptions and Goals)

**1. Assumptions made for the Program**

Florida will continue to grow, population wise, creating unique problems and challenges which need to be addressed by the state's land-grant universities. The key to solving community problems is to focus on educating people about their options for the future so they will take local action to solve local problems. FAMU researchers have been supporting the economic development

of north Florida families and farmers through the exploration of non-traditional crop and livestock systems. Planned programs will focus on increasing the income of rural residents and limited resource farmers and an organized marketing system to help alternative enterprises such as goat production sell their products more efficiently and for a better economic return.

**2. Ultimate goal(s) of this Program**

The ultimate goal of this program is to enhance the quality of life for rural families and increase income opportunities for small and limited resource farmers in north Florida.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2010 | 0.0 | 0.0 | 0.0 | 4.0 |
| 2011 | 0.0 | 0.0 | 0.0 | 4.0 |
| 2012 | 0.0 | 0.0 | 0.0 | 4.0 |
| 2013 | 0.0 | 0.0 | 0.0 | 4.0 |
| 2014 | 0.0 | 0.0 | 0.0 | 4.0 |

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

**1. Activity for the Program**

The following activities will be undertaken during the implementation of the planned program: research and demonstration studies, field days, visitations to farmers, experimental studies, training of students, publications, workshops and conferences.

**2. Type(s) of methods to be used to reach direct and indirect contacts**

| Extension | |
|---|---|
| Direct Methods | Indirect Methods |
| • One-on-One Intervention<br>• Group Discussion<br>• Demonstrations<br>• Workshop | • Web sites<br>• Public Service Announcement<br>• Newsletters |

**3. Description of targeted audience**

The target audience for this program include: small/limited resource farmers, extension workers, rural residents, families, community groups, and goat producers.

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

**1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

| | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| Year | Target | Target | Target | Target |
| 2010 | 300 | 250 | 100 | 100 |
| 2011 | 300 | 300 | 100 | 100 |
| 2012 | 300 | 300 | 100 | 100 |
| 2013 | 300 | 300 | 100 | 100 |
| 2014 | 300 | 300 | 100 | 100 |

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

**Expected Patent Applications**

**2010 :**0 **2011 :**1 **2012 :**0 **2013 :**0 **2014 :**0

**3. Expected Peer Review Publications**

| Year | Research Target | Extension Target | Total |
|---|---|---|---|
| 2010 | 2 | 1 | 3 |
| 2011 | 3 | 1 | 4 |
| 2012 | 2 | 2 | 4 |
| 2013 | 2 | 2 | 4 |
| 2014 | 2 | 2 | 4 |

## V(H). State Defined Outputs

**1. Output Target**

- 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.

**2010 :**50 **2011 :**60 **2012 :**60 **2013 :**60 **2014 :**60

## V(I). State Defined Outcome

| 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. |

**Outcome #1**

**1. Outcome Target**

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. Outcome Type :** Change in Condition Outcome Measure

| **2010 :** 40 | **2011 :** 40 | **2012 :** 50 | **2013 :** 50 | **2014 :** 60 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1890 Research

**4. Associated Knowledge Area(s)**

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 307 - Animal Production Management Systems
- 311 - Animal Diseases
- 601 - Economics of Agricultural Production and Farm Management
- 803 - Sociological and Technological Change Affecting Individuals, Families and Communities

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

**1. External Factors which may affect Outcomes**

- Populations changes (immigration,new cultural groupings,etc.)
- Government Regulations
- Economy

**Description**

Several external factors affect the outcomes for this planned program. Small farmers and goat producers are more vulnerable than larger enterprises to many of the factors such as: high input prices, marketing conditions and demand for animals, feed and drug costs, food processing and safety regulations. Programs on rural issues may be affected by state and federal regulations, reduced funding and changing needs of an aging population.

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

**1. Evaluation Studies Planned**

- Case Study
- Before-After (before and after program)
- Comparisons between different groups of individuals or program participants experiencing different levels of program intensity.
- During (during program)
- Comparisons between program participants (individuals,group,organizations) and non-participants
- Time series (multiple points before and after program)

**Description**

The evaluation of this program will be done jointly with the Cooperative Extension Program. Evaluations will be done before and after, as well as during the studies to determine the effectiveness of the program delivery to small and limited resource farmers. Case studies will be compared when studying the needs of rural families. Extension workers will be polled to find out is they are receiving adequate technical information.

**2. Data Collection Methods**

- Case Study
- Structured
- Mail
- Sampling
- Unstructured
- Observation
- Whole population

**Description**
Data will be collected by direct observation, visiting demonstration sites and through personal survey. Experimental studies will be planned using sound statistical methodology.

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

**Program #5**

**1. Name of the Planned Program**

BioEnergy Research

**2. Brief summary about Planned Program**

In order to better serve our clientele, the small farmers, a small demonstration plot has been set up on the Quincy Farm. This field plot includes several bioenergy crops, namely sugarcane, sweet potato, sorghum and some halophytic plants. The goals are to test several growing conditions such as irrigated versus non irrigated, fertilized versus non fertilized, herbicide treated versus non herbicide treated. The results will be evaluated by the end of the summer. An educational and extension agenda is also included.

Accomplishments to date:

**a)** The study of microbial strains for improved biomass conversion efficiency (*Louime et al.*).

**b)** The evaluation of the potential of thermochemical conversion of biomass (*Abazinge et al.*).

**c)** Study of halophytes as potential biofuels feedstock (*Onokpise et a.l*).

**d)** The development of educational and outreach modules for local communities and consumers and providing assistance with technologies transfer (*Taylor et al.*)

Future Work:

**e)** focus on biodiesel production from algae.

**f)** analyzing and developing small scale distributed conversion systems for small farmers.

**g)** analyzing the structural components including cellulose, lignin and starch contents of selected plant species including invasives such as Kudzu, Cogon Grass and Tropical Soda Apple, for new potential value-added products.

**h)** entrepreneurial activities related to bioenergy business ventures

**i)** research, design, and build an efficiently scaled power plant to demonstrate process integration and bio-renewable fuels synergy in small farm-scale bio-reactor

**j)** specific objectives will focus on the training of minorities including education and outreach activities.

**3. Program existence :** New (One year or less)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

## 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 | | | | 25% |
| 511 | New and Improved Non-Food Products and Processes | | | | 25% |
| | **Total** | | | | 100% |

## V(C). Planned Program (Situation and Scope)

**1. Situation and priorities**

- To complete the Quincy, FL field work
- To start a new algae project
- To collaborate with bioenergy research group at Lincoln University
- To follow-up on Extension programs with small farmers in north Florida
- To process seeds into biodiesel

**2. Scope of the Program**

- In-State Extension
- In-State Research
- Integrated Research and Extension

## V(D). Planned Program (Assumptions and Goals)

**1. Assumptions made for the Program**

Crops native to the Southeast can be grown and processed into biodiesel, therefore generating new source of income for small farmers

**2. Ultimate goal(s) of this Program**

To train the next generation of agricultural scientist in the area of bioenergy.

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

**1. Estimated Number of professional FTE/SYs to be budgeted for this Program**

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2010 | 0.0 | 0.0 | 0.0 | 1.0 |
| 2011 | 0.0 | 0.0 | 0.0 | 1.0 |
| 2012 | 0.0 | 0.0 | 0.0 | 0.5 |
| 2013 | 0.0 | 0.0 | 0.0 | 0.5 |
| 2014 | 0.0 | 0.0 | 0.0 | 0.5 |

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

**1. Activity for the Program**

1- Develop new courses in Bioenergy
2- Introduce new laboratory techniques related to bioenrgy
3- Establish Field experimental plots

**2. Type(s) of methods to be used to reach direct and indirect contacts**

| Extension | |
|---|---|
| Direct Methods | Indirect Methods |
| • Demonstrations<br>• Other 1 (Farmers Day)<br>• Education Class | • Web sites<br>• Public Service Announcement<br>• Newsletters |

**3. Description of targeted audience**

Small farmers in the North Florida region.

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

**1. Standard output measures**

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

| | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| Year | Target | Target | Target | Target |
| 2010 | 500 | 750 | 200 | 200 |
| 2011 | 700 | 1000 | 250 | 300 |
| 2012 | 900 | 1250 | 300 | 400 |
| 2013 | 1000 | 1500 | 350 | 500 |
| 2014 | 1000 | 1500 | 350 | 500 |

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

**Expected Patent Applications**

**2010 :**0 **2011 :**0 **2012 :**0 **2013 :**0 **2014 :**0

### 3. Expected Peer Review Publications

| Year | Research Target | Extension Target | Total |
|---|---|---|---|
| 2010 | 2 | 2 | 4 |
| 2011 | 3 | 1 | 4 |
| 2012 | 2 | 1 | 3 |
| 2013 | 2 | 1 | 3 |
| 2014 | 2 | 1 | 3 |

## V(H). State Defined Outputs

### 1. Output Target

- 1. Graduates 2. Publications 3. Workshops

**2010** 4 **2011** 5 **2012** 7 **2013** 8 **2014** 10

## V(I). State Defined Outcome

| 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 |

**Outcome #1**

**1. Outcome Target**

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. Outcome Type :** Change in Knowledge Outcome Measure

| **2010** :10 | **2011 :** 15 | **2012 :** 20 | **2013** :20 | **2014 :**25 |
|---|---|---|---|---|

**3. Associated Institute Type(s)**

•1890 Research

**4. Associated Knowledge Area(s)**

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

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

**1. External Factors which may affect Outcomes**

- Government Regulations
- Public Policy changes
- Appropriations changes
- Natural Disasters (drought,weather extremes,etc.)

**Description**

The Bioenergy Program is expected to produce the following outcomes:1) Produce the next generation of scientists in agricultural sciences with a focus on Bioenergy; 2) Identify plant genotypes native to the Southeast as potential biofuel feedstock; 3) Generating Technologies to convert plant materials into usable end products for the consumer. In order to accomplish these goals, the center's work will focus on several strategic research areas which involve: feedstock development, and conversion processes. Conversion processes will include both biological and thermochemical conversions. However, there are several external factors that may affect the outcome. Such factors include but not limited to: Natural disaster (Hurricanes in Florida), students recruitment, delay in funding and equipment malfunction.

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

**1. Evaluation Studies Planned**

- Case Study
- During (during program)
- Before-After (before and after program)

**Description**

The project will be evaluated based on several criteria. The evaluation process will start before the program and will continue till the closing on the program. There will be several evaluation steps done during the course of the project. These evaluations will include participants feedbacks. Feedbacks can be formal or informal. In terms of formal feedbacks, phone or direct survey questions will be asked of the participants and responses evaluated. The response will allow us to better remediate to current issues and also better planned future programs. As part of the total evaluation process, the project will also be compared to other similar projects in other states and within the state of Florida.

**2. Data Collection Methods**

- On-Site
- Sampling
- Case Study

**Description**

Data collection will include sampling, case study and on-site observations. . Sampling will be done in a randomized manner to ensure proper evaluation of data and take away bias that might hinder correct statistical analysis. In addition, case study will be

set up in order to collect specific data under specific conditions….e.g. Biomass yield comparison between irrigated and non irrigated plot. In the case of the Mallo that we are presently experimenting on, it is well known that some genotypes might have high level of drought tolerance. The project will look at this characteristic by setting up several experiments in the field and in the greenhouse and data will be collected randomly to shed light in to the water efficiency of these plants. In conclusion, some on site observations will allow us to determine in real time corrective measures to issues that might arise in the course of the project.

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

**Program #6**

**1. Name of the Planned Program**

Public Health Entomology, Research and Education

**2. Brief summary about Planned Program**

Florida's subtropical climate combined with its extensive wetlands provides an ideal environment for mosquitoes and other biting arthropods of public health importance. Control of these arthropods and the pathogens they spread are of utmost importance to the continued growth and development of the State. As such, it is public policy of the State of Florida as defined in Chapter 388, Florida Statutes, "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. It is policy of the state to conduct arthropod control in a manner consistent with protection of the environmental and ecological integrity of all lands and waters throughout the State." The planned program in this area will address these issues as it relates to the conduct of research, extension, and education on arthropods of public health concern.

**3. Program existence :** New (One year or less)

**4. Program duration :** Long-Term (More than five years)

**5. Expending formula funds or state-matching funds :** Yes

**6. Expending other than formula funds or state-matching funds :** Yes

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

**1. Program Knowledge Areas and Percentage**

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---|---|---|---|---|---|
| 133 | Pollution Prevention and Mitigation | | 20% | | 20% |
| 134 | Outdoor Recreation | | 10% | | 10% |
| 135 | Aquatic and Terrestrial Wildlife | | 5% | | 5% |
| 136 | Conservation of Biological Diversity | | 5% | | 5% |
| 311 | Animal Diseases | | 5% | | 5% |
| 312 | External Parasites and Pests of Animals | | 5% | | 5% |
| 721 | Insects and Other Pests Affecting Humans | | 30% | | 30% |
| 722 | Zoonotic Diseases and Parasites Affecting Humans | | 10% | | 10% |
| 723 | Hazards to Human Health and Safety | | 10% | | 10% |
| | **Total** | | 100% | | 100% |

## V(C). Planned Program (Situation and Scope)

**1. Situation and priorities**

Mosquitoes and related arthropods are responsible for vectoring pathogens that cause human and animal morbidity and mortality. Their biting activity also affects the tourism and real estate industries by decreasing business and lowering land values when excessive pest populations are present. The priorities of this program are: 1.) Perform basic and applied research to develop and test formulations, application techniques and procedures of pesticides and biological control agents for the control of arthropods of public health and nuisance importance. 2.) Provide special attention to the needs of arthropod control districts, counties and municipalities of the state by providing information, assistance, and recommendations for the safe and effective control of arthropods which create a health or nuisance problem. 3.) Conduct environmental impact studies to determine and mitigate adverse effects of arthropod control pesticides, with a special emphasis on integrated arthropod control. 4.) Provide the Florida Department of Agriculture & Consumer Services with such information as required to assist the Department in the performance of duties with respect to arthropod control under Chapter 388, F.S. 5.) Serve as a center for training students as well as state and local government personnel in the safe and effective control of biting arthropods that create a public health or nuisance problem.

**2. Scope of the Program**

- In-State Extension
- Integrated Research and Extension
- In-State Research

## V(D). Planned Program (Assumptions and Goals)

### 1. Assumptions made for the Program

Florida's human population will continue to grow. Increased development of coastal and wetland habitats utilized by mosquitoes and other biting arthropods will bring citizens and tourists in closer contact. This will result in greater requests for management methods to balance the need for arthropod control while minimizing adverse environmental effects. This will require research and extension programs that are responsive to changing needs and priorities. It is assumed that the State of Florida will continue to appropriate funding to support the six faculty and 14 staff positions of this program, as well as the operating costs necessary to maintain the research, extension and education facilities. ARS support will also be necessary to supplement limited and diminishing state funds.

### 2. Ultimate goal(s) of this Program

To develop and provide effective and environmentally compatible mosquito and public health arthropod control strategies and IPM programs.

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

### 1. Estimated Number of professional FTE/SYs to be budgeted for this Program

| Year | Extension | | Research | |
|---|---|---|---|---|
| | 1862 | 1890 | 1862 | 1890 |
| 2010 | 0.0 | 2.1 | 0.0 | 3.0 |
| 2011 | 0.0 | 2.1 | 0.0 | 3.0 |
| 2012 | 0.0 | 2.1 | 0.0 | 3.0 |
| 2013 | 0.0 | 2.1 | 0.0 | 3.0 |
| 2014 | 0.0 | 2.1 | 0.0 | 3.0 |

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

### 1. Activity for the Program

Clientele consultation and technical assistance; research proposal development; grant application submittal; publications and presentations; workshops, symposia, and conferences; stakeholder task forces and councils; graduate student and governmental clientele training; assisting Florida Department of Agriculture & Consumer Services.

### 2. Type(s) of methods to be used to reach direct and indirect contacts

| Extension | |
|---|---|
| Direct Methods | Indirect Methods |
| • Demonstrations<br>• One-on-One Intervention<br>• Workshop<br>• Group Discussion | • Newsletters<br>• Public Service Announcement<br>• Web sites |

### 3. Description of targeted audience

Mosquito/arthropod control agencies; federal/state environmental and public health land management agencies; extension service; public/private schools; citizens and tourists.

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

### 1. Standard output measures

**Target for the number of persons(contacts) to be reached through direct and indirect contact methods**

| | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---|---|---|---|---|
| Year | Target | Target | Target | Target |
| 2010 | 330 | 330 | 100 | 100 |
| 2011 | 350 | 350 | 100 | 100 |
| 2012 | 450 | 450 | 100 | 100 |
| 2013 | 460 | 460 | 100 | 100 |
| 2014 | 475 | 475 | 100 | 100 |

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

**Expected Patent Applications**

**2010 :** 2 **2011 :** 0 **2012 :** 1 **2013 :** 0 **2014 :** 1

### 3. Expected Peer Review Publications

| Year | Research Target | Extension Target | Total |
|---|---|---|---|
| 2010 | 5 | 1 | 6 |
| 2011 | 5 | 1 | 6 |
| 2012 | 5 | 1 | 6 |
| 2013 | 6 | 2 | 8 |
| 2014 | 6 | 2 | 8 |

## V(H). State Defined Outputs

### 1. Output Target

- 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.

**2010 :** 0 **2011 :** 1 **2012 :** 1 **2013 :** 1 **2014 :** 1

## V(I). State Defined Outcome

| 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 Target**

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.

**2. Outcome Type :** Change in Knowledge Outcome Measure

**2010 :** 50 **2011 :** 50 **2012 :** 75 **2013 :** 75 **2014 :** 100

**3. Associated Institute Type(s)**

•1890 Research

**4. Associated Knowledge Area(s)**

- 133 - Pollution Prevention and Mitigation
- 134 - Outdoor Recreation
- 135 - Aquatic and Terrestrial Wildlife
- 136 - Conservation of Biological Diversity
- 311 - Animal Diseases
- 312 - External Parasites and Pests of Animals
- 721 - Insects and Other Pests Affecting Humans
- 722 - Zoonotic Diseases and Parasites Affecting Humans
- 723 - Hazards to Human Health and Safety

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

**1. External Factors which may affect Outcomes**

- Government Regulations
- Appropriations changes
- Public Policy changes
- Natural Disasters (drought,weather extremes,etc.)

**Description**

Outcomes can be affected by weather conditions, changes in policy priorities, funding and new regulations. These factors will undoubtedly result in a concomitant change in proposed research, extension and educational activities.

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

**1. Evaluation Studies Planned**

- After Only (post program)
- Before-After (before and after program)

**Description**

A stakeholder Research Advisory Council will evaluate how well the program benefits its clientele in an annual post program appraisal. The Council will also make recommendations on research and extension priorities for the future year. This will be used to evaluate the program accomplishments/shortcomings the following year.

**2. Data Collection Methods**

- Mail
- On-Site
- Whole population
- Observation
- Telephone

**Description**

Data provided in the program annual report will be used by the Research Advisory Council to assess the programs responsiveness to clientele needs and priorities. These data will be reviewed and discussed in an annual onsite meeting. Individual Council members will complete evaluations and supply comments by email to the Council Chair. The Council Chair will formulate a consensus report and forward to the program administrators. Email and telephone calls will be employed to coordinate activities among Council members and administrators.