

2017 University of Florida and Florida A&M University Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

The University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) is a federal-state-county partnership dedicated to developing knowledge in agriculture, human and natural resources, and the life sciences, and enhancing and sustaining the quality of human life by making that information accessible. While extending into every community of the state, UF/IFAS has developed an international reputation for its accomplishments in teaching, research and extension. Because of this mission and the diversity of Florida's climate and agricultural commodities, UF/IFAS has facilities located throughout Florida -- 14 academic departments and two schools based at the main campus in Gainesville, 18 research facilities, and an Extension office in each of Florida's 67 counties.

The research mission of UF/IFAS, conducted by the Florida Agricultural Experiment Station, is to discover new scientific knowledge, encourage innovative study and create applications based on sound science -- delivering solutions to the challenges facing agriculture, natural resources and life sciences in the State of Florida, our country and the world. Specifically, its goals include:

- Building agricultural systems research that is effective in preserving the diversity, building the strength and ensuring the development and economic sustainability of Florida's agriculture.
- Facilitating research within UF/IFAS that focuses on natural resources and environmental systems and emphasizes stewardship of the land and values of diversity in ecological systems. Programs serve to discover the underlying science of our natural resources while finding novel applications to preserve, protect and manage Florida's ecosystems.
- Focusing on human systems research and agriculture's impact on society and human behavioral issues related to food, natural resources, the environment and agriculture.

By seeking ways to enable the success of individual faculty and empowering multidisciplinary teams, we will achieve these goals and will strive to identify and meet future opportunities to further our research mission. For example, several initiatives at the university and UF/IFAS will shape our future work.

In 2013 the University of Florida kicked off a Preeminence effort designed to launch UF as an international leader in many areas. This effort has resulted in, among other things, the hiring (to date) of 92 nationally recognized faculty members to maximize UF's impact to better serve students, Floridians, the nation and the world. Ten of those Preeminence hires are in UF/IFAS. The Preeminence plan identifies four priorities that will allow UF to directly address complex social issues:

1. Sustainability with a focus on biodiversity; food security, safety and distribution; plant genomics; and renewable energy and storage.
2. Health and wellness with a focus on drug discovery and development; genomic medicine; mathematical modeling of diseases; metabolomics; mucosal immunology; neuroscience and the brain; infectious and zoonotic diseases; skeletal muscle biology; smart polymer nanomedicines; and management/control of human and veterinary infectious agents.
3. Information systems with a focus on autonomous systems; informatics; cybersecurity; human centered computing; and STEM translational communication research (i.e., what goes into a successful translation regarding how, when, where, and to whom to deliver potentially life-saving information in the areas of health and science).

4. Learning and society with a focus on African studies; creative writing; historical and environmental archaeology; law; Latin American development; materials innovation; online learning; optimizing early childhood interventions; and social network analysis.

A major initiative of the Preeminence program is the Challenge 2050 project to address how the world will sustain the health and well-being of more than 9.6 billion people. Scientists predict we will no longer be able to produce enough food to feed Earth's human population by 2050. Food production, energy consumption, and environmental impact are all critical and will require leaders and problem solvers who can think broadly and boldly. Challenge 2050 brings interdisciplinary students and faculty, industry partners and policymakers together to prepare for the future. Challenge 2050 Project also provides training and professional development opportunities for building industry leadership capacity.

UF/IFAS recently launched the Institute of Global Food Systems (IGFS) with the addition of three Preeminence hires. These researchers, and future hires, bring a great deal of expertise and creativity and will work alongside existing faculty already engaged in projects that support the institute's goals. IGFS focuses on a comprehensive approach; examining the large, systemic picture with endless combinations of factors, each with the ability to make a food system succeed or collapse.

This past year UF/IFAS Research launched a seed fund grant opportunity to address climate change and Florida's agricultural, natural resources and human systems. In 2016 we awarded over \$1.2 million to ten faculty members from eight different departments. The goal is to seed activities that will increase our visibility and leadership in the area of climate change.

The UF/IFAS Extension mission is to develop educational programs targeting critical issues throughout Florida. These will be achieved by continuing to partner with clientele, volunteers, county governments, and public and private agencies. Teams of Extension and research faculty and staff statewide focus on seven key areas:

1. Increasing the sustainability, profitability and competitiveness of agricultural and horticultural enterprises
2. Enhancing and protecting water quality, quantity and supply
3. Enhancing and conserving Florida's natural resources and environmental quality
4. Producing and conserving traditional and alternative forms of energy
5. Empowering individuals and families to build healthy lives and achieve social and economic success
6. Supporting urban and rural community resources and economic development
7. Preparing youth to be responsible citizens and productive members of the workforce

Florida Extension (UF and FAMU) has delivered science-based information to foster healthy people, a healthy environment, and a healthy economy for more than 100 years. Florida's economy is based on growth, tourism and agriculture. During the recession our population growth was largely flat, but growth has picked up recently and in 2014 the state passed New York to become the third most populous state at an estimated 19.9 million. Florida's population is estimated to reach 27.2 million by 2045.¹ With this growth comes the need for new information on food and fiber production, water conservation, natural resource protection, alternative energy and conservation, community resource development, and individual and family well-being. Extension will continue to improve the lives of Floridians as we face the challenges of tomorrow and beyond.

The goals and initiatives outlined above are based on long-range, strategic planning processes by Florida Extension (UF and FAMU), resulting in the Extension Roadmap (2013-2023) and the Research Roadmap (2009, updated in 2013). While these program areas are designed to meet state needs, many directly relate to the five NIFA priorities. A Community Input Survey similar to the one conducted in 2011 will be conducted in 2016 and analyzed in 2016/2017 to assess whether our strategic plan is still meeting the needs of Florida's citizens.

¹ Rayer, S. and Wang, Y. 2016. Florida Population Studies, Vol 49, Bulletin 74. University of Florida Bureau of Economic and Business Research. Online: <http://tinyurl.com/hnzk322>.

UF/IFAS (1862) Extension

In 2014 a task force was formed to look at the staffing needs of Florida Extension and provide

recommendations for organizational changes as it relates to staffing. Another task force called Revenue Enhancement was formed at the same time and is tasked with identifying and evaluating new or expanded funding sources and opportunities. The recommendations of these task forces will be released in 2015 and implementation will likely take several years. However, we do not expect this to result in significant impact to this Plan of Work.

FAMU/CAFS (1890) Extension

Although extension in Florida is made up of a collaboration between the 1862 UF/IFAS Extension and the 1890 FAMU/CAFS Extension (and together they are the Florida Cooperative Extension Service), they will be reported separately as much as possible to provide a clearer picture of the strong programs and impact FAMU and UF/IFAS have individually on Florida and its citizens. The Cooperative Extension Program is the extension educational component of Florida A&M University's land grant mission. The FAMU Cooperative Extension Program, housed in the College of Agriculture and Food Sciences (CAFS), provides research-based educational information and direct technical assistance to improve the quality of life for limited resource citizens. As a result, countless residents in Florida have been enriched through the positive impact of significant information shared by specialists and agents through the Cooperative Extension Program. Reaching out to serve farmers, rural and urban families, elderly, youth, entrepreneurs, small business owners, and underserved communities continues to be a rich tradition of the FAMU Cooperative Extension Program.

FAMU/CAFS is particularly focused on issues related to the following Extension programs which they reach through the statewide, regional and county initiatives:

- Agriculture and Natural Resources:
 - Agribusiness Management and Marketing, including Small Farm to School and Beginning Farmer
 - Animal Health
 - Community and Urban Agriculture, including Arboriculture & Landscape Extension
 - Small-Scale Crop and Livestock Enterprises, including Small Ruminants and Protected Agriculture
 - Sustainable Agricultural Systems
- Community Resource Development
 - Entrepreneurship
 - Community Capacity Building
- Family and Consumer Science
 - Expanded Food and Nutrition Education Program
 - Family Resource Management
- 4-H/Youth and Volunteer Development

FAMU (1890) Research

Florida is one of the fastest growing states, currently ranking fourth in population growth after California, New York and Texas. Most of this growth has been taking place in major urban areas, but agriculture continues to play a significant role in Florida's economy. Florida's agriculture is both diverse and unique in terms of: farm size, crops grown or livestock maintained, and economic investments. The changing demographics of the state and the consequent needs of our stakeholders dictate that we develop appropriate research programs which would address the key challenges to sustainable development. FAMU's research programs have a particular focus to the needs of small to medium scale, part-time, or limited resource farmers. Sixty percent of Florida's farms fit the definition of a "small farm," which makes FAMU's mission particularly crucial in enhancing the overall economy of the state.

The Plan of Work was prepared after receiving inputs from various sources through surveys, interviews, and direct contacts with stakeholders. The major areas of need are captured in the following seven planned programs:

1) Viticulture and Small Fruits Research: provide leadership in the development of the grape and wine industry in Florida through quality research and statewide extension and outreach activities that address the needs and concerns of stakeholders.

2) Preserving Water Quality of North Florida Watersheds Research: administered through the Center for Water and Air Quality focused on water quality and quantity issues in Florida Panhandle.

3) Strategic Research for the Management of Invasive Pest Species: implemented by the Center for Biological Control involves a multidisciplinary approach ranging from prevention to management and restoration, with specific areas including offshore pest mitigation, onshore development of ecologically based management of invasive insect pests and weeds, development of electronic diagnostic tools and resources for insect identification, assessment of the economic impact of IAS and improving the safety of biological control.

4) Small Farm Production, Marketing, and Rural Economic Development Research: supports science-based information, as well as economic and marketing information, for limited resource farmers and rural and urban citizens and communities to promote their economic and physical well-being in research areas including crop and livestock production/marketing systems, family resource management and community economic development.

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

Year	Extension		Research	
	1862	1890	1862	1890
2017	435.0	27.0	320.0	24.0
2018	435.0	27.0	320.0	24.0
2019	435.0	27.0	320.0	24.0
2020	435.0	27.0	320.0	24.0
2021	435.0	0.0	320.0	0.0

II. Merit Review Process

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

- Internal University Panel
- External Non-University Panel
- Combined External and Internal University Panel
- Expert Peer Review

2. Brief Explanation

UF/IFAS (1862) and FAMU/CAFS (1890) Merit Review

A formal merit review is conducted annually of each Extension team's current Plan of Action (PoA) by Extension evaluation specialists and program leaders and coordinated through UF's Program Development and Evaluation Center (PDEC). The evaluation specialists may or may not be directly involved with a particular initiative but understand both logic model theory and the long-range plan for Florida Extension. The review panel provided extensive feedback and recommendations for improvement to the teams to the respective program leader and the Extension team leader(s). Results of the merit review are also provided to Extension deans. Teams are expected to update their plans based on the merit review recommendations and all PoAs are posted to the PDEC website. Team members are encouraged to discuss and document the research resource needs for the next year, including the need for new research. UF/IFAS Extension conducts county program reviews, five per year, to insure its educational programming is effective and meets local needs. Teams consisting of state specialists, county faculty (from other counties) and Extension administrators and/or unit leads visit a single county for 2-3 days. Presentations and meetings are held with county Extension staff and faculty as well as county administrators, stakeholders, and clientele. Each review team submits a written report (including SWOT analysis and recommendations for improvements) to Extension deans, program leaders, and the appropriate CED and DED. DEDs select up to three priority items from the report for CEDs to work on over the following year. CEDs are required to complete a one-year follow-up report demonstrating the improvements or changes made to these priority areas. Reports are sent to Extension deans, program leaders, and DEDs and shared with unit leaders as needed. A state specialist is assigned to manage these program reviews and actively analyzes the data to look at statewide trends and patterns.

UF/IFAS (1862) Scientific Peer Review

All USDA funded projects must be submitted to the USDA/NIFA using the REEport system and must be peer reviewed by three researchers, with final approval from the unit leader. Peer reviewers may be a faculty member of the same department, another department at the university, or from another institution. Upon completion of the peer review and unit leader's approval, the project is reviewed at the research dean's office for USDA compliance and submitted to NIFA for their approval. REEport projects are also evaluated annually by the unit leader and program leaders via the Annual Progress Report, as well as the individual faculty's report of accomplishments and a plan of work for the next year. Research faculty at UF/IFAS may be evaluated on the traditional criteria such as quality and quantity of peer-reviewed publications and sponsored research as well as the evaluation data collected to measure the effectiveness of the transfer of research-based information to the community.

FAMU (1890) Research Peer Review Process

All USDA funded projects must be submitted to the USDA/NIFA using the REEport system and must be peer reviewed with final approval from the unit leader. In order to ensure maintenance of a high quality and accountability of its research program, FAMU has implemented a revised process for the review and monitoring of research projects funded under the Evans-Allen program. Project ideas are developed from the bottom up, with ideas being generated by individual or groups of faculty in response to stakeholder needs. Center Advisory Councils play an important role in identifying priorities. Project ideas will fall within the priority areas identified in the university's strategic plans. Additionally, the project ideas will also link 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 will be 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 will be monitored through annual evaluation which will include review by Center Advisory Councils as appropriate. Upon completion of the peer review and unit leader's approval, the project is reviewed by the Research Director for USDA compliance and submitted to NIFA for their approval. REEport projects are also evaluated annually by the unit leader and program leaders via the Annual Progress Report, as well as the individual faculty's report of accomplishments and a plan of work for the next year.

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 Extension and 1862 Research conduct periodic long-range or strategic planning processes. Following each planning cycle, which involves input by stakeholders from the grassroots to the state and national level, critical needs are identified, prioritized and separated into strategic, statewide program areas. Critical issues that may or may not fall within these areas but requiring additional research are provided to research or other university units for further discussion and action. Research administration and faculty are actively involved in any Extension long-range planning process.

The latest effort resulted in the Florida Extension Roadmap 2013-2023 which identifies seven statewide Initiatives and several issue-based Priority Work Groups within these initiatives. Extension is organized into teams based on this structure and to address the critical needs identified during the long-range planning process. Teams collaborate with one another as most statewide programs include cross-cutting issues that require the involvement of many teams. Teams also work with other states when similar programs or needs are identified. These teams include faculty with research, teaching and Extension appointments. Both UF/IFAS and FAMU/CAFS faculty are included on these teams as well as some agricultural commodity and industry representatives.

Research also works closely with stakeholders, advisory boards, regulatory agencies and international agencies to monitor other issues and critical needs that have been revealed as problems or potential. Projects are then developed that may be state, regional, national or international in composition.

FAMU (1890) Research

Projects are developed by individual or groups of faculty in response to stakeholder needs, and will fall within the priority areas identified in the university's strategic plans and . Additionally, the project ideas will also link to priority areas for USDA and/or the state of Florida. Research works closely with stakeholders, regulatory agencies and international agencies to monitor other issues and critical needs that have been revealed as problems or potential. Project are developed by individual or groups of faculty in response to stakeholder needs and will fall within the priority areas identified in the university's strategic plans, as well as link to priority areas for USDA and/or the state of Florida. The projects developed may be state, regional, national or international in composition.

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

As part of the long-range planning process that resulted in the Extension Roadmap 2013-2023, efforts were made to identify and assess the needs of under-served and under-represented populations through grassroots listening sessions and a community input survey. Issues are identified both by these populations and by the organizations and services that work with and for them. Priority Work Group teams are provided with all of this information as they develop statewide programs around these issues. Each Priority Work Group creates a statewide Plan of Action (PoA) each year. Target audiences are a component of that plan and special emphasis is placed on including under-served and under-represented populations in finding the best research-based solutions to critical issues.

FAMU (1890) Research

Florida A&M University, an 1890 Land-Grant university, has traditionally worked with the under-served and under-represented groups involved in agriculture and rural development. Research programs are developed in close association with its extension component, and are geared toward meeting the specific needs of small/limited resource audiences through research activities in:

- vineyard and orchard management (site identification and production)
- sustainable soil and water management initiatives and best management practices to help in mitigation of non-point source pollution.
- prevent introduction of invasive alien species and management of established species through development of ecologically based management strategies.
- agricultural production and marketing systems and other rural issues and approaches appropriate and relevant to these audiences.

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

Each Priority Work Groups creates a statewide Plan of Action (PoA) that is based on a logic model format. The plans identify short- to long-term outcomes and expected longer-term impacts. The teams working on these plans consist of both county Extension faculty and state specialists (i.e., state faculty with an Extension appointment and most of whom also have a Research appointment). Each year, all PoAs undergo a merit review. The results of the review are then used by the Priority Work Group teams to evaluate and update their plans. Program leaders and Initiative team leaders are actively involved in this process to ensure the quality and appropriateness of the outcomes and impacts, as well as other aspects of the PoA.

UF/IFAS continues to work with the Extension teams to develop several statewide surveys in Qualtrics (online survey software) that will provide a set of statewide data on key indicators for the critical issues identified in our 2013-2023 Extension Roadmap as well as the NIFA priorities. We are exploring the use of Tableau data visualization software to create data dashboards, for internal and external use, to demonstrate and track impact and outcomes.

FAMU (1890) Research

A wide range of expected outcomes and impacts are envisaged and while some of these are/ can be generalized, others will be specific to individual planned programs. The outcomes and impacts will also be measurable either in qualitative or quantitative terms. Expected outcomes of the planned programs include: production and evaluation of new grape hybrids annually, identification and release of new grape cultivars, production and distribution of clean vines, greater profitability and productivity for North Florida agricultural producers, better crop production and management information, enhanced information on changing land-use patterns, soil erosion and management practices and their possible effects on water quality, better animal production and management information, reduced costs, enhanced environmental stewardship, reduced use of chemicals (fertilizers and pesticides), more

effective safeguarding against invasive alien species and further integration of research, teaching and extension programs.

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

UF and FAMU will continue to work together on the Extension teams mentioned above, as well as continuing to foster collaborative teams of county Extension faculty, researchers and state specialists to tackle key statewide issues including those that come arise unexpectedly such as the Gulf oil spill in 2010. The integration of Research and Extension leads to better solutions because all aspects of a problem are considered and faculty are better informed about what is going on in the state or region. Multi-state programs offer many opportunities for greater efficiency through the sharing of resources, a broader knowledge base, a more diverse audience reached, and less duplication of effort.

FAMU (1890) Research

The planned program will be reviewed annually 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 three research centers bring a number of scientists together to address critical issues through greater synergy which tends to be more effective in solving problems.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages 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 of selected individuals from the general public
- Other (Contact traditional under-served clientele)

Brief explanation.

To insure that UF/IFAS and FAMU/CAFS are conducting high quality research and educational programs that address critical state needs, the following methods are utilized to obtain stakeholder input:

- Periodically, Florida Extension (UF and FAMU) conducts a comprehensive statewide needs assessment. In 2011-12, we held listening sessions in every county with clientele and stakeholders; 10 regional meetings to discuss the findings of the listening sessions with our faculty, Extension and Research administrators and unit leaders; conducted a Delphi study of key stakeholders and opinion leaders; sought input from stakeholders and the public using focus groups; and conducted an online survey of nearly 4,300 Floridians. Underserved and under-represented groups were identified by

faculty and strongly encouraged to participate in the listening sessions and online survey. We will conduct a new Community Input survey in 2016.

- Each of the 67 county Extension offices has a county-wide advisory committee and each county faculty member is expected to have at least one program advisory committee. County Extension Directors (CED) and District Extension Directors (DED) review the membership of the committees as part of the faculty member's annual review. It is expected that the overall advisory committee is made up of members that represent county demographics and that each of the program advisory committees' membership resembles the demographics of the target audience they serve.

- UF/IFAS has 16 academic departments and 12 Research and Education Centers (REC) and each has an advisory council representing various agricultural commodities, natural resource organizations, community and business leaders, etc.

- The Florida Agricultural Council, Inc. (FAC) is a non-profit foundation that consists of five regional advisory councils (RAC) that meet at least once a year and provides a forum to discuss societal trends, educational and technological issues, and economic pressures that affect agricultural and natural resource entities in Florida.

- A Customer Satisfaction Survey is conducted annually of 12-14 counties on a five-year rotation. Questionnaires are mailed to Extension program participants, asking them to rate their experience and the information provided. The county-level data are provided to the Extension dean, DEDs and CEDs for those counties, including information on positive or negative trends and findings. CEDs are encouraged to share the data with their faculty and staff. The Florida Department of Education is also provided a copy of the report.

- County Program Reviews are conducted in five different counties each year to insure the educational programming is effective and meets the needs of the county. County administrator(s) and stakeholders from each of the key program areas are invited to participate and provide feedback about the quality, effectiveness, and relevance of the Extension programs offered in the county.

- The Center for Public Issues Education (PIE Center) at the University of Florida conducts several interdisciplinary projects that measure the knowledge, behaviors and attitudes of consumers and constituents as it relates to agriculture and natural resources. The PIE Center then shares its findings with the public and stakeholders, including Florida Extension, through educational outreach and training programs using cutting-edge technology. The PIE Center uses online panels purchased through Qualtrics (online survey tool) and oversamples for minorities to ensure their opinions are accurately represented in the survey results.

- The university-wide Challenge 2050 project, led by UF/IFAS Agricultural Education and Communication faculty, was recently created to develop human capacity to meet the needs associated with a population projected to exceed 9.6 billion by 2050. By bringing together interdisciplinary students and faculty, industry partners, and policymakers, and through innovative dialogue, initiatives, coursework, research, and advocacy efforts, we create a foundation for addressing this challenge.

FAMU (1890) Research

FAMU/CAFS has two academic divisions, including seven program areas, and one Research and Extension Center (REC) with advisory committees representing various agricultural industries, community and business leaders. Research advisory committees help to identify ways to encourage participation in long range planning. 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, Florida Farm Bureau, Florida Fruit and Vegetable Association, Florida Nursery Growers Association, CARET representatives, Florida Water Management District representatives, Florida Mosquito Control Association are represented in the different research program/center Advisory Councils. Through participation in these Councils as well as in other forums, 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. A Research Forum will be held to encourage stakeholder participation and facilitate interaction with

researchers. Other public events are conducted to gather information from stakeholders. Whenever it is feasible, efforts will be made to coordinate relevant activities with extension to avoid duplication.

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 Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

We identify stakeholders through a variety of formal and informal means, including relationships with Extension clientele, partnerships with collaborating organizations or companies, input from county administrators and other elected officials, advertising and social media, and suggestions from advisory committees and commodity groups. In addition to statewide efforts to identify key issues and stakeholders through our long-range planning process (as described in the first narrative), counties and districts as well as academic departments and Research and Education centers, may conduct their own listening sessions, needs assessments, and surveys to identify stakeholders.

FAMU (1890) Research

Attempts will be made to include as many diverse groups as possible. This activity will be coordinated with the extension program in order to avoid duplication of effort. 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

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals
- Meeting with the general public (open meeting advertised to all)
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Survey of selected individuals from the general public

- Other (Through county extension agents)

Brief explanation.

See previous responses for Florida Extension and 1862 Research..

1890 Research

Stakeholder input will be collected throughout the year in informal and formal meetings. The research center advisory councils are critical since they include representatives from different stakeholder groups. Regular meetings of these Councils will be held on the campus where research results will be presented and stakeholders' input will be requested. Input will also be collected from other stakeholders identified through churches, schools, recreation centers, food-banks, and healthcare providers. Additionally and as appropriate, researchers from the university will make presentations at meetings/conferences organized by different stakeholder groups. As appropriate, specific efforts will be made to coordinate these activities with the extension program in order to avoid duplication of effort and redundancy.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process
- In the Action Plans
- To Set Priorities

Brief explanation.

Listening was at the core of the Florida Extension Roadmap planning process. Florida Extension actively sought diverse viewpoints regarding Florida's future through listening sessions, interviews, focus groups, and surveys that involved a wide range of citizens, educators, health care providers, state agencies, industry/trade associations, businesses, local governments, community leaders, and faculty members. This process identified a wide range of key issues that affect Florida's people, its economy, and its environment. As a result of this effort, we used that information to map out our statewide initiatives in our Extension Roadmap 2013-2023, continue to use input to guide our newly created strategic staffing and revenue enhancement plans, and shape our new urban Extension initiative. We will continue to use the Roadmap to guide our annual review and update of our statewide teams' action plans.

Input received from stakeholders through other formal and informal methods (described earlier) will be used by administrators and faculty to evaluate and update the Extension and the Research Roadmaps as needed. The Florida Ag Council remains a very important source of input on organizational and programmatic initiatives. At the county level, stakeholder input is considered when making adjustments to planned programs, staffing, finances, administration, etc.

FAMU (1890) Research

Stakeholder input is used in overall program assessment, planning and resource allocation. Research priorities and recommendations will be developed from the

proceedings of the College advisory council. The input is used in determining the direction and emphasis of the entire research program, including modifying existing projects, but also in identifying new issues that need to be addressed and hiring of new staff. The input is also factored in the development/revision of center/program strategic plans, and guides the development of extramural grants and other complimentary activities.

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Global Food Security and Hunger
2	Food Safety
3	Climate Change and Natural Resources
4	Sustainable Energy
5	Childhood Obesity
6	Family, Youth and Community
7	Strategic Research for the Management of Invasive Pest

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

2. Brief summary about Planned Program

Agriculture, horticulture, natural resources and related industries are vital components of Florida's economy. Florida's 47,500 farms produce nearly 300 different commodities on more than 9.5 million acres. Total economic contributions for agriculture, natural resources and related food industries broadly defined to include allied inputs and services, manufacturing and distribution, and nature-based recreation, were more than 2 million jobs, representing 21% of the state workforce, and \$120 billion in value added impacts, representing 15% of state Gross Regional Product. These industries are extremely diverse. More than 90% of Florida's producers are small farmers, including many limited-resource farmers. It is imperative that our agricultural and horticultural producers continue to be economically and environmentally sustainable, as these enterprises provide the products that increase our quality of life and provide access to safe and nutritious food.

Florida's agriculture and horticulture producers face increasing challenges, including rapidly changing technologies, local-to-global markets, climate extremes, varying consumer demands, and increasing regulations. Hence, Florida Extension's educational programs must provide farmers, ranchers, and producers with the research-based knowledge they need to improve sustainability and profitability. Adoption of new technologies, new production practices, and alternative crops developed by UF/IFAS Research, along with new marketing options and a trained labor force will result in viable agricultural and horticultural production that continues to be sustainable and profitable and contributes to the state's economy.

The number of farm and food entrepreneurs is increasing in rural and urban communities. Most communities do not have established food systems that can deliver food products from the farms to the consumers. Food system development includes farmers' markets, community gardening, food hubs, processors, and wholesale/direct market development. Food system development also includes programs like Farm to School and Farm to Institution.

Florida Extension and UF/IFAS research address these broad NIFA issues related to Global Food Security and Hunger: (1) enhanced capacity of a sustainable global food system including new varieties, animals and technologies; (2) more sustainable, diverse and resilient food systems across scales; (3) improved national and global capacity to meet growing food demands; and, (4) increased access to safe and affordable food.

1890 Research

Small Farm Production, Marketing and Rural Economic Development Research supports science-based information, as well as economic and marketing information, for limited resource farmers, rural and urban citizens and communities to promote their economic and physical well-being. The program works collaboratively with horticulturists, social scientists, agricultural economists, rural development specialists and extension to generate relevant data and to provide relevant outreach support to targeted clientele. The research findings are used to support extension personnel in providing appropriate and relevant programs and services. The program priorities are community development, asset building, food security and small farm production and marketing. Research areas will include crop production and marketing systems, small-scale livestock production and marketing systems and community economic development.

Viticulture and Small Fruit Research at the Center for Viticulture and Small Fruit Research at is committed to the development and growth of Florida's viticulture industry. "Improving the quality of Florida's grapes and wines" is a our state mandate (Florida Viticulture Policy Act, Ch599FS) and our mission (www.famu.edu/CAFS/Viticulture). The Viticulture and Small Fruit Program was established by Florida State Legislature in 1978 under the Viticulture Policy Act (Section 599.001-599.0013, Florida Statute) in the College of Agriculture and Food Sciences at Florida A&M University. The primary mission of the Center was to conduct research and provide service that will enable the Florida grape and wine industry to become a viable industry. This mission was later expanded to include serving the needs of small and limited resource farmers in North Florida. The program was initially house on the campus of Florida A&M University but later moved to its present location on Mahan Drive in 2001. Currently, the program covers the following areas:

- Grape Breeding and Genetics
- Biotechnology
- Viticulture and Product Development
- Small Fruit & Vegetable IPM Program
- Bioprocessing and Vinification
- Extension, Outreach and Public Service
- Vineyard and Small Fruit Management
- Student Training and Development
- Florida A&M University National Clean Plant (NCPN) Center for Grapes

The Center will continue to focus on biotechnology and genetic enhancement of such traits that will lead to further development of Florida grapes (muscadine and Florida hybrid bunch grapes) with superior characteristics for fresh fruit, wine and value-added products and phytochemicals from grapes. Biochemical and molecular markers/agents that will enhance disease resistance/tolerance for major diseases, vineyard management practices that will increase production efficiency and fruit quality for grapes and small fruits will be evaluated. Greater linkage and coordination with extension will be sought in order to enhance public outreach. The viticulture faculty will also continue to make student training a major component of their research programs by providing financial and scholarly support to them.

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	5%	5%	10%	0%
202	Plant Genetic Resources	5%	5%	3%	0%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	5%	5%	3%	0%
204	Plant Product Quality and Utility (Preharvest)	5%	5%	3%	10%
205	Plant Management Systems	5%	5%	12%	20%
206	Basic Plant Biology	5%	5%	5%	0%
211	Insects, Mites, and Other Arthropods Affecting Plants	5%	5%	10%	5%
212	Diseases and Nematodes Affecting Plants	5%	5%	20%	5%
213	Weeds Affecting Plants	5%	5%	3%	0%
215	Biological Control of Pests Affecting Plants	5%	5%	3%	0%
302	Nutrient Utilization in Animals	5%	5%	3%	10%
303	Genetic Improvement of Animals	5%	5%	5%	0%
306	Environmental Stress in Animals	5%	5%	2%	0%
307	Animal Management Systems	5%	5%	2%	20%
403	Waste Disposal, Recycling, and Reuse	5%	5%	2%	0%
503	Quality Maintenance in Storing and Marketing Food Products	5%	5%	3%	20%
601	Economics of Agricultural Production and Farm Management	5%	5%	2%	10%
602	Business Management, Finance, and Taxation	5%	5%	2%	0%
603	Market Economics	5%	5%	2%	0%
605	Natural Resource and Environmental Economics	5%	5%	5%	0%
	Total	100%	100%	100%	100%

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

1. Situation and priorities

The USDA ERS report "Household Food Security in the United States in 2013" (Coleman-Jensen et al., 2014) estimates 14% of Florida's households are considered food insecure, a figure similar to the national average. Over four million Floridians are considered food insecure -- 19% of adults and 28% of children do

not have access to nutritious and/or affordable food. One of the factors influencing food security in Florida is that historically the state's food systems were designed to leverage our seasonal advantage in the fresh produce market nationally and internationally. But system development (including value-added processing, aggregation, regulation and distribution infrastructure) is limited within state. With a growing number of small farms (more than 90% of all farms now have annual sales of under \$250,000), and the resulting direct to consumer sales, this system development is more critical and complicated than ever. Integrated pest management (IPM) is particularly challenging due to the mild climate and global agricultural markets that cause accidental or intentional introduction of invasive pests.

1890 Research

Small Farm Production, Marketing, and Rural Economic Development

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, loss of 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. The rural areas have a much higher population of older people and their needs are unique in terms of assistance programs. At the same time, federal as well as state agencies have identified declining farm population, especially, limited resource farmers as a major area of concern for the nation. This project will help the targeted communities to become much more sustainable while also taking advantage of production and marketing information and assistance to improve their economic situation.

Viticulture and Small Fruit Research

Florida wine and grape industry has been one of the nation's great agricultural success stories capable to generate economic impact close to 1 billion ("The Economic Impact of the Wine and Grape Industries in Florida", 2010 Report of the **Stonebridge Research Group LLC**).

Pierces disease is the key limitation for majority of the Southeastern U.S. and commercial grape growing is solely based on native muscadines and Florida hybrid bunch grapes. Florida has the 2nd highest wine consuming population in the country and consumed about 57.5 million gallons but produced about 350,000 gallons of wine annually. This situation offers great economic potential and opportunities for the state to develop a viticulture industry. Because of Pierce's disease caused by the bacterium *Xylella fastidiosa*, it is not economically feasible to grow the European grapes (*Vitis vinifera*) such as Merlot, Chardonnay, Syrah, and Cabernet Sauvignon that flourish in California and other major wine growing areas. Only those grape species such as muscadines (*Muscadinia rotundifolia*) and Florida hybrid bunch grapes (Subgenus *Euveitis*) that are tolerant to the disease are able to thrive in the hot and humid conditions of Florida and the southeastern region. The Florida grapes (muscadines and Florida hybrids) and wines are unique with their own taste, flavor and aroma that are different from the traditional European grapes. Over the years, breeding and research have resulted in new cultivars with improved fruit and wine quality that has helped the industry grow. However, in spite of these improvements, the industry still faces major challenges that need to be addressed to sustain growth and development. Industry/stakeholder needs to be addressed are as follows:

- Development of muscadine cultivars with superior characteristics - size, improved taste, color and shelf-life for fresh fruit and wine.
- Development of Florida hybrid bunch cultivars for red wine with improved taste color, and shelf-life.
- Enhancement of nutraceutical properties and utilization of value-added products from muscadine grapes.
- Identification of suitable small fruits as alternative crops for small farmers in North Florida.
- Identification of best management practices for grapes and small fruits that will help to improve production efficiency and fruit quality.

2. Scope of the Program

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

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

1. Assumptions made for the Program

- Animal and plant systems will continue to be critical to the economic viability of the state.
- Global markets and warm climate will contribute to high level of invasive pests.
- Small farms will constitute a major portion of all farms in Florida.
- Stakeholders will be engaged in programming related to global hunger and security.
- Participants see Extension as a trustworthy source of information and utilize the information they receive.
- Resources will continue to be available from county, state and federal sources.

1890 Research

- Florida will continue to grow, creating unique problems and challenges which will need to be addressed by the state land grant universities especially in terms of meeting the demand for food and fiber.

2. Ultimate goal(s) of this Program

- Increasing the sustainability, profitability, and competitiveness of agricultural and horticultural enterprises:
 - Maintain and enhance production systems of all types and scales by conducting research and improving knowledge and adoption of production efficiencies and effectiveness, new technologies, good agricultural practices, integrated pest management, and environmental stewardship.
 - Help producers and growers protect the economic sustainability of their operations by conducting research and teaching about agricultural business planning, financial management, and succession planning.
 - Improve Floridians' knowledge about food systems, agricultural production, environmental services, and the environment through public education.

1890 Research Programs

- Reduce food insecurity, increase sustainability of limited income farm families and improve quality of life for Florida citizens while mitigating the challenges posed by economic challenges in production and marketing.

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
2017	150.0	15.0	100.0	10.5
2018	150.0	15.0	100.0	10.5
2019	150.0	15.0	100.0	10.5
2020	150.0	15.0	100.0	10.5
2021	150.0	0.0	100.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research studies and experiments that will enhance or protect animal, plant, and food systems.
- Conduct genetic research on new forages, improving beef/forage integrated production systems, identifying animals with better pathogen resistance, and applying the latest technologies to select and breed animals that perform best under Florida's climactic conditions.
- Transfer research discoveries to Extension faculty through in-service trainings and EDIS publications.
- Maintain consistent communication with stakeholders to learn and prioritize needs.
- Fund, design and implement websites, conferences, curricula, fact sheets, workshops, field days, demonstrations, and programs to support a robust and resilient Florida food system.
- Publish research findings, program outcomes, and decision support tools.
- Provide leadership at local, regional, state and national levels to disseminate research findings and facilitate communication and foster current and new partnerships.

1890 Research

The small production, marketing and rural economic development project is an integrated effort. The asset building and research projects with other state and local agencies 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.

The viticulture and small fruit research project is also an integrated effort and will provide for extension and outreach, student/professional training and development and in addition the following:

- Conventional breeding, evaluation and selection of hybrid vines for fresh fruit and wine.
- Embryo rescue, molecular, and mutagenic transformation to develop seedless muscadines.
- Identification, isolation, screening, characterization, and validation of genetic markers of viticulturally important genes.
- Identification, isolation, screening and validation of metabolites and proteins relating to growth function, fruit and wine quality, and disease tolerance.
- Stressed induced biochemical and molecular changes in grapes.
- Evaluation and understanding of antioxidant capacities of phytochemicals in grapes.
- Understanding the effects of grape phytochemicals in preventing diseases and obesity.
- Functional expression of flavonoid nutraceuticals in grapes.
- Identification of management practices for grapes and small fruits.

- Evaluation of non-traditional small fruits, including blackberries and raspberries.
- Evaluation, screening and production of 'clean vines' for industry.

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

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations • Other 1 (telephone calls) 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • TV Media Programs • Web sites other than eXtension • Other 1 (radio)

3. Description of targeted audience

- Producers
- Commodity Associations
- Owners/Operators
- Managers/Supervisors
- Workers/Laborers
- Allied Industry Representatives
- Farmers
- Regulatory agencies
- Local, state and federal government and policymakers
- Tribal government
- International governing bodies
- Harvesting/Packing/Processing/Distribution
- Harvesters/Packers
- Processors
- Food handlers
- Distributors/Transporters
- Retailers
- Consumers
- Buyers
- Entrepreneurs
- Importers/Exporters
- Youth and 4-H (K-12)
- Youth educators
- Extension faculty and professional staff

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Improve procedures and techniques of farming operations that will sustain small farm operations
 - Improve economic and marketing competitiveness for small and limited resource farmers.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.
2	Improved national and global capacity to meet growing food demands.

Outcome # 1

1. Outcome Target

Number of participants adopting best practices and technologies resulting in increased yield, reduced inputs, increased efficiency, increased economic return, and/or conservation of resources.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 212 - Diseases and Nematodes Affecting Plants
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 215 - Biological Control of Pests Affecting Plants
- 307 - Animal Management Systems
- 306 - Environmental Stress in Animals
- 205 - Plant Management Systems
- 403 - Waste Disposal, Recycling, and Reuse
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 303 - Genetic Improvement of Animals
- 302 - Nutrient Utilization in Animals
- 204 - Plant Product Quality and Utility (Preharvest)
- 206 - Basic Plant Biology
- 601 - Economics of Agricultural Production and Farm Management
- 202 - Plant Genetic Resources
- 603 - Market Economics
- 213 - Weeds Affecting Plants
- 605 - Natural Resource and Environmental Economics
- 602 - Business Management, Finance, and Taxation
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 211 - Insects, Mites, and Other Arthropods Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research
- 1890 Extension

Outcome # 2

1. Outcome Target

Improved national and global capacity to meet growing food demands.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management
- 403 - Waste Disposal, Recycling, and Reuse
- 603 - Market Economics
- 306 - Environmental Stress in Animals
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 302 - Nutrient Utilization in Animals
- 202 - Plant Genetic Resources
- 503 - Quality Maintenance in Storing and Marketing Food Products
- 605 - Natural Resource and Environmental Economics
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 212 - Diseases and Nematodes Affecting Plants
- 307 - Animal Management Systems
- 206 - Basic Plant Biology
- 303 - Genetic Improvement of Animals
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 602 - Business Management, Finance, and Taxation
- 204 - Plant Product Quality and Utility (Preharvest)

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

Natural disasters such as tropical storms and hurricanes are common occurrences in this state. Severe weather conditions such as drought frequently lead to large-scale fires. Florida also has other weather extremes such as floods leading to large-scale damage especially along coastal regions and rivers that can impact natural resource and environmental research studies.

Florida also has three international shipping ports: Miami, Jacksonville and Tampa. Florida also has six international airports. Florida also had an estimated 105 million tourists in 2015, including more than 11 million from overseas. It has been estimated that this international influx into Florida has made us the entry point of one new invasive pest, plant or disease each week.

Florida is still being impacted by the economic situation. Public higher education in Florida lost more than 50% of state funding and has been impacted by other losses caused indirectly by the economic down turn. Issues related to Medicaid are also expected to impact us heavily. Changes in state, county and federal appropriations can also affect the outcomes related to the Florida land-grant mission.

Because of limited resources in Florida and continuing devolution Extension programs can always be affected by changing public and governmental priorities.

In addition for **FAMU** another significant factor is the economy which has the capacity to influence appropriation changes and public policies and regulations. If there are fewer dollars the competition from other priorities and programs will become stronger and can affect the outcome of the program. Competing social and political influences on food systems, including the GMO debate. Societal concerns about animal welfare, beef healthfulness and environmental impacts of animal agriculture may impair long-term viability of Florida animal production systems.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The Florida land-grant colleges (both UF and FAMU) understand the value of evaluation in our annual program plan. Methods of evaluation are included as part of the annual faculty activity plan of work and report of accomplishment process (Workload). This information is collected as part of the logic model used in our Florida system and will be available for the NIFA reports of accomplishment on a yearly basis.

Short-term outcomes collected in this area include:

1. Increased understanding of the merits of newly developed cultivars and how they impact market demand, production efficiency, and profitability.
2. Increased understanding of how current, innovative production practices impact profitability and environment.
3. Increase use by animal producers of more efficient agricultural technologies.
4. Increase understanding and engaging producers in local, state and federal regulations that affect the animal industry.
5. Increase diversification of animals in production.
6. Improve utilization of feed, fuel, fertilizers and pharmaceutical drugs and chemicals.
7. Improve knowledge of marketing strategies and local food systems.

Medium-term outcomes include:

1. Producers select new crops and varieties that will improve crop rotation, production efficiency, and profitability.
2. Increased grower adoption of new cultural practices for Florida crops to improve profitability and sustainability.

3. Increase animal production output per production unit
4. Improve precision of resource utilization and adoption of good agricultural practices (i.e., BMPs, BQA) that result in increased income and/or decreased costs.
5. Increase diversity of Florida agricultural products and businesses.
6. Higher consumer confidence.
7. Improve compliance with food regulations.
8. Increase business starts.
9. Adoption of profitable marketing and risk management strategies.
10. Voters and elected officials use research-based information from Florida Extension when making policy decisions.

Long-term outcomes include:

1. Optimize sustainable production, harvest and handling practices that result in higher economic returns while minimizing environmental impact.
2. Optimize profitability of animal production systems within natural and environmental constraints.
3. Increase in agricultural sector jobs.
4. Increase market penetration and market share in national and global arena.
5. Increase in secure food households.
6. Alternative markets for commodities.
7. Increase contribution of the agricultural sector to the state GDP and employment.
8. Policy decisions impacting Florida agriculture and natural resources are research-based.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Food Safety

2. Brief summary about Planned Program

Although the Dietary Guidelines for Americans includes food safety recommendations when preparing and eating foods to reduce the risk, foodborne illnesses continue to be a major health concern, especially for persons with compromised immunity such as infants, young children, older adults, and persons with certain medical conditions. Fresh produce is crucial to a healthy diet, but in the last three decades, the numbers of foodborne illness outbreaks associated with fresh produce has increased. In Florida, the majority of foodborne illnesses are attributed to commercial food service and foods prepared in private homes. Many home food processors are using practices that put them at high risk for foodborne illness and economic losses due to food spoilage. Extension programs are targeted in areas that we feel can make the biggest difference: professional food service managers/operators, professional food workers/handlers, consumers, and volunteers. The Master Food and Nutrition Volunteer Program was developed for the state of Florida with four tracks: Nutrition; Food Safety, Food Preservation and Home Canning, and Food Preparation.

Other Extension programs are geared at small farms, including organic farms. To ensure safe food production and supply, food safety practices such as Good Agricultural Practices (GAP) must be followed and these include safe irrigation methods, natural fertilizers, worker health and hygiene and proper post-harvest handling and storage.

Research in the area of food safety involve many of the commodities important in Florida, including seafood and aquaculture products, citrus, fresh fruits and vegetables, and dairy products. Other research areas include microbiology, food processing, quality and sensory aspects of foods, and composition and chemistry of foods. Due to Florida's susceptibility to invasion by exotic tropical and subtropical arthropods, nematodes, and weeds, UF/IFAS researchers are working on pesticide toxicology related to food safety and environmental contamination. Emerging pathogens are increasingly important.

3. Program existence : Mature (More than 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
216	Integrated Pest Management Systems	10%	10%	13%	0%
311	Animal Diseases	10%	10%	18%	0%
312	External Parasites and Pests of Animals	10%	10%	3%	0%
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	10%	10%	3%	0%
315	Animal Welfare/Well-Being and Protection	10%	10%	3%	0%
504	Home and Commercial Food Service	10%	10%	0%	0%
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	10%	10%	10%	0%
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	10%	10%	30%	0%
721	Insects and Other Pests Affecting Humans	10%	10%	15%	0%
722	Zoonotic Diseases and Parasites Affecting Humans	10%	10%	5%	0%
	Total	100%	100%	100%	0%

V(C). Planned Program (Situation and Scope)**1. Situation and priorities**

Food safety challenges faced by the United States continue to grow. The CDC estimates that 1 in 6 Americans gets sick from foodborne diseases each year, and 3,000 die as a result. Florida is among the top five states in the overall numbers of foodborne illnesses, and the majority of foodborne illnesses are attributed to commercial food service and foods prepared in private homes. A majority of foodborne illnesses in the US are due to microbial causes. Several factors have contributed to the current trends. There have been significant changes in food production, supply and consumption. Recent years have seen a tremendous growth in consumption of raw or minimally processed food that is often associated with foodborne illness. At the same time there has been an increase in new or emerging germs, toxins, and incidences of antibiotic resistance. The number of farm and food entrepreneurs is increasing in rural and urban communities. Florida ranks 9th among states in organic product sales according to the USDA's 2011 Certified Organic Production Survey. Imported food continues to make up a growing share of the food supply. The USDA reports that between 2009 and 2014, agricultural imports to the U.S. increased by 56%, from \$70B to \$109B. Because of the recent economic downturn and the new Florida Cottage Food Rules, home food preservation is returning as a popular activity across the state and Floridians are now allowed to sell certain homemade products under at farmer markets.

2. Scope of the Program

- In-State Extension
- In-State Research

- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

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

1. Assumptions made for the Program

- Research discoveries by Florida scientists will reduce the outbreaks of food pathogens and increase food safety.
 - Finding new and better practices related to food safety can reduce the number of cases of foodborne illness in Florida.
 - The growth in organic farming, home-based food production, and eating of fresh and local produce will continue or rise.
 - Professional workers in the food services industry will continue to need certification training.
 - Stakeholders will be engaged in programming related to food safety.
 - Participants see Extension as a trustworthy source of information and utilize the information they receive.
- Resources will continue to be available from county, state and federal sources.

2. Ultimate goal(s) of this Program

- Improve Floridians' ability to handle food safely by providing education and intervention for consumers, families, and food handlers.
- Improve Florida farmers' ability to produce and distribute safe food.
- Expand knowledge and technology related to food safety through research studies.
- All faculty working with plant and animal systems will be effective food safety trainers and possess a working knowledge of the Federal Food Safety Modernization Act (FSMA) and related legislation.

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
2017	26.0	0.5	100.0	0.0
2018	26.0	0.5	100.0	0.0
2019	26.0	0.5	100.0	0.0
2020	26.0	0.5	100.0	0.0
2021	26.0	0.0	100.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research studies and experiments that will enhance or protect Florida's food systems and supply.
 - Transfer research discoveries to Extension faculty through in-service trainings and EDIS publications.
 - Maintain consistent communication with stakeholders to learn and prioritize needs.
 - Fund, design and implement websites, conferences, curricula, fact sheets, workshops, field days, demonstrations, and programs to support food safety in Florida.
 - Conduct one-on-one consultations with citizens, farmers, etc.
 - Publish research findings, program outcomes, and decision support tools.
 - Provide leadership at local, regional, state and national levels to disseminate research findings and facilitate communication and foster current and new partnerships.

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

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations 	<ul style="list-style-type: none"> • Newsletters • Web sites other than eXtension

3. Description of targeted audience

- Professional food service workers/handlers
- Professional food service managers/operators
- Volunteers who work with food
- Consumers
- Home canners and food preparers
- Small farmers
- Organic farmers
- Agribusiness
- Food entrepreneurs

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Increase number of viable technologies to improve food safety.
2	Increase adoption of safe food handling practices at the individual, family, community, production, and supply system level.

Outcome # 1

1. Outcome Target

Increase number of viable technologies to improve food safety.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 721 - Insects and Other Pests Affecting Humans
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 504 - Home and Commercial Food Service
- 216 - Integrated Pest Management Systems
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources
- 315 - Animal Welfare/Well-Being and Protection
- 314 - Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
- 312 - External Parasites and Pests of Animals
- 722 - Zoonotic Diseases and Parasites Affecting Humans
- 311 - Animal Diseases

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Increase adoption of safe food handling practices at the individual, family, community, production, and supply system level.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 504 - Home and Commercial Food Service
- 712 - Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

Natural disasters such as tropical storms and hurricanes are common occurrences in this state. Severe weather conditions such as drought frequently lead to large-scale fires. Florida also has other weather extremes such as floods leading to large-scale damage especially along coastal regions and rivers that can impact natural resource and environmental research studies.

Florida also has three international shipping ports: Miami, Jacksonville and Tampa. Florida also has six international airports. Florida also had an estimated 105 million tourists in 2015, including more than 11 million from overseas. It has been estimated that this international influx into Florida has made us the entry point of one new invasive pest, plant or disease each week.

Florida is still being impacted by the economic situation. Public higher education in Florida lost more than 50% of state funding and has been impacted by other losses caused indirectly by the economic down turn. Issues related to Medicaid are also expected to impact us heavily. Changes in state, county and federal appropriations can also affect the outcomes related to the Florida land-grant mission.

Because of limited resources in Florida and continuing devolution Extension programs can always be affected by changing public and governmental priorities.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The Florida land-grant colleges (both UF and FAMU) understand the value of evaluation in our annual program plan. Methods of evaluation are included as part of the annual faculty activity plan of work and report of accomplishment process (Workload). This information is collected as part of the logic model used in our Florida system and will be available for the NIFA reports of accomplishment on a yearly basis.

- Change in knowledge about basic food safety, and intent to change behavior, as measured by pre/post evaluation.

- Behavior change related to food safety practices as measured by 24 hour recall and behavior checklists.
- Pass rates on state food safety certification exam and/or ServSafe® certification.
- Agricultural enterprises and the general public will identify food safety risks, response guidelines and best practices.
- Agricultural enterprises implement mitigation practices and obtain third party certification when required.
- The number of operations compliant with current state and federal food safety legislation will be tracked.

At **FAMU** the evaluation of this program will be done jointly with cooperative extension program. The evaluation studies will combine routine monitoring and documentation together with before and after evaluations between the various groups involved with the program. The evaluation studies will be combine routine monitoring and documentation together with before and after evaluations between the various groups involved with the program.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Climate Change and Natural Resources

2. Brief summary about Planned Program

Educational programs teach Floridians about natural resource conservation, public issues, and community resource efficiency. Programs in this area provide in-depth training for volunteers to assist in our educational efforts. Floridians and local governments will acquire a better understanding of their individual and collective role in the state's effort to enhance and protect natural resources. Florida researchers study many aspects of environmental quality issues involving water, soil, urban and agricultural lands, and aquatic systems. For example, researchers using agricultural systems modeling to predict future crop yields, supplies and prices, can help account for the potential effects of global climate change on pest and disease pressures and may evolve to ensure food security under variable and changing climate conditions. They are also working on projects aimed at helping to protect and restore the state's springs system, developing technology to help farmers measure their water usage, and creating new mobile apps that help citrus, strawberry, and urban turfgrass producers conserve water by irrigating only when it's needed. Using science-based information and technology, Extension faculty educate Florida's diverse audiences about ways to address environmental impacts and assist local communities in improving environmental quality.

UF established a campus-wide interdisciplinary Water Institute in 2006 to address Florida issues while being recognized for providing solutions, science, and education for national and global water resource problems. The UF Water Institute works closely with UF/IFAS Extension. Southeast Climate Extension (SCE), supported by USDA-NIFA, is developing new decision-support and educational resources, designing training opportunities, and learning with stakeholders about how to make agriculture more climate-resilient and more efficient. This effort involves faculty throughout the southeast US and integrates Extension and research communities to facilitate transfer of technologies and information about research gaps and needs of the industry. Important partnerships between SCE and FAMU have resulted in FAMU adding climate education to their list of services for minority and limited resources farmers in Florida and having a designated "Climate Extension" specialist. The Florida Climate Institute (FCI) is a multi-disciplinary network of national and international research and public organizations, scientists, and individuals concerned with achieving a better understanding of climate variability and change. The FCI has eight member universities, including UF and FAMU.

1890 Research (Preserving Water Quality of North Florida Watersheds)

The Center for Water and Air Quality strives to promote stewardship information for managing, protecting and conserving water resources through education, research and outreach activities; to reduce air quality issues and to serve as a resource for providing solutions for emerging and current water and air quality problems in Florida and globally. Watersheds in the US are confronted with several problems addressing both quality and quantity of the nation's water supply. These include degradation from land use practices, nutrient loading of surface water bodies, impairment of ground and surface water due to leaching and runoff of fertilizers and other chemicals used in agriculture, landscaping and home gardening activities and impacts of climate change which may result in periods of drought or flood conditions.

Some of these problems are caused by human activities often through neglect or lack of knowledge. These problems are not only costly to solve but may have socioeconomic implications such as adverse effects on human and animal health and well-being, loss of agricultural productivity and reduction in ecological biodiversity and sustainability of the natural resource base. Examples of these problems include non-point source pollution of the State's groundwater system from agricultural activities carried out in Georgia. Another problem is impairment of the Apalachicola River Basin (in north Florida) due to

diminishing in-stream flow, resulting from rapid urban growth in its headwaters area. Understanding the occurrence of these problems will enable us to develop and implement strategies for their prevention and or control. Activities to be carried out for the management and prevention include on - farm and on-station research, monitoring of water bodies, streams, rivers, characterization of riverine aquatic fauna, dynamics of aquatic ecosystems and impairment of soil and water quality by soil erosion and leaching due to land use and management practices. Results of the research will provide valuable information which farmers, students, extension agents, policy makers and other stakeholders may use to reduce problems of water quality and quantity in respective watersheds.

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
101	Appraisal of Soil Resources	0%	0%	10%	0%
102	Soil, Plant, Water, Nutrient Relationships	20%	20%	15%	20%
104	Protect Soil from Harmful Effects of Natural Elements	0%	0%	5%	0%
111	Conservation and Efficient Use of Water	20%	20%	10%	20%
112	Watershed Protection and Management	20%	20%	10%	15%
123	Management and Sustainability of Forest Resources	10%	10%	10%	0%
132	Weather and Climate	0%	0%	5%	0%
133	Pollution Prevention and Mitigation	10%	10%	10%	20%
134	Outdoor Recreation	0%	0%	5%	0%
135	Aquatic and Terrestrial Wildlife	10%	10%	10%	10%
136	Conservation of Biological Diversity	10%	10%	10%	15%
	Total	100%	100%	100%	100%

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

1. Situation and priorities

Florida's natural resources and environment are vital to a strong economy and sustainable communities. The natural environment is directly connected to climate change, tourism, sustainable community development, human health, and jobs. Natural resources must be conserved and enhanced to develop and support a strong local economy and mitigate risks associated with climate variability and change.

Pressure on our natural resources varies widely across Florida. Pressures include the loss of natural areas, an increase in urban development, the use of energy and water resources, and growing impacts on marine ecosystems. For communities to flourish Florida researchers and Extension must actively manage finite natural resources and develop tools and strategies to minimize environmental impacts.

Water plays a critical role in sustaining Florida's environment and economic vitality, which are keys to a high quality of life. Water quality problems have been associated with highly urbanized areas and with agricultural, horticultural, and industrial land uses. Water shortages are not uncommon in Florida. Compounding this problem is the state's projected population growth, which will demand an extra 150 gallons of water per day for each additional resident. In the long term, Florida will rely greatly on water use efficiency, conservation, desalination, and reclaimed water to assure a sufficient future water supply. Florida must enhance and protect its domestic water supply while also meeting the water requirements of agriculture, horticulture, tourism, and industry, as well as the state's 19 million inhabitants and its natural systems, all without placing undue pressure on a finite resource. To achieve the outcome of maintaining plentiful and safe water for all, Florida Extension programming must continue to provide educational programs that result in behavior change, including improved management and use of the latest technology and information developed by Florida researchers to increase water conservation and decrease pressure on our resources.

2. Scope of the Program

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

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

1. Assumptions made for the Program

- Climate change will continue to be a major area of concern in the state and nation.
- Changes in knowledge and behavior with regard to water and land use can help reduce factors associated with climate variability and change.
 - Water and natural resources will continue to be critical to the economic viability of the state.
 - More effective ways of measuring and mitigating the effects of weather and climate on agriculture and natural resources can be developed.
 - Through research we can identify ways to monitor and forecast the effects of climate on crops, pastures, and rangelands.
 - Volunteers will continue to be trained as Master Naturalists.
 - Stakeholders will be engaged in programming related to water, natural resources, and climate change.
 - Participants see Extension as a trustworthy source of information and utilize the information they receive.
 - Resources will continue to be available from county, state and federal sources.

2. Ultimate goal(s) of this Program

- Conserve Florida's finite freshwater resources by conducting research and developing technologies, and teaching rural, suburban and urban audiences how to use less water.
- Improve the quality of Florida's water resources through research studies and developing technologies, and by teaching target audiences how to implement agricultural best management practices (BMPs), Green Industries BMPs, Florida-Friendly Landscaping principles, and low impact development standards.
- Improve Floridians' knowledge about water allocation, use, quality, and conservation through public education.
- Improve community decision making relative to natural coastal resources and policies by providing scientific and economic information on the consequences of various options.
- Develop and sustain natural resource entrepreneur opportunities by teaching stakeholders how to start and maintain a business with focus on natural resources-related jobs.
- Improve environmental quality through research and by teaching citizens about the relevance and value of natural resources to Florida's economy.
- Reduce damage to Florida agriculture through the development of advanced forecasting and monitoring devices that predict changes in weather patterns.

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
2017	90.0	1.5	40.0	0.0
2018	90.0	1.5	40.0	0.0
2019	90.0	1.5	40.0	0.0
2020	90.0	1.5	40.0	0.0
2021	90.0	0.0	40.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research studies and experiments that will enhance or protect Florida's environment and natural resources.
- Fund, design and implement websites, conferences, curricula, fact sheets, workshops, field days, demonstrations (e.g., beach cleanups, restoration projects, fish descending methods), and programs to support climate change, natural resources and water initiatives.
- Conduct one-on-one consultations including field visits, with citizens, farmers, etc.
- Transfer research discoveries to Extension faculty through in-service trainings and EDIS publications.
- Maintain consistent communication with stakeholders to learn and prioritize needs.
- Publish research findings, program outcomes, and decision support tools.
- Provide leadership at local, regional, state and national levels to disseminate research findings and facilitate communication and foster current and new partnerships.

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

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● Web sites other than eXtension

3. Description of targeted audience

- Green industry professionals
- Residents
- Residential communities
- Homeowners associations
- Urban property owners and managers
- Developers
- Homeowners
- Government officials
- Elected officials
- Tour providers
- Biologists
- Commercial and recreational fishers
- Producers and growers
- Large landowners
- Farmers
- Regulatory agencies
- Non-governmental agencies
- Local, state and federal government, planners and policymakers
- Entrepreneurs
- Volunteers
- Youth and 4-H (K-12)
- Youth educators
- Extension faculty and professional staff

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Development of new knowledge and technologies.
2	Enhance adaptive capacity to climate change.
3	Increase water conservation.
4	Improve Florida's natural resources and environment through the use of trained volunteers.

Outcome # 1

1. Outcome Target

Development of new knowledge and technologies.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 112 - Watershed Protection and Management
- 134 - Outdoor Recreation
- 101 - Appraisal of Soil Resources
- 135 - Aquatic and Terrestrial Wildlife
- 133 - Pollution Prevention and Mitigation
- 102 - Soil, Plant, Water, Nutrient Relationships
- 136 - Conservation of Biological Diversity
- 111 - Conservation and Efficient Use of Water
- 104 - Protect Soil from Harmful Effects of Natural Elements

4. Associated Institute Type(s)

- 1862 Research

Outcome # 2

1. Outcome Target

Enhance adaptive capacity to climate change.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 101 - Appraisal of Soil Resources
- 123 - Management and Sustainability of Forest Resources
- 112 - Watershed Protection and Management
- 135 - Aquatic and Terrestrial Wildlife
- 132 - Weather and Climate
- 111 - Conservation and Efficient Use of Water

- 102 - Soil, Plant, Water, Nutrient Relationships
- 136 - Conservation of Biological Diversity
- 134 - Outdoor Recreation

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

Outcome # 3

1. Outcome Target

Increase water conservation.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Improve Florida's natural resources and environment through the use of trained volunteers.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 135 - Aquatic and Terrestrial Wildlife
- 123 - Management and Sustainability of Forest Resources
- 111 - Conservation and Efficient Use of Water
- 133 - Pollution Prevention and Mitigation
- 112 - Watershed Protection and Management
- 136 - Conservation of Biological Diversity
- 102 - Soil, Plant, Water, Nutrient Relationships

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

Natural disasters such as tropical storms and hurricanes are common occurrences in this state. Severe weather conditions such as drought frequently lead to large-scale fires. Florida also has other weather extremes such as floods leading to large-scale damage especially along coastal regions and rivers that can impact natural resource and environmental research studies.

Florida also has three international shipping ports: Miami, Jacksonville and Tampa. Florida also has six international airports. Florida also had an estimated 105 million tourists in 2015, including more than million from overseas. It has been estimated that this international influx into Florida has made us the entry point of one new invasive pest, plant or disease each week.

Florida is still being impacted by the economic situation. Public higher education in Florida lost more than 50% of state funding and has been impacted by other losses caused indirectly by the economic down turn. Issues related to Medicaid are also expected to impact us heavily. Changes in state, county and federal appropriations can also affect the outcomes related to the Florida land-grant mission. Because of limited resources in Florida and continuing devolution Extension programs can always be affected by changing public and governmental priorities.

For **FAMU** the most significant factor is the economy which has the capacity to influence appropriation changes and public policies and regulations. If there are fewer dollars the competition from other priorities and programs will become stronger and can affect the outcome of the program.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The Florida land-grant colleges (both UF and FAMU) understand the value of evaluation in our annual program plan. Methods of evaluation are included as part of the annual faculty activity plan of work and report of accomplishment process (Workload). This information is collected as part of the logic model used in our Florida system and will be available for the NIFA reports of accomplishment on a yearly basis.

Some short-term outcomes include:

- Residents, homeowners associations, builders and developers, agricultural stakeholders, urban property owners and Green Industry professionals will demonstrate increased awareness, knowledge gain and intent to adopt or change practices as taught through the various educational programs.
- Florida LAKEWATCH continues to recruit and train citizen scientists/volunteers to monitor the water chemistry of Florida's aquatic resources.
- Participants increase knowledge in irrigation techniques, methods to reduce stormwater runoff, and selecting plants for low water usage and savings.
- Participants can accurately identify what watershed they live in and where it ultimately drains, where there drinking water comes from (local perspective)

Some medium-term outcomes include:

- Farmer and producers will implement more efficient irrigation methods.
- Green Industry BMP attendees will adopt practices.
- Identification of trends regarding nutrient concentrations that are decreasing/increasing.
- Participants reporting monetary savings due to adoption of Florida Friendly Landscaping or Best Management Practices.

Some long-term outcomes include:

- Reduced water usage. Decreased water demand based on data from water management districts.
- Reduced crop water stress with optimum water applications as measured with soil moisture sensors.
- Improved water quality by reducing non-source pollution from urban sources. Verified using industry benchmark reports from UF and state data sources.
- Increase in jobs due to new natural resource-related industries.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Sustainable Energy

2. Brief summary about Planned Program

As our nation looks to plants to satisfy its growing energy demands, University of Florida faculty are searching for answers to both long-term and near-term questions associated with bioenergy production and passing those options on to stakeholders. The key is to provide a scientific and practical foundation to support an economic and sustainable bioenergy future in Florida. Florida has 15 million acres of forested land, 10 million acres of farm land and 3 million acres of pasture. Landscape waste and other waste of Florida's population of 18.4 million people are significant. UF has the expertise to develop research and extension programs to demonstrate potential of energy crops, refine and develop new process technologies, conduct environmental assessments, define the economics of energy production and teach programs on energy conservation. The benefits to Florida will be economic development, environmental sustainability and energy independence.

The main focus of IFAS' bioenergy programs is on the potential production of biomass, bioconversion processes and generation and conservation of energy. The production of biomass includes species identification such as silage, sugarcane, urban tree waste, vegetable wastes, algae, and trees to name a few, low input growing systems for these potential crops, genetic evaluation of improved crops and efficient harvesting and transportation. In addition to these programs is the extraction of oil feedstocks and anaerobic digestion of waste products.

Extension programs in this area focus on conservation practices and efficiency improvement, alternative energy solutions, and community capacity development.

Although energy conservation and production was clearly identified during the development of the Roadmap for Extension, this initiative is not fully developed because of the lack of human resources within UF/IFAS Extension. We are currently reviewing our staffing needs statewide through our Strategic Staffing task force and that will guide our Extension work in this area.

3. Program existence : Intermediate (One to 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	0%	0%	10%	0%
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%	0%	10%	0%
204	Plant Product Quality and Utility (Preharvest)	0%	0%	10%	0%
205	Plant Management Systems	0%	0%	10%	0%
206	Basic Plant Biology	0%	0%	10%	0%
403	Waste Disposal, Recycling, and Reuse	25%	0%	10%	0%
511	New and Improved Non-Food Products and Processes	25%	0%	40%	0%
607	Consumer Economics	25%	0%	0%	0%
801	Individual and Family Resource Management	25%	0%	0%	0%
	Total	100%	0%	100%	0%

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

1. Situation and priorities

Florida is the fourth most populous state in the nation. It ranks third in total fuel and electrical energy consumed annually, but it produces less than 1% of the total energy it consumes. Florida's demand for electricity is expected to rise 30% during the next 10 years. Almost 90% of Florida's energy is produced using fossil fuels. Thus, it is imperative that the state enter the bioenergy and bioproducts arena with special emphasis on improving self-sufficiency, alternative energy sources, addressing climate change, and stimulating economic development by transforming agricultural products into energy. Rising fuel prices, environmental concerns, pressures for oil independence and federal energy policy are creating a strong market for renewable energy. Within the United States, Florida has the climate, soils, land, and water to produce year-round diverse, fast-growing, high-yielding biomass feedstocks. Abundant opportunities exist in Florida to grow and process biofuel-producing crops without competing with food production. Florida Extension can provide the research-based information needed to produce, deliver, and process bio-based energy products while conserving natural resources. Broad-based education and awareness are needed to enhance participation in utility conservation programs, enhance energy efficiency, and improve consumer choices about energy use. By using a conservation and efficiency approach, Florida Extension education programs can help residents acquire a better understanding of their roles and learn practices they can implement to reduce their individual and community energy consumption.

2. Scope of the Program

- In-State Extension
- In-State Research

- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

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

1. Assumptions made for the Program

- Extension educational programs in the area of sustainable energy will increase markets.
- Increased markets will improve the state and local economy and the environment.
- Research will continue in the area of bioenergy and bio-based products.
- Stakeholders, including utilities, builders and the public, will be engaged in programming related to bioenergy, bio-based products, energy conservation and other issues related to sustainable energy.
 - Participants see Extension as a trustworthy source of information and utilize the information they receive.
 - Resources will continue to be available from county, state and federal sources.

2. Ultimate goal(s) of this Program

- Greater number of bio-based alternative energy production industries.
- Increased agricultural industries that have the ability to produce sustainable feedstocks for the commercialization of advanced biofuels and renewable chemicals.
 - Developed high yielding biomass feedstocks year round that do not compete with food crops and can promote economic stability and security for the long term.
 - Adoption of best management practices for the production and transportation of bio-fuel feedstocks.
 - Greater numbers of well-informed citizens locally engaged in activities that will promote sustainability and energy efficiency.
 - Improved web access to reliable residential energy efficiency information and recommendations.
 - Increased availability of financing for measurably effective energy efficiency residential retrofits.
 - Improved cost effectiveness of utility demand side management programs (DSM).
 - Adoption of more resource efficient designs and management structures.

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
2017	4.0	1.0	20.0	0.0
2018	4.0	1.0	20.0	0.0
2019	4.0	1.0	20.0	0.0

2020	4.0	0.0	20.0	0.0
2021	4.0	0.0	20.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop and deliver educational programs that work with citizens, businesses and government to support development of a sustainable and renewable energy supply in Florida.
- Develop and deliver programs that transfer new, research based technologies for renewable energy and alternative energy sources to Florida citizens and communities.
- Develop and implement extension educational programs to train producers, and processors about production, best management practices, marketing, processing technologies and distribution of bio-based feedstock.
- Develop and deliver programs for policy makers and consumers to increase biofuels literacy.
- Consult with landowners, developers and government to promote design, construction, and management practices that measurably reduce energy consumption in new developments.
- Develop/deliver educational programs addressing energy issues (i.e., Sustainable Floridians).
- Create websites to increase knowledge of personal energy use (i.e., www.MyFloridaHomeEnergy).
- Support energy efficient retrofit programs (i.e., PACE, Florida Energy Efficient Loans).
- Work with utilities, financial institutions and government to evaluate energy efficiency programs.

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

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • TV Media Programs • Web sites other than eXtension

3. Description of targeted audience

- General public
- Homeowners
- Agricultural producers/growers
- Business
- Developers
- Local government
- Homeowners
- Utilities
- Financial institutions

V(G). Planned Program (Outputs)

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- Number of contacts
 - Direct Adult Contacts
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 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

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V(H). State Defined Outputs

1. Output Measure

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Implementation of sustainable biofuels systems.

Outcome # 1

1. Outcome Target

Implementation of sustainable biofuels systems.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 403 - Waste Disposal, Recycling, and Reuse
- 801 - Individual and Family Resource Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 205 - Plant Management Systems
- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 607 - Consumer Economics
- 204 - Plant Product Quality and Utility (Preharvest)
- 511 - New and Improved Non-Food Products and Processes

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

Natural disasters such as tropical storms and hurricanes are common occurrences in this state. Severe weather conditions such as drought frequently lead to large-scale fires. Florida also has other weather extremes such as floods leading to large-scale damage especially along coastal regions and rivers that can impact natural resource and environmental research studies.

Florida also has three international shipping ports: Miami, Jacksonville and Tampa. Florida also has six international airports. Florida also had an estimated 105 million tourists in 2015, including more than 11 million from overseas. It has been estimated that this international influx into Florida has made us the

entry point of one new invasive pest, plant or disease each week.

Florida is still being impacted by the economic situation. Public higher education in Florida lost more than 50% of state funding and has been impacted by other losses caused indirectly by the economic down turn. Issues related to Medicaid are also expected to impact us heavily. Changes in state, county and federal appropriations can also affect the outcomes related to the Florida land-grant mission.

Because of limited resources in Florida and continuing devolution Extension programs can always be affected by changing public and governmental priorities.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The Florida land-grant colleges (both UF and FAMU) understand the value of evaluation in our annual program plan. Methods of evaluation are included as part of the annual faculty activity plan of work and report of accomplishment process (Workload). This information is collected as part of the logic model used in our Florida system and will be available for the NIFA reports of accomplishment on a yearly basis.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Childhood Obesity

2. Brief summary about Planned Program

Obesity is one of the leading causes of disability and death and contribute to the rising cost of health care. Risk for these conditions can be reduced through changes in lifestyle behaviors, including healthful eating behaviors, physical activity, and participation in health screenings. Extension lifestyle intervention programs provide adults and children with the knowledge, motivation, and skills they need to adopt behavior changes that promote positive nutritional status and reduce health risks, which may result in lower health care costs. In addition to intensive programs, Extension offers research-based information designed to increase awareness about obesity to a broad audience through written materials and other media. Increased awareness can motivate these individuals to participate in Extension lifestyle intervention programs.

Research in the area of human nutrition addresses basic and applied aspects of human nutrition in efforts to improve the health and wellness of Floridians and the world population, and includes studies on gene regulation, immunity, and women's health. Research areas include the function and biochemistry of micronutrients, the role of water-soluble vitamins in the health of various populations, the effects of phytochemicals and nutrient supplements on health, and the development of education programs for improved nutrition and health. Research in the area of childhood obesity has focused on nutrition in food and changes in behavior that can lead to reduced body mass.

Programming that addresses nutrition is needed for a variety of reasons in Florida. Almost 14% of the population lives below the poverty level and as poverty levels rise, the nutritional and health risks to people of all ages increase. Hungry children often have learning and behavioral problems and expectant mothers with inadequate nutrition are more likely to have low birth weight babies. Furthermore, Florida adults with the lowest incomes and the least education have the highest prevalence of obesity. This disparity, along with the persistent increase in obesity rates over the last two decades, is cause for concern as obesity is linked to increased risk for a number of chronic diseases, including heart disease, hypertension, diabetes, and certain cancers.

About one-fourth of children in Florida live in poverty, with over 1.5 million eligible to receive free or reduced lunch. For many children, the National School Lunch and Breakfast Programs provide most of their food during the week. Offering healthy, local food can ensure that children are eating the nutrient-rich foods they need while simultaneously supporting Florida's agricultural economy. The Florida Department of Agriculture and Consumer Services (FDACS) has partnered with UF/IFAS to establish a Florida Farm to School Program. The goal of this program is "to engage farmers, state and federal agencies, land grant institutions, school food authorities, and families through facilitated discussion, training, and technical support in the development of a successful FDACS Florida Farm to School Program that improves the health and welfare of children and contributes positively to Florida's agricultural economy." With Extension's relationship with many school districts, Extension is perfect to partner with FDACS to roll out its Farm to School Program. One of the first in the country, FAMU Extension has operated a Farm to School Program for over 18 years in collaboration with the New North Florida Cooperative. This Farm to School Program targets small-scale, limited resource farmers and school districts with high participation in USDA Free and Reduced meal programs.

3. Program existence : Mature (More than 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
701	Nutrient Composition of Food	0%	0%	40%	0%
702	Requirements and Function of Nutrients and Other Food Components	0%	0%	15%	0%
703	Nutrition Education and Behavior	50%	50%	30%	0%
723	Hazards to Human Health and Safety	0%	0%	5%	0%
724	Healthy Lifestyle	50%	50%	10%	0%
	Total	100%	100%	100%	0%

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

1. Situation and priorities

Over the past 30 years, the prevalence of obesity in children and adolescents has tripled. A 2010 CDC study estimated that nearly 36% of adults and 17% of children in the U.S. are obese. The 2011/12 National Survey of Children's Health reports that 27.5% of Florida youth age 10-17 are overweight or obese. The economic consequences of this increasing problem are immense. According to a study done by health economist Eric Finkelstein (2014), the direct medical costs (doctor visits and medication) associated with childhood obesity is \$19,000. Most of these costs come as an adult due to the higher risk of cardiovascular disease, type 2 diabetes and some cancers. In addition to the direct costs, there are also indirect costs through the loss of work productivity or absenteeism. According to National Health and Nutrition Examination Survey (NHANES) data cited by Ogden and Carroll (2010) the prevalence of obesity has increased disproportionately among Hispanic and black children and adolescents. The current problem with childhood obesity is the result of many factors and requires an integrated multi-action approach.

2. Scope of the Program

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

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

1. Assumptions made for the Program

- Children will eat nutritional and tasty foods that can help reduce body mass.
- Parents can have a great influence over what a child eats and their level of physical activity.
- Excessive weight is correlated with more health problems.
- Obesity among Florida's population negatively impacts the state through higher medical costs.
- Stakeholders will be engaged in programming related to nutrition and physical activity.
- Participants see Extension as a trustworthy source of information and utilize the information they receive.
- Resources will continue to be available from county, state and federal sources.

At FAMU Childhood obesity is best addressed through an integrated multipronged approach based on research audiences will be willing to adopt healthier food choices.

2. Ultimate goal(s) of this Program

- Increase knowledge of chronic disease risk factors related to childhood obesity.
- Increased knowledge of lifestyle practices that can reduce health risks.
- Identify strategies that improve one or more lifestyle practices that reduce weight gain in children.
- Identify life style practices that would be most likely to reduce childhood obesity.
- Identify one or more methods of reducing modifiable health risk factors (e.g., high blood pressure) in youth
- Demonstrate increased knowledge of lifestyle practices that can reduce childhood obesity.
- Demonstrated intent to improve lifestyle practices that can reduce childhood obesity.
- Improve one or more lifestyle practices that reduce childhood obesity.
- Show a reduction in weight leading to a decrease in health risk factors related to childhood obesity.

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
2017	20.0	0.0	4.0	0.0
2018	20.0	0.0	4.0	0.0
2019	20.0	0.0	4.0	0.0
2020	20.0	0.0	4.0	0.0
2021	20.0	0.0	4.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research studies and experiments that will increase taste and nutritional value of food, and develop methods and tools to effectively change behavior in the areas of human nutrition and physical activity.
- Transfer research discoveries to Extension faculty through in-service trainings and EDIS publications.
- Maintain consistent communication with stakeholders to learn and prioritize needs.
- Fund, design and implement websites, conferences, curricula, fact sheets, workshops, field days, demonstrations, and programs to support efforts to reduce childhood obesity.
- Conduct one-on-one consultations with citizens, families, etc.
- Publish research findings, program outcomes, and decision support tools.
- Provide leadership at local, regional, state and national levels to disseminate research findings and facilitate communication and foster current and new partnerships.

At **FAMU** the childhood obesity program will have specific emphasis on low and moderate income communities. The ultimate goals of the program will be improve community food security and availability of healthy food choices and prevention of childhood obesity and reduction of long-term risks for chronic diseases.

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

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations 	<ul style="list-style-type: none"> • Newsletters • Web sites other than eXtension

3. Description of targeted audience

- Parents
- Children and youth
- Caregivers
- Adults of all ages, including those with special needs
- Educators (K-12)
- Local, state, and federal agencies
- Non-profit agencies
- Schools and universities
- Businesses
- Faith-based organizations
- State and local health departments
- Hospitals
- Community agencies and organizations
- Master Nutrition Education Volunteers
- Health professionals

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Development of methods of change that increase adoption of healthy eating habits by youth and adolescents
2	Research in the area of human nutrition, food safety and human health and well-being addressing problems and opportunities to the food industry and quality of life in Florida and throughout the world
3	Children practice healthy eating.
4	Children engage in healthy levels of physical activity.

Outcome # 1

1. Outcome Target

Development of methods of change that increase adoption of healthy eating habits by youth and adolescents

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 703 - Nutrition Education and Behavior
- 723 - Hazards to Human Health and Safety
- 701 - Nutrient Composition of Food

4. Associated Institute Type(s)

- 1890 Extension

Outcome # 2

1. Outcome Target

Research in the area of human nutrition, food safety and human health and well-being addressing problems and opportunities to the food industry and quality of life in Florida and throughout the world

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 723 - Hazards to Human Health and Safety
- 724 - Healthy Lifestyle
- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 701 - Nutrient Composition of Food

4. Associated Institute Type(s)

- 1862 Research
- 1890 Research

Outcome # 3

1. Outcome Target

Children practice healthy eating.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 703 - Nutrition Education and Behavior
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

Outcome # 4

1. Outcome Target

Children engage in healthy levels of physical activity.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 724 - Healthy Lifestyle
- 703 - Nutrition Education and Behavior
- 723 - Hazards to Human Health and Safety

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Natural disasters such as tropical storms and hurricanes are common occurrences in this state. Severe weather conditions such as drought frequently lead to large-scale fires. Florida also has other weather extremes such as floods leading to large-scale damage especially along coastal regions and rivers that can impact natural resource and environmental research studies.

Florida also has three international shipping ports: Miami, Jacksonville and Tampa. Florida also has six international airports. Florida also had an estimated 105 million tourists in 2015, including more than 11 million from overseas. It has been estimated that this international influx into Florida has made us the entry point of one new invasive pest, plant or disease each week.

Florida is still being impacted by the economic situation. Public higher education in Florida lost more than 50% of state funding and has been impacted by other losses caused indirectly by the economic down turn. Issues related to Medicaid are also expected to impact us heavily. Changes in state, county and federal appropriations can also affect the outcomes related to the Florida land-grant mission.

Because of limited resources in Florida and continuing devolution Extension programs can always be affected by changing public and governmental priorities.

For **FAMU** the most significant factor is the economy which has the capacity to influence appropriation changes and public policies and regulations. If there are fewer dollars the competition from other priorities and programs will become stronger and can affect the outcome of the program.

Obtaining permission to work with youth can be difficult. Identifying youth with obesity issues has negative connotations for children that must be carefully monitored and in many cases protective parents resistant to change themselves may increase the factors making these studies difficult to obtain necessary participants (both adults and children).

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The Florida land-grant colleges (both UF and FAMU) understand the value of evaluation in our annual program plan. Methods of evaluation are included as part of the annual faculty activity plan of work and report of accomplishment process (Workload). This information is collected as part of the logic model used in our Florida system and will be available for the NIFA reports of accomplishment on a yearly basis.

Some outcomes include:

- Changes in knowledge about basic nutrition and the importance of physical activity as measured by pre/post evaluation.
- Intent to change behaviors related to choosing healthy foods, increasing physical activity as measured by pre/post evaluation.
- Changes in behavior related to choosing healthy foods, increasing physical activity as measured by 24 hour food recalls and behavior checklists.
- Dollars saved on healthcare and dollars saved on food costs.
- Improvement in health parameters measured using standard procedures (e.g., blood pressure, body weight).
- Increased numbers of schools/districts with a HUSSC certification or Healthy District Award.
- More schools implementing school gardens and procuring local foods.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Family, Youth and Community

2. Brief summary about Planned Program

Well-functioning families are the foundation of healthy communities. These families protect and nurture their members while teaching their children how to become thriving and contributing members of society. Families vary in structure, age, income, and other characteristics. Strong families foster the health, well-being, and financial security of all Florida communities. Diverse family structures and underserved groups, such as teenage parents, single parents, grandparents raising grandchildren, cohabiting couples, dual-earner families, military families, aging adults, and caregiving families, are increasing in Florida. Poverty, social isolation, parental substance abuse and addiction, stress, child abuse, domestic violence, and marital instability are major challenges. In addition, many Florida families are concerned with housing issues, caregiving decisions, and stress caused by caring for an aging relative. Potential hurricanes and other natural disasters present additional challenges for families. Florida Extension faculty, using tools, discoveries and knowledge gained or developed by its researchers, assist Florida's diverse families to better understand healthy growth and development in children and help them improve individual and family function and well-being.

Floridians are experiencing a sustained period of economic challenge. Tens of thousands are outside the financial mainstream, lacking access to many key services needed for economic success. Affordable housing, foreclosure, home maintenance, and energy costs are also pressing challenges for Floridians. Florida Extension improves economic viability for low- and middle-income families, senior citizens, immigrant families, social service providers, and teachers through comprehensive research-based financial management training programs designed with the help of Florida scientists.

Challenges are abundant in Florida's rural and urban areas. Florida Extension's Community Resource Development (CRD) program seeks to engage and empower communities to bring about change through economic development, capacity building, public policy education, and civic engagement. Economic conditions have increased attention on unemployment, underemployment, job loss, business loss, stagnant incomes, and other associated economic impacts throughout the state. Even in strong economic times, these issues are at the top of concerns expressed by Floridians. CRD programs help counties, cities, and individuals understand their local economies and assess the impacts of potential economic loss or development. Additionally, through the CRD program, Florida Extension aids individuals, entrepreneurs, local governments, existing businesses, and others with training for business start-ups, retention, and/or expansion.

Population growth is beginning to rebound. Over the next several decades, millions of residents will be added to the state's population. Therefore, issues such as land use and growth and the interface between rural/urban and incorporated/ unincorporated areas and climate change will continue to be a focus and challenge citizens, local governments, and communities. Florida Extension programs focus on teaching alternative strategies, developed together with researchers, that can be used to address these issues and to build leadership in our communities to direct developments, and in helping counties and communities engage citizens in determining their communities' strengths, challenges, opportunities, and vision that will lead to increased community vitality. This program will continue to educate not just local elected decision makers about their duties, roles, responsibilities, and how to make public policy choices, but all who wish to engage in the process of community building.

Today's youth are tomorrow's citizens, consumers, parents, and leaders. Florida's 4-H Youth Development Program offers age-appropriate, learn-by doing educational opportunities that complement K-12 education to develop knowledge, life skills, and leadership abilities in Florida's youth. These qualities empower youth to positively influence their communities and become contributing members of society. Community members, leaders, and local officials are very concerned about opportunities for youth in their communities. Florida Extension 4-H programs work to supplement formal education, enhance life skills development, and prepare youth for tomorrow's workforce.

Participation in 4-H clubs provides the positive, supportive environment youth need to succeed. School enrichment, day and residential camps, and other types of programs introduce youth to longer-term learning experiences. Through participation in 4-H clubs and other educational activities, efforts will focus on meeting the highest-priority educational needs: helping youth develop science, technology, engineering, and math (STEM) literacy; helping youth develop an interest in learning that will equip them to succeed in a rapidly changing society and global economy; teaching youth

responsibility, developing their ability to become leaders, and engaging them in their communities; helping youth develop healthy lifestyles; and encouraging youth to get outdoors to appreciate nature, agriculture, and natural resources.

Research shows that the continuous presence of caring adults is critical to achieving positive youth development. With limited staff, volunteers can assist in reaching more youth. Florida 4-H is committed to developing youth and adult volunteers, valuing inclusiveness, and increasing the diversity of program participants. Florida Extension will provide training needed for volunteers to serve youth and their communities. In addition, Florida Extension will work to provide the support needed for volunteer-led organizations to be effective in helping the 4-H Youth Development Program meet its mission and goals. As an integral part of the land-grant mission, the 4-H program is relevant to diverse youth, achieves positive youth development, and, in the process, also provides opportunities for adults to develop their own leadership and workforce skills. Because 4-H is the youth development program of the Florida Cooperative Extension Service, UF and FAMU Extension faculty and staff will contribute their expertise to 4-H to achieve Extension's youth development goals.

3. Program existence : Mature (More than 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
607	Consumer Economics	5%	0%	5%	0%
608	Community Resource Planning and Development	5%	0%	5%	0%
723	Hazards to Human Health and Safety	5%	10%	15%	0%
724	Healthy Lifestyle	10%	10%	5%	0%
801	Individual and Family Resource Management	15%	20%	10%	0%
802	Human Development and Family Well-Being	10%	10%	15%	0%
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	10%	10%	0%	0%
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	5%	10%	10%	0%
805	Community Institutions and Social Services	5%	10%	10%	0%
806	Youth Development	30%	20%	25%	0%
	Total	100%	100%	100%	0%

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

1. Situation and priorities

According to the U.S. Census Bureau, Florida's estimated poverty rate is 17%, slightly above the national poverty rate, and ranks 18th in U.S. This represents a tremendous increase since 2007 when the rate was 12%. But even more startling is the fact that in Florida the rate of children living in poverty condition was 23.5% in 2010, meaning that approximately one in every four Florida children lives below the federal poverty line. Indeed, the rate of children living in poverty increased by nearly 35% from year 2006 to 2010. The Office of Management and Budget updates the poverty line every year to consider inflation, and for 2012 the federal poverty line is defined as income of \$22,050 or less a year for a household of four.

Due to the severe impact of the financial crisis on the United States housing market, many households have had no other choice but to file bankruptcy in order to reorganize debt and better manage their finances. The U.S. Courts report that the State of Florida had non-business bankruptcy filings 90,799 in 2011 and 108,186 in 2010. Although bankruptcy filings have experienced a 16% decrease over one year, for both years, the bankruptcy filings in Florida account for almost 50% of the total cases in the southeast region of the U.S. (11th Circuit Court of Appeal: AL, FL, and GA).

In 2011, Florida was positioned among the nation's 10 states with highest foreclosure rate. In fact, 2.06 households in the state had at least one foreclosure filing in the previous year. As of August 2012, it is estimated that 27,422 properties have been subject to foreclosure, which represents on average 1 in every 328 housing units statewide. In Florida, the average credit card debt is \$4,200 per individual. Nevertheless, in some cases, credit card debt represents almost 17% of their income. Many cities in the state of Florida have ranked in the top 25 cities with highest credit card debt in the nation. In regard to student loans debt, Florida has the highest overall rate of loan defaults among college students. In 2012, the overall rate for the sunshine state is 10.5%, putting Florida 1.7% above the national figure (8.8%). The average student loan debt in Florida is approximately \$21,184.

Homeowners and renters can save money by changing behaviors in the home, as well as improve their health and safety. In their study of hot, humid climates such as that found in Florida, Nahmens, Joukar, and Cantrell (2014) determined that three of the five most important factors affecting utility bills are related to home occupants' behaviors. While there are mechanical or physical improvements that can be made to the home, there are many considerations for improving the home that are "less" mechanical in nature (e.g. family routines and practices), which Cantrell (2013) showed to account for as much as 28 percent of the overall total performance of the home living situation. These considerations were motivated by the realization that although homes can benefit from costly mechanical upgrades, Wilhelmson (2008) found that families' single largest investment was not being adequately protected because families generally lacked attention and dedication to a routine level of home maintenance and streamlined operations. Mullens (2011) also showed that safety and health can be directly affected by the level of attention and dedication given to maintenance and streamlined operations.

Economic pressures have required more parents to enter the workforce in order to meet family expenses, and in Florida around two-thirds of children under the age of 6 have all parents in the workforce. This shift has led to a dramatic increase in the need for affordable childcare, and has highlighted the need to increase the quality of childcare provided in Florida. Research shows that quality early childcare, particularly for low-income families, can have a critical impact on the long term academic, emotional and social functioning of children, and for every \$1 spent on quality childcare for low-income families, there is a minimum long-term cost savings of \$8, as children are more likely to stay in school, stay in the workforce, and avoid societal costs such as substance abuse and incarceration.

The growth in the number and proportion of older adults is unprecedented in the history of the United States. One in eight Americans (12.9%) are over age 65, and the fastest growing segment of the aging population is those 85 and older, who often require more care. By 2030, one in five (20%) Americans will be over age 65 (U.S. Census 2010). Florida is a bellwether state for issues related to aging. Over 17% of Florida's population is age 65 and over. Between 2009 and 2030, Florida's population is expected to increase by almost 5.1 million, with those 60 and older accounting for almost 65% of this growth. As the baby boomers begin to reach retirement age and our "old old" residents reach the age of 85 and older, many will face multiple fiscal, physical, and social challenges that will help to determine their ability to age in place and have a fulfilling life well into their eighth and ninth decades of life. Challenges facing Florida's elders, identified by the 2010 Florida Department of Elder Affairs' Assessment of the Needs of Older Floridians, include inadequate nutrition (26%) and financial constraints that limited their ability to fill prescriptions (10%) and get dental (30%), eye (24%), or mental health (11%) care. Twenty-one percent surveyed reported problems with their home, including upkeep and minor or major repairs, and difficulty paying rent or the mortgage. Over half of older Floridians reported they needed assistance with daily activities such as housekeeping and shopping, while 17% needed help with personal care such as bathing and dressing.

Studies have found that youth who participate in 4-H are less likely to engage in at-risk behaviors (such as smoking, drinking, bullying, etc.), contribute more to their family and community, and state they are more likely to attend college (Lerner et al, 2012). All these factors lead to productive, well-adjusted citizens prepared for the workforce. The UF/IFAS Extension 4-H Youth Development Program in County relies on trained staff and volunteers to provide positive youth development experiences. These experiences include direct mentoring and education of youth, as well

as the coordination and management of events and activities. Research has shown that in addition to formal education, youth need multiples non-formal education experiences to develop critical life skills such as decision-making, responsibility, interpersonal skills, a service ethic, and social skills (Boyd, Herring, & Briers, 1992; Cantrell-Jordan, Heinsohn, & Doebler, 1989; Seevers & Dormody, 1994). Research shows that the continuous presence of caring adults is critical to achieving positive youth development.

2. Scope of the Program

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

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

1. Assumptions made for the Program

- Extension educational programs and research discoveries can empower individuals and families to build healthy lives and achieve social and economic success, strengthen urban and rural community resources and economic development, and prepare youth to be responsible citizens and productive members of the workforce.
 - An understanding of healthy growth and development will help improve individual and family function and well-being.
 - Affordable housing, foreclosure, home maintenance, and energy costs, and the lack of access to financial services will continue to be pressing challenges for Floridians.
 - Financial management training programs can improve economic viability for low- and middle-income families, senior citizens, and immigrant families.
 - Counties and cities that understand their local economies and can assess the impacts of potential economic loss or development will improve their area's economic prospects.
 - Age-appropriate, learn-by doing educational opportunities that complement K-12 education are the most effective way to develop knowledge, life skills, and leadership abilities in Florida's youth.
 - The continuous presence of caring adults is critical to achieving positive youth development.

2. Ultimate goal(s) of this Program

- Improve Floridians' access to affordable housing (purchase and finances) by teaching owners and renters how to operate and maintain their homes and conducting research.
 - Improve individual and family financial stability by teaching Floridians about knowledge and behavior aspects of money management and conducting research.
 - Improve the lifestyle of older Floridians by educating individuals, families, and communities about aging-related issues and conducting research.
 - Through research and Extension, empower individuals to make positive lifestyle choices that improve physical and mental health, strengthen relationships, and improve parenting and child care.
 - Improve economic vitality of Florida's communities by engaging community members in assessments, strategic planning, and business/entrepreneurial support and conducting research.

- Strengthen communities by helping engage citizens and build capacity by facilitating communication, leadership development, and problem solving as related to community issues and social concerns.
 - Improve community resiliency by facilitating responsible decision-making and policy establishment.
- Work with communities in conflict resolution, planning development community interaction, civic engagement and deliberative forum modeling using research-based information.
- Engage youth in experiential learning using Extension’s community-based 4-H Youth Development program to complement formal education that will lead to an interest in learning, development of important life skills, and workforce readiness.
 - Foster learning environments to make positive 4-H Youth Development possible by educating caring adults about volunteerism and using youth-adult partnerships and conducting research.

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
2017	145.0	10.0	6.0	0.0
2018	145.0	10.0	6.0	0.0
2019	145.0	10.0	6.0	0.0
2020	145.0	10.0	6.0	0.0
2021	145.0	0.0	6.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct research studies and experiments to develop knowledge and tools that will improve the lives of individuals, youth, families and communities.
- Transfer research discoveries to Extension faculty through in-service trainings and EDIS publications.
- Maintain consistent communication with stakeholders to learn and prioritize needs.
- Fund, design and implement websites, conferences, curricula, fact sheets, workshops, field days, demonstrations, social media and marketing, and programs to support efforts to improve youth development and the organizations and volunteers that support it, family financial stability, homeownership and housing in Florida, health and wellness of residents, and community and economic development.
- Conduct one-on-one consultations with citizens, children and youth, families, etc.
- Publish research findings, program outcomes, and decision support tools.
- Provide leadership at local, regional, state and national levels to disseminate research findings and facilitate communication and foster current and new partnerships.

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

Extension	
Direct Methods	Indirect Methods

<ul style="list-style-type: none">● Education Class● Workshop● Group Discussion● One-on-One Intervention● Demonstrations● Other 1 (telephone calls)	<ul style="list-style-type: none">● Public Service Announcement● Newsletters● TV Media Programs● Web sites other than eXtension● Other 1 (radio)
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3. Description of targeted audience

- Children and adolescents
- Teenagers
- Parents
- Families with children
- Childcare, after-school, and elder care providers
- Educators (K-12)
- Adults of all ages, including those with special needs
- Persons with type 2 diabetes
- Homeowners
- Prospective homeowners
- Renters
- Temporary/seasonal residents
- Housing professionals
- Developers
- Building/construction professionals
- Housing sales professionals
- Residential property managers
- Non-governmental organizations
- Community organizations
- Local business and industry representatives
- Local government and elected officials
- UF/IFAS and FAMU county and state faculty

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Youth learn skills to become productive members of the workforce.
2	Individuals and families learn skills to improve family financial stability.
3	Adults learn skills and techniques to improve their quality of life and personal safety.

Outcome # 1

1. Outcome Target

Youth learn skills to become productive members of the workforce.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

Outcome # 2

1. Outcome Target

Individuals and families learn skills to improve family financial stability.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 801 - Individual and Family Resource Management
- 607 - Consumer Economics
- 608 - Community Resource Planning and Development

4. Associated Institute Type(s)

- 1862 Extension
- 1890 Extension

Outcome # 3

1. Outcome Target

Adults learn skills and techniques to improve their quality of life and personal safety.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions and Social Services
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures
- 724 - Healthy Lifestyle

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

Natural disasters such as tropical storms and hurricanes are common occurrences in this state. Severe weather conditions such as drought frequently lead to large-scale fires. Florida also has other weather extremes such as floods leading to large-scale damage especially along coastal regions and rivers that can impact natural resource and environmental research studies.

Florida also has three international shipping ports: Miami, Jacksonville and Tampa. Florida also has six international airports. Florida also had an estimated 105 million tourists in 2015, including more than 11 million from overseas. It has been estimated that this international influx into Florida has made us the entry point of one new invasive pest, plant or disease each week.

Florida is still being impacted by the economic situation. Public higher education in Florida lost more than 50% of state funding and has been impacted by other losses caused indirectly by the economic down turn. Issues related to Medicaid are also expected to impact us heavily. Changes in state, county and federal appropriations can also affect the outcomes related to the Florida land-grant mission.

Because of limited resources in Florida and continuing devolution Extension programs can always be affected by changing public and governmental priorities.

For **FAMU** the most significant factor is the economy which has the capacity to influence appropriation changes and public policies and regulations. If there are fewer dollars the competition from other priorities and programs will become stronger and can affect the outcome of the program.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

The Florida land-grant colleges (both UF and FAMU) understand the value of evaluation in our annual program plan. Methods of evaluation are included as part of the annual faculty activity plan of work and report of accomplishment process (Workload). This information is collected as part of the logic model used in our Florida system and will be available for the NIFA reports of accomplishment on a yearly basis.

Some short-term outcomes include:

- Develop basic content knowledge and skills in healthy living, STEM, & citizenship/leadership.
- Increase knowledge of the principles and best practices of positive youth development.
- Increased knowledge in basic money management, budgeting, identity protection, savings and investing strategies, utilizing financial services, etc.
- Parents/caregivers will increase their knowledge of parenting strategies, child safety, normative stages of child development, and their children's emotional, behavioral, and cognitive readiness for school.

Some medium-term outcomes include:

- Improve workforce readiness skills in effective communications and positive choices by demonstrating responsibility, critical thinking, teamwork, problem solving, goal setting, and financial literacy.
- Follow appropriate policies, procedures, and safety guidelines when acting on behalf of 4-H.
- Change positive financial practices such as using a spending and savings plan, opening a banking account and reducing debt as measure by follow-up evaluations.
- Participants will demonstrate increased ability to cope with economic stress and natural disasters.
- Employers, officials and entrepreneurs participating in community resource development programs will employ strategies that increase profitability and improve economic conditions of their business or community.
- Increased collaboration among individuals and organizations to address community issues.

Some long-term outcomes include:

- Mature into healthy, scientifically literate, and engaged citizens who improve their communities.
- Increase individual, family and community capacity by enabling youth to use life skills practiced in 4-H to contribute to STEM literacy, healthy lifestyles, citizenship/leadership, and workforce readiness.
- Children will be better adjusted, ready for school, and have fewer behavior problems.
- Divorce and jail rates will reduce among participants.
- Floridians of all income levels will have increased access to key financial services.
- Increased growth and sustainability in economic sectors of communities.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Strategic Research for the Management of Invasive Pest

2. Brief summary about Planned Program

FAMU (1890) Research

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 the continuum from prevention of imminent threats to management of established species is required. This project takes a multi-disciplinary 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. Specific targets include both insect pests and weeds that affect both natural and managed ecosystems. Research on pest threats will be carried out offshore, mainly in the Caribbean which is a major pathway for the entry of IAS into Florida. Onshore research to mitigate the impacts of established IAS will focus mainly on invasive weeds.

3. Program existence : Intermediate (One to 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
135	Aquatic and Terrestrial Wildlife	0%	0%	0%	40%
211	Insects, Mites, and Other Arthropods Affecting Plants	0%	0%	0%	20%
215	Biological Control of Pests Affecting Plants	0%	0%	0%	20%
216	Integrated Pest Management Systems	0%	0%	0%	20%
	Total	0%	0%	0%	100%

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

1. Situation and priorities

FAMU (1890) Research

Invasive Alien Species (IAS) are a major threat to agriculture and the environment (GAO, 2006; Pimental 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 on 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, USDA, ARS and USDA 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 and development of ecologically based management of insect pests and weeds including hydrilla.

2. Scope of the Program

- In-State Research
- Multistate Research

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

1. Assumptions made for the Program

FAMU (1890) Research

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 campus to work closely with the University scientists.

2. Ultimate goal(s) of this Program

FAMU (1890) Research

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
2017	0.0	0.0	0.0	5.0
2018	0.0	0.0	0.0	5.0
2019	0.0	0.0	0.0	5.0
2020	0.0	0.0	0.0	0.0
2021	0.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

FAMU (1890) Research

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 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 anthropol biological control agents. A database containing data on host range of different natural enemy taxa will be developed. Onshore research: We will conduct research to develop ecologically based strategies for the management of invasive insect pests and weeds that have become established in Florida.

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

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● Web sites other than eXtension

3. Description of targeted audience

FAMU (1890) Research

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

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Electronic identification keys/tools/resources developed
 - Knowledge generated on specific target pests and used for the development of contingency plans.
 - Analyses conducted on key issues regarding safety and specific target biological control agents studied to determine safety.
 - Target biological control agents introduced and established against specific insect pest or weed targets.
 - Undergraduate and graduate students trained through mentorship and involvement in research programs.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Digital identification keys/tools/resources for identification of invasive species utilized
2	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 IAS minimized.
5	More effective management of aquatic weeds in first order springs.
6	Trade between the US and partners through implementation of strategies to mitigate the introduction of invasive insects, pests and weeds.
7	Well trained undergraduates and graduates contribute to the effective management of native and non-native pests.

Outcome # 1

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 216 - Integrated Pest Management Systems
- 215 - Biological Control of Pests Affecting Plants

4. Associated Institute Type(s)

- 1890 Research

Outcome # 2

1. Outcome Target

Strategies for the identification, prevention or management of invasive species

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 216 - Integrated Pest Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 215 - Biological Control of Pests Affecting Plants

4. Associated Institute Type(s)

- 1890 Research

Outcome # 3

1. Outcome Target

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

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants

- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1890 Research

Outcome # 4

1. Outcome Target

The introduction and spread IAS minimized.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 215 - Biological Control of Pests Affecting Plants
- 135 - Aquatic and Terrestrial Wildlife
- 211 - Insects, Mites, and Other Arthropods Affecting Plants

4. Associated Institute Type(s)

- 1890 Research

Outcome # 5

1. Outcome Target

More effective management of aquatic weeds in first order springs.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 135 - Aquatic and Terrestrial Wildlife
- 216 - Integrated Pest Management Systems

4. Associated Institute Type(s)

- 1890 Research

Outcome # 6

1. Outcome Target

Trade between the US and partners through implementation of strategies to mitigate the introduction of invasive insects, pests and weeds.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 216 - Integrated Pest Management Systems
- 215 - Biological Control of Pests Affecting Plants

4. Associated Institute Type(s)

- 1890 Research

Outcome # 7

1. Outcome Target

Well trained undergraduates and graduates contribute to the effective management of native and non-native pests.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

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

4. Associated Institute Type(s)

- 1890 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Description

FAMU (1890) Research

The major external factors which may affect outcomes of the planned programs include: unfavorable weather conditions, lack of cooperation from offshore country agencies, lack of effective biological control agents, sagging economy, reduction in funding of current and planned research studies.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

FAMU (1890) Research

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 measurable outcomes will help guide field and lab studies. The Center Advisory Council will evaluate the outcomes of research on an annual basis.