2013 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 accomplishments of the Florida A&M University (FAMU) planned research programs during 2013. These activities were carried out through the College of Agriculture and Food Sciences (CAFS) during 2013. 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 2013, 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 of the active program is provided below.

Viticulture and Small Fruits Research: 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 non-traditional small fruits, including chestnuts, 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 3research 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 Florida hybrid bunch grapes germplasm for disease resistance, 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 gene expressions and differential 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, invitro evaluation of strains of subepidermal cells of muscadine pericarp
for use as a source of flavonoid compounds, development of new value-added products from grapes and
small fruits and evaluation of chestnuts and non-traditional small fruits, blackberries and raspberries for
North Florida. Our patent application on the production of in-vitro strains of subepidermal cells of muscadine grapevine pericarp for use as a source of flavonoid compounds is pending and research on value-added products has yielded encouraging results culminating in the submission of three patent applications for the production of nutraceuticals. The program was also continued contributing to the teaching program through support of graduate and undergraduate student research and training. The program was also involved in a range of extension and outreach activities including: workshops, grape field days, IPM field day, seminars and a grape harvest festival. Stakeholder and public participation at these events has been strong.

Preserving Water Quality of North Florida Watersheds: The mission of the Center for Water Quality is to protect, improve, and conserve the quality and quantity of Florida's water resources; enhance sustainable water management practices and address stakeholder needs in managing and mitigating water pollution problems. During 2013, the 5 year POW under the Evans Allen funded project ended. The project focused on investigating the effects of land cover and land-use changes in the Apalachicola River Watershed on soil erosion and water quality and the biodiversity in freshwater streams within the watershed. Faculty within the Center continued to support the program by use of other resources to address the goals and objectives of the program. These include: (1) continued work on the use of the Watershed Assessment Model (WAM) which will predict nutrient loading: so far a prototype of the user interface module has been developed and FDACS, FAMU and SWET have convened workshops to determine the functionality, methodology, data requirements (input) and reporting function (output) to drive the model that will aid in the 'selection and implementation of agricultural best management practices or best management practices selection and implementation tool' specific model to Florida. (2) Through two Capacity Building Grants, we continue to (a) assess the effects of land-use practices on aquatic insect communities in ravine streams in north Florida, focusing on the effects of dam impoundment and removal on aquatic insect communities and (b) use of the Laboratory Information Management System (LIMS) which has been used to store all analytical data generated in the water quality lab. Training on the use of the LIMS database was provided to Research Assistants and Students. Also the microbiology lab which was developed through this continued, continued to be used to monitor water quality in Apalachicola river watershed and also supported some of the college activities of the 3rd Rattlers High School Summer Youth program (RATLR) which aim is to raise agricultural and technological literate students. The Faculty continue their recruitment activities and one center faculty has a project entitled "Enhancing graduate student recruitment and retention in soil and water science at Florida A&M University". The specific objectives are geared to develop and implement innovative and effective graduate student recruitment program in Soil and Water Science; broaden experiential learning opportunities for graduate students; establish better retention strategies which will lead to timely completion and finally to build a alumni network to further recruitment. Three graduate students were recruited on this project. A new course Principles of Hydrology was developed by the center with undergraduate and graduate course numbers which is now being offered. Faculty attended and participated in several conferences and symposiums along with graduate students. The Center also participated in the Viticulture annual Farm Fest day. On display from the Center was a model depicting groundwater movement in an artesian well.

Strategic Research for the Management of Invasive Pest Species: The Center for Biological Control was established in 1999 as a unique partnership between FAMU, the USDA -ARS and the USDA - APHIS. The Center conducts research on the ecologically-based management of established pests and invasive alien species; provides education and training opportunities to undergraduate and graduate students with internships scholarships, and fellowships; transfers knowledge to the public through workshops, newsletters and extension services; and strengthens national and international collaborations. In 2013, the Center began implementing its third five-year plan under the "Strategic Research for the Management of Invasive Pest Species" The Center's research 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 comprehensive, approach that includes prevention and mitigation. Should alien invasive species gain entry, then emphasis switches to early detection, eradication, and management. Thus, the strategic research on IAS ranges 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 students. During 2013, the Center hosted 24 graduate students (eight of them graduated with a MS. Degree) and 7 undergraduate students, who are actively involved in the research activities. Faculty and students have been recipients of several Awards at professional meetings (Entomological Society of America Annual meeting, Minorities in Agriculture, Natural Resources and Related Sciences, Association of Research Directors Symposium...). The Faculty was very successful in securing extramural funds to support the programs of the Center. Our patent applications on the production of fungus spores of Metarhizium to control the destructive and invasive alien pest of honey bee colonies is pending; it should provide new control avenues to beekeeping and enhance crop pollination. Center faculty also participated in several training workshops, national and international collaborations and other extension led activities.

During 2013 the work funded under the Evans-Allen program focused on two core areas: offshore research on high risk pest species and onshore management of established invasive species. Offshore research focused on generating data on surveillance, monitoring, biology, ecology and management of four high risk pest threats (Planococcus lilacinus, Rhyncophorus ferrugineus, Oxycarenus hyalinipennis, Tuta absoluta and Anastrepha grandis) in the Dominican Republic, Aruba, Curacao, Kenya, and Panama. Several mealybugs of Planococcus sp. have become important invasive pests in the Caribbean and therefore are constant threats to Florida agriculture. The coffee mealybug, Planococcus lilacinus is particulary a serious threat because of its wide range of host plants. From a country-wide survey of 131 locations in 19 provinces in the Dominican Republic and Haiti, 11 species of invasive mealybug were identifies along with the parasitoid Leptomastix dactylopii and the predators, Cryptolaemus montrouzieri and Cycloneda sanguine. Studies on R. ferrugineus were continued in Aruba and Curacao with efforts being targeted on development of trapping methods. Data on the acoustical analyses for R. ferrugineus indicated that early instar larvae were detectable in the field. Initial surveys were conducted in Kenya to document occurrence of O. hyalinipennis and to identify potential areas for conducting exploratory surveys for natural enemies. For this purpose, linkages were established with the Division of Plant Industry, Florida Department of Agriculture and Consumer Services, University of Florida, in order to obtain Caribbean and old world specimens of the cotton seed bug. Additionally, specimens of the insect were obtained from the cotton belt of from Pakistan. A population genetic study to compare specimens from these locations will provide useful information to guide future efforts on natural enemy exploration. Studies to generate data on surveillance, monitoring, biology, ecology and management two new pest threats, T. absoluta and A. grandis were initiated in Panama. A collaborative linkage was created with the University of Panama for the implementation of this research project. Other research projects include the integrated pest

management on fruits and vegetables and the biological control of the invasive weed, Hydrilla verticillata. Surveys of the Wacissa River indicated varying levels of Hydrilla infestations. For this purpose, the Hydrilla tip mining midge, Cricotopus lebetis is being reared in the laboratory for release into Wacissa River to assess its effectiveness in controlling Hydrilla.

Rural Development and Statewide Goat Research: The rural development research program is focused on providing science based research information to rural communities as well as limited resource citizens of urban communities in collaboration with community based as well as faith based organizations.

During 2013, the program was focused on community development, asset building, hunger, homelessness and climate change. In addition, an environmental education and asset 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 and acquiring assets. Participants in these meetings were able to see how the decisions they made impacted 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.

Total Actual Amount of professional FTEs/SYs for this State

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	19.5
Actual	0.0	0.0	0.0	15.7

II. Merit Review Process

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

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

2. Brief Explanation

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 CAFS 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. The five year POW modified every year to ensure it continues to meet the requirements and the needs of the program.
During 2013, 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
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- 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 the 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. 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. In addition program newsletters were mailed to stakeholders and direct contact was made through the mail, email or telephone.

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 between the research program and FAMU's extension and teaching programs continues to be 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 the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- 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 farmer and 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 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, 6) climate change as a cross cutting issue, and 7) adolescent and childhood obesity.
Report

IV. Expenditure Summary

1. Total Actual Formula dollars Allocated (prepopulated from C-REEMS)			
Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
0	0	0	1911033

2. Totaled Actual dollars from Planned Programs Inputs				
	Extension		Research	
	Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
Actual Formula	0	0	0	1077601
Actual Matching	0	0	0	621456
Actual All Other	0	0	0	0
Total Actual Expended	0	0	0	1699057

3. Amount of Above Actual Formula Dollars Expended which comes from Carryover funds from previous				
Carryover	0	0	0	227988

V. Planned Program Table of Content

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger - Viticulture and Small Fruits Research

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
201	Plant Genome, Genetics, and Genetic Mechanisms				25%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants				25%
205	Plant Management Systems				50%
	Total				100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	6.0
Actual Paid Professional	0.0	0.0	0.0	5.0
Actual Volunteer	0.0	0.0	0.0	10.0

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	397989
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	472513
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 Center conducted a wide range of viticulture research to address industry needs and concerns, and provided services to help stakeholders in the industry. the Center also conducted research in small fruits, including chestnuts, evaluating and identifying IPM practices for fruits and vegetables. The faculty were also involved in statewide extension and outreach activities as well as teaching and training graduate and undergraduate students. A summary of the activities are listed below:

*Contunied efforts develop new and improved gape hybrids for Florid usin convetionl molcular techniqs.
*Continued evaluation of advanced selections of grapes for fresh frui n wine.
*Continued evaluation of grape germplasm for disease resistance.
*Continued evaluation of best management practices for muscadine grapes.
*Evalution oIPM strtegies onsmall fruits and vegetables.
*Developmet of innovative techniques for resveratrol induction and anthocyanin production frm grapes.
*Identified muscadine genotypes with high stilbene content.
*Identified metabolic an cellulr pathwaysactivie during ripning in muscadines, including prtein coding for disease resitance, sugar metabolism, amino acids and phenolic compounds.
*Developed diseaes-free muscadine and bunch grapes trough invitro propagation

2. Brief description of the target audience

The target audience is made up of grape growers, processors (wineries), hobbyists and households who are interested in grapes, wines, and non-traditional small fruits. Small farmers, including, minorities and limited resource farmers are also our target audience.

3. How was eXtension used?

In extension and professional development, the faculty were involved in the following activities:

- Organized the Grape Harvest Festival that has attracted increasing number of attendees each year.
- Conducted vineyard visits to assist grape growers solved problems.
- Conducted workshops and seminars for grape growers, small farmers, and the local community.
- Conducted tours for farmers, grape growers, students, FAMU alumni, and industry personnel.
- Participated in undergraduate and graduate student training and development, and experiential training programs.
- Participated in youth development training programs and summer programs.
- Participated in collegiate activities relating to student recruitment.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	4000	500	130	100

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	6	6

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Hybrid seedlings from breeding program.

Year	Actual
2013	2294

Output #2

Output Measure

- Advanced hybrid selection.

Year	Actual
2013	25

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Continued industry growth - increased in new vineyards and wine production in the state.
2	Release of new cultivars (change in knowledge).
3	Release of new cultivars (change in action).
4	Release of new cultivars (change in condition).
5	Public and stakeholder participation at workshops, field days, seminars and harvest festival (change in action).
6	Public and stakeholder participation at workshops, field days, seminars and harvest festival (change in condition).

Outcome #1

1. Outcome Measures

Continued industry growth - increased in new vineyards and wine production in the state.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	24

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Florida grape and wine industry has benefit from the research and extension work done by the Center.

What has been done
New knowledge and information has been shared with stakeholders to help them improve their operations.

Results
Increased in vineyard acreage, Florida Farm Wineries and total wine production in the state.

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

Outcome #2

1. Outcome Measures

Release of new cultivars (change in knowledge).

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
No new cultivars were released

What has been done
Hybrid seeds were planted in the summer of 2013 and previous years? seedlings were evaluated.

Results
Several advanced selections were made during the year.

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

Outcome #3

1. Outcome Measures

Release of new cultivars (change in action).

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	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
201	Plant Genome, Genetics, and Genetic Mechanisms
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants
205	Plant Management Systems

Outcome #4

1. Outcome Measures

Release of new cultivars (change in condition).

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Use of contaminated planting materials has contributed to the spread of diseases in Florida.

What has been done
The foundation vineyard will help provide clean planting materials to nurseries to propagate planting materials for grape growers in Florida.

Results
Clean planting materials were provided to grape growers and researchers.

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

Outcome #5

1. Outcome Measures

Public and stakeholder participation at workshops, field days, seminars and harvest festival (change in action).

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Grape growers and small farmers were able to see results of different research projects.

What has been done
New information and materials provided to the growers.

Results
Lower disease incidence in the vineyard and cost of production. More households interested in vegetable and fruit production

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

Outcome #6

1. Outcome Measures

Public and stakeholder participation at workshops, field days, seminars and harvest festival (change in condition).

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	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
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 regulation requires that the sale of Florida wines be conducted through a licensed distributor (Three tier system). This requirement restricts the ability of Florida wineries, particularly the small wineries, to market their wines to retail stores. Small wineries are often unable to pay for the services of distributors or distributors are not interested in promoting Florida wines because of the relatively low market volume. The sale of non-Florida wines presents a formidable challenge to the local wine industry.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The evaluation results indicated that the program achieved satisfactory progress towards meeting the goals in the plan of work. Program faculty have been very productive in terms of publishing their research in reputable journals and participating in relevant scientific meetings. They have also been successful in procuring external grants from various agencies to further support the program. The breeding program continued to evaluate several advanced lines that are being prepared for release in the near future. Several important genetic markers, genes, proteins and metabolites were identified and these are expected to greatly facilitate the breeding and biotechnology efforts. A patent application on the production of in-vitro strains of sub-epidermal cells of muscadine grapevine pericarp for use as a source of flavonoid compounds is pending. However, several cosmetic products incorporating the sub-epidermal cells have been developed and are under evaluation. Research on value-added products yielded encouraging results as evidenced by the submission of four patent applications for the production of nutraceuticals. The small fruit program continued to evaluate non-traditional small fruits, including raspberries and blackberries. The results

from these evaluations will be used to make appropriate recommendations for small and limited resource farmers. Extension and outreach activities have been very successful and effective. Stakeholder and public participation in events such as workshops, grape field days, IPM field day, seminars and grape harvest festival has been high.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Climate Change - Preserving Water Quality of North Florida Watersheds

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
102	Soil, Plant, Water, Nutrient Relationships				35%
111	Conservation and Efficient Use of Water				35%
133	Pollution Prevention and Mitigation				30%
	Total				100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	4.0
Actual Paid Professional	0.0	0.0	0.0	4.2
Actual Volunteer	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	334603
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	92494
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 in the planned program include: Selection of a suitable study site representing typical soil type, cropping system and management; Quantifying historic and current land-use patterns; Collection of field data on soil erosion and nutrient loss; and, recording of aquatic biota information**.**

2. Brief description of the target audience

The target audience for the planned program include: crop producers in the Apalachicola River Basin, small and limited resource farmers, extension personnel, environmental personnel and local, state and federal agencies.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	2	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Inventory of land use/land cover patterns in the Apalachicola River Basin.
  Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Data on soil erosion and nutrient loss under irrigated and non irrigated conditions.
  Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Baseline aquatic insects data on two major water streams in the basin.
  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	Information on changing land-use patterns in the Apalachicola River Watershed.
2	Comparison of soil erosion measurements by the Mesh-bag method and the simulation results of RUSLE (the Universal Soil Loss Equation).
3	Identification of best management practices for efficient management of soil, water and nutrients.
4	Improvements of stream ecosystems.

Outcome #1

1. Outcome Measures

Information on changing land-use patterns in the Apalachicola River Watershed.

Not Reporting on this Outcome Measure

Outcome #2

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	Actual
2013	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Soil erosion and re-deposition are processes of soil degradation of croplands, a central conservation concern of all farmers and the general public with respect to sustainable land use and management. Soil erosion and re-deposition in a landscape scale has rarely been observed due to lack of a suitable field technology.

What has been done
We developed the mesh-pad technology to observe the soil erosion and re-deposition on a 220-m slope farm land and compared the results with those of the SWAT model.

Results
We compared the measured results of soil loss (and soil re-deposited) using the mesh-pad method from the 220-m slopes (2-3 %) of the 160-acre Mears Farm with the simulation results of SWAT (Revised Universal Soil Loss Equation, RUSLE, based simulation model). The measured soil loss from the first four weeks (150.1 mm total rainfall) of the peanut cultivation was 0.5 t/h vs. the SWAT simulation of 9.8 t/h. The measured soil loss of the following seven weeks (196.6 mm total rainfall) was 0.16 t/h vs. the SWAT simulation of 1.5 t/h. The reduced soil erosion during the last seven weeks of the cultivation, which was reflected both in the measured and simulated

results, was due to the much better vegetation cover of the ground. This is the first time soil loss is actually measured from a true non-obstructed field runoff condition of a 220-m slope. The comparison concluded that the SWAT simulation of soil loss has been exaggerated 10-20 times over the observed values. The re-deposition of the eroded soil on the slope, which cannot be estimated from SWAT, was 11.5 t/h for the first four weeks of the cultivation and 28.2 t/h for the last seven weeks of the cultivation. Vegetation cover did not reduce soil re-deposition but it did reduce soil loss substantially.

4. Associated Knowledge Areas

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

Outcome #3

1. Outcome Measures

Identification of best management practices for efficient management of soil, water and nutrients.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Improvements of stream ecosystems.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Our results show that the mesh-bag method can be successfully deployed to observe soil nutrient erosion under un-obstructed natural run-off field conditions of relatively large-scale field experiments. This is the first time a true field soil erosion technology has been developed to observe true soil erosion process in natural field conditions. The

development of this technology will fill a significant gap in soil and water conservation science and will provide valuable information that has been unavailable in the past for the verification, validation and calibration of soil erosion models. The biological monitoring employed in this study may be effectively used in developing watershed protection and ecosystem management strategies.

Key Items of Evaluation

The mesh-bag method to estimate soil erosion under irrigated and non-irrigated conditions provides valuable information regarding the redistribution of top soil.

The EPT (Ephemeroptera, Plecoptera, Tricoptera) Aquatic Index may be used to determine the water quality status of freshwater streams in a watershed.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

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

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
135	Aquatic and Terrestrial Wildlife				25%
211	Insects, Mites, and Other Arthropods Affecting Plants				25%
215	Biological Control of Pests Affecting Plants				25%
216	Integrated Pest Management Systems				25%
	Total				100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	4.0
Actual Paid Professional	0.0	0.0	0.0	2.0
Actual Volunteer	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	225712
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
0	0	0	56449
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 seven high risk species (Planococcus lilacinus, Rhyncophorus ferrugineus, Rhyncophorus cruentatus and Rhyncophorus palmarum, Oxycarenus hyalinipennis, Tuta absoluta, and Anastrepha grandis) was carried out or initiated in Trinidad, Dominican Republic, Curacao and Aruba, Bahamas, Jamaica and Panama with a view to generate data on biology, ecology, surveillance and control. These pests are listed as high priority threats by USDA APHIS. Research activities were conducted in collaboration with several international partners.

Onshore research: Biological control of Hydrilla verticillata. A survey of the upper 1.5 miles of the river of the Wacissa Springs Group was conducted. A descriptive scale of 0-3 was used with 0 indicating Hydrilla undetected and 3 completely choked. Survey results of the Wacissa River indicated varying levels of Hydrilla infestations. Thus, for mitigation purpose, cultures of Hydrilla were established in the laboratory from Wacissa Big Blue Spring, Wacissa #2 and Garner Spring. The Hydrilla tip mining midge, Cricotopus lebetis were reared in the laboratory for release into Wacissa River to assess its effectiveness in controlling Hydrilla. This project is conducted in collaborations with colleagues at the University of Florida.

Benefits and risks of biological control: The effectiveness of risk communication activities for entomophagous biological control agents were compiled. Data on classical and fortuitous biological control were collected for use to populate existing or new databases. These data allow the testing on hypothesis relating to safety issues.

2. Brief description of the target audience

The target audience include: federal and state biosecurity agencies, farmers, general public, extension workers and pest management specialists. For instance, the information on the invasive weed Hydrilla will be used by target fishermen and general public (who use the aquatic resources for recreation), water resource managers and private industry such as bottled water enterprises. The work on offshore pests is aimed at safeguarding US Agriculture, farmers, food and ornamental growers, the nursery industry and government agencies

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	200	500	50	1500

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

Patent Applications Submitted

Year:	2013
Actual:	2

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	3	7	10

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Electronic identification keys/tools/resources developed.

Year	Actual
2013	2

Output #2

Output Measure

- Knowledge generated on specific target pests and used for the development of contingency plans.

Year	Actual
2013	6

Output #3

Output Measure

- Analyses conduced on key issues regarding safety and specific target biological control agents studied to determine safety.

Year	Actual
2013	2

Output #4

Output Measure

- Target biological control agents introduced and established against specific insect pest or weed targets.

Year	Actual
2013	28

Output #5

Output Measure

- Undergraduate and graduate students trained through mentorship and involvement in research programs.
  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	Digital identification keys/tools/resources for the identification of invasive species utilized.
2	More effective strategies for the identification, prevention or management of invasive species.
3	Integrated pest management approaches adopted by farmers leading to greater profitability.
4	The introduction and spread of IAS minimized.
5	More effective management of aquatic weeds in first order springs.
6	Trade between the US and partners is safer through implementation of strategies to mitigate the introduction of invasive insect pests and weeds.
7	Well trained undergraduates and graduates contribute to the effective management of native and non-native pests

Outcome #1

1. Outcome Measures

Digital identification keys/tools/resources for the identification of invasive species utilized.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

More effective strategies for the identification, prevention or management of invasive species.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Florida faces a disproportionate risk from invasive pests which are a major threat to agriculture and the environment. Farmers, the general public, ornamental industry, and various state and federal agencies involved in efforts to mitigate the threats of invasive pests are concerned with these threats.

What has been done
Offshore studies are being conducted to generate knowledge that is critical for the development of mitigation measures against several pest threats. Studies on the red palm weevil (RPW),Rhynchophorus ferrugineus, in Curacao focused on development of optimal methods for operating pheromone traps and acoustically assessing infestations in individual trees. In addition, offshore studies on the coffee mealybug in the Dominican Republic provide useful insights for the development of the management strategy for Planococcus lilacinus.

Results
From a country-wide survey of 131 locations in 19 provinces in the Dominican Republic, eleven (11) species of invasive mealybug were identifies along with the parasitoid Leptomastix dactylopii and the predators, Cryptolaemus montrouzieri and Cycloneda sanguine.

Bucket traps with pheromone lures and a molasses food-bait mixture captured RPW adults reliably for about eight days. A portable, user-friendly acoustic sensor system enabled identification of larvae in individual infested trees through the use of signal processing analyses that screened out bird and wind noise. This information will assist future efforts to monitor, control, or eradicate RPW in Curacao, Aruba and nearby islands and the United States, should the pest gain entry.

4. Associated Knowledge Areas

KA Code	Knowledge Area
211	Insects, Mites, and Other Arthropods Affecting Plants
216	Integrated Pest Management Systems

Outcome #3

1. Outcome Measures

Integrated pest management approaches adopted by farmers leading to greater profitability.

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

The introduction and spread of IAS minimized.

Not Reporting on this Outcome Measure

Outcome #5

1. Outcome Measures

More effective management of aquatic weeds in first order springs.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Hydrilla, an invasive and noxious weed is considered the second most important aquatic weed world-wide behind water hyacinth. Currently, many springs and first order streams in Florida are infested with this weed. As a result, the ecosystem has degraded, and the spring and river's ecological and recreational value has drastically diminished. Thus, the understandings of the risk of spread of Hydrilla to non-infested bodies of water and methods to mitigate the risk are needed. A range of stakeholders including: fisherman, canoeists, kayakers, boaters, swimmers, scuba divers, water resource managers, private industry is affected.

What has been done
Surveys of the Wacissa River indicated varying levels of Hydrilla infestations.

A web site was established to disseminate knowledge to these groups. An awareness campaign has been mounted using brochures and other paraphernalia such as, hats, and rulers.

Results
The Hydrilla tip mining midge, Cricotopus lebetis is being reared in the laboratory for release into Wacissa River to assess its effectiveness in controlling Hydrilla.

The web site is active and is providing knowledge to these groups. Public awareness materials have also been disseminated to stakeholders.
11

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

Outcome #6

1. Outcome Measures

Trade between the US and partners is safer through implementation of strategies to mitigate the introduction of invasive insect pests and weeds.

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Well trained undergraduates and graduates contribute to the effective 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	Actual
2013	26

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
A safe agricultural system is critical to national security but U.S. crops, a cornerstone of our nation's economy, are vulnerable to attack. Events at the beginning of the new millennium further complicated issues relating to bio-security. More than ever, a plethora of actions are required in order to effectively safeguard our nation. Thus, more innovative and scientific programs must be developed in order to increase the number of well trained professionals to fill critical positions in research and regulatory functions in various agencies

What has been done
A central component of our work on invasive species is to train both graduate and undergraduate students to undertaken such professional careers. These students are involved in experiential learning, attending and presenting their research results at professional meetings.

Results
During the 2013 academic year, eight graduate students received their M.S .degree and two other students received the B.S. degree.

4. Associated Knowledge Areas

KA Code	Knowledge Area
135	Aquatic and Terrestrial Wildlife
211	Insects, Mites, and Other Arthropods Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Government regulations regarding globalization of trade and transport has multiplied concerns of introduction of invasive species. This threat has increased as trade has grown and so have the complexities of trade especially in agricultural products. Increase in temperature improves the 13 survival and rapid spread of arthropods pests to new environment where they become very destructive and difficult to control.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The overall implementation of the research program in the Center for Biological Control was evaluated by the Center Advisory Council in December 04, 2013 and found to be progressing satisfactorily.

The Coffee mealybug, Planococcus lilacinus is particulary a serious threat because of its wide range of host plants. A country-wide survey in the Dominican Republic revealed the following species of mealybug: Dysmicoccus boninsis, Dysmicoccus brevipes, Dysmicoccus neobrevipes, Ferrisia virgata, Hypogeococcus pungens, Paracoccus marginatus, Planococcus citri, Planococcus minor, Pseudococcus jackbeardsleyi, Puto barberi and Saccharicoccus sacchari. The parasitoid Leptomastix dactylopii was found attacking mealybugs in several genera including Dysmicoccus, Planococcus, Paracoccus and Puto. In addition, insect predators such as Cryptolaemus montrouzieri and Cycloneda sanguine were also present in the areas surveyed, as well as the predatory Dipteran larvae: Syrphidae. Fortunately, the destructive species of mealybug, P. lilacinus was not found during the country wide survey.

Red palm weevil: Studies on Rhyncophorus ferrugineus were continued in Aruba and Curacao with efforts being targeted on development of trapping methods. The preliminary results of the acoustical analyses for R. ferrugineus indicated that early instar larvae were detectable in the field. This information is useful should the pest become introduced into the United States. In addition, data indicated that no R. cruentatus or R. cruentatus were captured in the survey in Aruba and these two species did not appear to be current threats to palms on the island

Hydrilla; The development of a biological control strategy for the invasive weed, Hydrilla verticillata was continued. Surveys of the Wacissa River indicated varying levels of Hydrilla infestations. For this purpose, the Hydrilla tip mining midge, Cricotopus lebetis was reared in the laboratory for release into Wacissa River to assess its effectiveness in controlling Hydrilla.

Key Items of Evaluation

Coffee mealybug: This invasive species (Planococcus lilacinus) is serious threat to US agriculture because of its wide range of host plants. It is a very detrimental pest in the Carribbean and its introduction in the US will have detrimental consequences. As a result, there is an urgent need to study the biology and dynamics of the pest populations and design management strategies.

Red palm Weevil: The red palm weevil is a major threat to the United States. Knowledge from this program will be beneficial to prevention/management programs. This is particularly relevant given the current concerns about the possible introduction of this pest

in California.

Hydrilla: This study not only evaluates the efficacy of biological control agents for control and the management of the invasive aquatic weed in the Wacissa Springs and Wacissa River, but also, it provides experiential learning opportunities for students.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Climate Change - Rural Development and Climate Change Research Program

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
608	Community Resource Planning and Development				50%
803	Sociological and Technological Change Affecting Individuals, Families, and Communities				50%
	Total				100%

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	1.0
Actual Paid Professional	0.0	0.0	0.0	1.0
Actual Volunteer	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	119297
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

The rural development and climate change project is an integrated effort. The asset building and climate change joint venture will enhance the economic base of the community while incorporating environmental procedures that will result in high productivity. The following activities will be undertaken during the implementation of the planned program: Research and demonstration studies and needs surveys and focus groups, experimental studies, training of students, workshops and conferences.

2. Brief description of the target audience

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

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	150	200	75	150

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

Patent Applications Submitted

Year:	2013
Actual:	0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Increase producer/community participation in rural development activities

Year	Actual
2013	8

Output #2

Output Measure

- Number of producers/communities adopting proposed interventions

Year	Actual
2013	4

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Improved environmental stewardship
2	A functional network mobilizing and supporting organizations and coalitions focused on asset building for people of all income levels.
3	Improved procedures and techniques for preserving natural resources and conservation widely adopted.

Outcome #1

1. **Outcome Measures**

Improved environmental stewardship

Not Reporting on this Outcome Measure

Outcome #2

1. **Outcome Measures**

A functional network mobilizing and supporting organizations and coalitions focused on asset building for people of all income levels.

Not Reporting on this Outcome Measure

Outcome #3

1. **Outcome Measures**

Improved procedures and techniques for preserving natural resources and conservation widely adopted.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

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)

Evaluation Results

The programs/activities provided opportunities in those targeted audiences to improve their acquisition of services and or facilitate their engagement with their respective audiences. It is expected that the results will show neighborhood change over a five year period. Policy makers at the local, state and federal level may use the results to

demonstrate neighborhood economic change. The program activities also provided an opportunity for grass roots community based organizations and universities to be engaged in the planning as well a data collection phase of a proposed federal black belt initiative.

Key Items of Evaluation

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Sustainable Energy - Bioenergy Research

☐ Reporting on this Program

Reason for not reporting

Florida A&M University will not report on this program this year.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	2.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

The key activities to be implemented under the program include: Development and evaluation of different plant species as potential biofuels feedstock. These will include, halophytes, hardwood species, algae and Camelina. The program will coordinate with extension to provide outreach for small farmers in relevant areas of sustainable energy development including for instance training on "how to make

biodiesel." It is anticipated that the program will also providing experiential learning opportunities for students.

-

2. Brief description of the target audience

Small farmers in the North Florida region.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	2	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Species of plants evaluated

Year	Actual
2013	0

Output #2

Output Measure

- Extramural grants to support bioenergy research

Year	Actual
2013	0

Output #3

Output Measure

- Partnerships with clientele

Year	Actual
2013	0

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

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

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	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
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Childhood Obesity - Research

☐ Reporting on this Program

Reason for not reporting

Florida A&M University will not report on this program this year.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	1.5
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

Faculty research projects will focus on finding ways to prevent or reduce incidence of childhood obesity through: development of diverse choice of health food, food product development, community

engagement, nutrition and hunger and nutrition education and behavior.

2. Brief description of the target audience

Target audience will include: low to moderate income families, school, nutrition and health professionals, community leaders and local and state level agencies.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	1	1	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of program participants reached to improve their food resource management

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of youth and adolescents documented to have adopted healthy eating or more active lifestyles.
2	Number of children, adolescent and adult participants documented to have reduced chronic disease indicators associated with obesity

Outcome #1

1. Outcome Measures

Number of youth and adolescents documented to have adopted healthy eating or more active lifestyles.

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	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
{No Data}	null

Outcome #2

1. Outcome Measures

Number of children, adolescent and adult participants documented to have reduced chronic disease indicators associated with obesity

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	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
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Food Safety - Research

☐ Reporting on this Program

Reason for not reporting

Florida A&M University will not report on this program this year.

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	1.0
Actual Paid Professional	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
Actual Volunteer	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

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

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 Matching	1890 Matching	1862 Matching	1890 Matching
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}
1862 All Other	1890 All Other	1862 All Other	1890 All Other
{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}	{NO DATA ENTERED}

V(D). Planned Program (Activity)

1. Brief description of the Activity

The FAMU food safety program will gather and analyze data on small organic farmers to capture their fruit and vegetable growing practices and post-harvest handling. It will also formulate food safety education modules that will be tailored towards reaching the small organic growers. These research based

modules will be used by extension personnel. The program will also develop protective washes for fruits and vegetables specifically for use on tomatoes, cantaloupes and green leafy vegetables focusing on gram negative bacteria.

2. Brief description of the target audience

Target audiences will include, small to medium sized limited resource producers, processors, retailers and consumers.

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	0	0	0	0

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

Patent Applications Submitted

Year: 2013

Actual: {No Data Entered}

Patents listed

{No Data Entered}

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Specific food chains assessed to identify sources of contamination

Year **Actual**

2013	0

Output #2

Output Measure

- Number of producers/processors adopting new practices/processes

Year	Actual
2013	0

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Reduction in the incidences of food borne illnesses

Outcome #1

1. Outcome Measures

Reduction in the incidences of food borne illnesses

2. Associated Institution Types

- 1890 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	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
{No Data}	null

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}