V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Global Food Security and Hunger

☑ Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
204	Plant Product Quality and Utility (Preharvest)	20%	10%	0%	
205	Plant Management Systems	10%	10%	0%	
212	Pathogens and Nematodes Affecting Plants	10%	0%	0%	
213	Weeds Affecting Plants	10%	0%	0%	
215	Biological Control of Pests Affecting Plants	10%	0%	0%	
216	Integrated Pest Management Systems	0%	10%	0%	
307	Animal Management Systems	0%	10%	0%	
308	Improved Animal Products (Before Harvest)	0%	20%	0%	
315	Animal Welfare/Well-Being and Protection	10%	10%	0%	
503	Quality Maintenance in Storing and Marketing Food Products	20%	20%	0%	
603	Market Economics	10%	10%	0%	
	Total	100%	100%	0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	80.0	11.0	0.0	0.0
Actual Paid Professional	59.4	6.0	0.0	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

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

Extension		Research	
Smith-Lever 3b & 3c	**1890 Extension**	**Hatch**	**Evans-Allen**
651579	569983	0	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
651579	569983	0	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct workshops and meetings
- Deliver services
- Develop products, curriculum, resources
- Provide training
- Provide counseling
- Make assessments
- Work with the media
- Develop partnerships

2. Brief description of the target audience

- Producers
- Commodity associations
- Owners/Operators
- Managers/Supervisors
- Workers/laborers
- Allied industry representatives
- Small farmers
- Government/Regulatory
- County government
- State government
- Federal Government
- Tribal Government
- International governing bodies
- Harvesting/Packing/processing/distribution/transporting
- Retailers
- Importers/Exporters
- Youth and 4-H
- Youth educators
- Extension faculty

3. How was eXtension used?

eXtension use was not reported for this program

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	842005	1932286	0	0

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

Patent Applications Submitted

Year: 2012

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	151	0	151

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- {No Data Entered}

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Change in Knowledge Agricultural and Natural Resource Industry Profitability and the Sustainable Use of Environmental Resources
2	Change in Behavior Agricultural and Natural Resource Industry Profitability and the Sustainable Use of Environmental Resources
3	Change in Condition Agricultural and Natural Resource Industry Profitability and the Sustainable Use of Environmental Resources
4	Change in Knowledge Awareness of Agriculture's and Natural Resource's Importance to an Economy That Ranges From Local to Global
5	Change in Behavior Awareness of Agriculture's and Natural Resource's Importance to an Economy That Ranges From Local to Global
6	Change in Condition Awareness of Agriculture's and Natural Resource's Importance to an Economy That Ranges From Local to Global
7	Change in Knowledge Protecting Florida from Existing and Emerging Pests and Diseases
8	Change in Behavior Protecting Florida from Existing and Emerging Pests and Diseases
9	Change in Condition Protecting Florida from Existing and Emerging Pests and Diseases

Outcome #1

1. Outcome Measures

Change in Knowledge Agricultural and Natural Resource Industry Profitability and the Sustainable Use of Environmental Resources

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	47722

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
FAMU conducts annual Hazard Analysis and Critical Control Point (HACCP) food safety training workshop.

What has been done
The objective is to train food service processors, producers, and students in practices that will minimize potential food-borne hazards. The program administered a pre- (before the training) and post (after the training) to the participants to test their knowledge on food safety.

Results
For 2012 HACCP workshop, 13 participants took a 19-multiple choice-question test on food safety and potential hazards. Analysis showed that 100 percent (13 participants) improved knowledge (by up to 23%) after the training. One hundred percent of the participants also idicated that their experience gained from the workshop will make them more confident in dealing with HACCP matters.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
503	Quality Maintenance in Storing and Marketing Food Products
603	Market Economics

Outcome #2

1. Outcome Measures

Change in Behavior Agricultural and Natural Resource Industry Profitability and the Sustainable Use of Environmental Resources

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	15319

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In 2011, the University of Florida IFAS Extension Small Farms Food Safety Implementation Team began conducting farmer trainings across the state.

What has been done
This successful pilot project was continued in 2012, during which team delivered six trainings statewide involving 50 farmers (plus one food safety audit preparatory workshop attended by 24 farmers at SFAE conference in Kissimmee in August 2012 . An agent In-Service Training (IST) ?Teaching Your Farmers How to Build Your Own Farm Food Safety Manual? was held on December 10-12, 2012 at Camp Weed near Live Oak. The evaluation component was implemented by Sebastian Galindo-Gonzales. Funding for agent travel and materials and supplies (food safety tool kit of educational materials) was provided by this FDACS Specialty Crops Block Grant. In total, 17 county agents and program assistants were trained in 2012 to deliver ?Build Your Own Food Safety Manual? workshops. Agents who attended the IST were asked to complete a pre- and post-test using an online form developed using Qualtrics software. A total of 17 agents took the pretest, and 13 took the post-test. Results were statistically analyzed by Dr. Galindo. In summary, agents increased their skills ($p<.001$), and knowledge ($p<.001$) of food safety.
A total of 40 county extension faculty are now members of the Small Farms Food Safety Implementation team. They work collaboratively to conduct farm food safety trainings at the county level. A standardized evaluation tool is used by all agents and results are pooled and analyzed by Galindo.

Results
Evaluations were completed by 29 farmers attending the trainings in Polk, St. Johns, Escambia, and Washington Counties. These farmers ranged from 1 to 51 years of farming experience and

were currently farming anywhere from 1 to 4,000 acres. However, most farmers were farming less than 100 acres of fruits or vegetables. A detailed report of the evaluation results was submitted with this final report. Highlights were as follows:
?Overall, the evaluations showed the farmers valued the training, viewed food safety plans as very important, and plan to implement a food safety program on their farm, even though most (74%) were not being required by their buyers or markets to develop one.
?Mean knowledge gain at all four training sites was 77%.
?Eighty nine percent of participants viewed the information received in the training as easy to very easy to understand, and 93% rated the intensity of their learning experience as high to very high.
?Importantly, all 29 farmers indicated they plan to have some type of audit conducted, and 20 indicated they plan to have a fee-based audit, such as a third party, customer, or regulatory audit. Based on an industry food safety consultant?s quote, the charge for preparing a farm typical of the ones owned by the training participants for a fee-based audit was estimated at $8,000 to $10,000. Even at the lower figure, the food safety trainings provided a savings of at least $160,000 to those 20 farmers who were confident they could complete the plan on their own after the trainings and prepare for the audit.

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
216	Integrated Pest Management Systems
503	Quality Maintenance in Storing and Marketing Food Products
603	Market Economics

Outcome #3

1. Outcome Measures

Change in Condition Agricultural and Natural Resource Industry Profitability and the Sustainable Use of Environmental Resources

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Change in Knowledge Awareness of Agriculture's and Natural Resource's Importance to an Economy That Ranges From Local to Global

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	11261

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
IFAS and FAMU: Along with growing public awareness and demands for safe and nutritious produce, it has become increasingly clear that our small farms specialty crops industry is facing unique economic and communicative challenges regarding trade opportunities, regulatory issues, and customer expectations.

What has been done
Overall, the SCBG provided funding ($132,549)that matched Smith-Lever Funds to help build capacity of Florida specialty crop small farm operators through the statewide small farms conference programming, statewide food safety training, and identification of challenges faced by Florida?s small farm operators. Furthermore, food safety educational materials developed by Dr. Keith Schneider and his team (SCBG UF Project Number 00070629, 2009) were utilized during food safety trainings (Component Two) in this project. The outcomes of the present project significantly complemented previous

Results
program efforts and promoted statewide recognition of UF-IFAS and FAMU-CESTA Extension from agricultural leaders. The financial support awarded to this project facilitated the training of an additional 17 county extension agents and program assistants to join the Small Farm Food Safety Implementation Team (Component Two, $35,000). As a result of this pilot training program, a total of 74 farmers participated in hands-on food safety trainings during 2012. Funding from this project ($30,000) also was allocated to support the 4th FL SFAE Conference (Component Three), which was attended by over 750 stakeholders. Furthermore, funds were utilized for critical assessment of the economic impact of the involved land grant universities outreach efforts on Florida's small farm specialty crop industry (Component One, $73,000).

4. Associated Knowledge Areas

KA Code	Knowledge Area
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
215	Biological Control of Pests Affecting Plants
216	Integrated Pest Management Systems
307	Animal Management Systems

308	Improved Animal Products (Before Harvest)
315	Animal Welfare/Well-Being and Protection
503	Quality Maintenance in Storing and Marketing Food Products
603	Market Economics

Outcome #5

1. Outcome Measures

Change in Behavior Awareness of Agriculture's and Natural Resource's Importance to an Economy That Ranges From Local to Global

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1462

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The Lake County Extension Small Farms Program was developed at the suggestion of the Lake County Livestock and Natural Resources Advisory Group. The primary goals of this program were to introduce Lake County land owners to the many agriculture opportunities available to them; to encourage good risk management and to assist in the developing of well thought out business plans.

What has been done
At the first class 82% of participants indicated that while they were interested in starting an Ag-business in the next year they had given no thought to developing a business plan. A follow up survey indicated that 85% of participants intended to research and develop a business plan prior to investing in their business. Follow up interviews with individual participants uncovered one woman who not only was able to develop a business plan based on the resources given her in the Small Farms class but was also able to obtain financing (a $120k credit union loan) that had been denied to her prior to submitting a business plan.

2. Objective: Ninety percent of Lake County Extension Livestock and Horse Program Participants will demonstrate improved knowledge of good agribusiness practices including: risk management, marketing, regulatory practices, and financial management as measured by follow up electronic and telephone surveys as well as post program questionnaires.

Results
Outcomes:

o Ninety five percent of surveyed Lake County Extension Livestock and Horse Program participants (n=58) reported and/or demonstrated improved knowledge of good agribusiness practices as a result of their participation in Extension programs.

o As a result of participation in the Small Farm Series, 87.5% of new or potential farm owners (n=29) indicated the intention to review financial risks prior to investing money in a farming or ranching business.

Impact: The adoption of sound business practices such as accurate record keeping, risk management, and marketing are essential to the efficiency and long term sustainability of agricultural enterprises. As a result of participating in the Lake County Extension Livestock and Horse Programs local farmers and ranchers are better equipped to compete in today?s marketplace.

4. Associated Knowledge Areas

KA Code	Knowledge Area
307	Animal Management Systems
315	Animal Welfare/Well-Being and Protection
603	Market Economics

Outcome #6

1. Outcome Measures

Change in Condition Awareness of Agriculture's and Natural Resource's Importance to an Economy That Ranges From Local to Global

Not Reporting on this Outcome Measure

Outcome #7

1. Outcome Measures

Change in Knowledge Protecting Florida from Existing and Emerging Pests and Diseases

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	9880

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
Scouting for pests and disease is an import method of reducing crop damage.

What has been done
During the most recent Sugarcane Orange Rust field day in Hendry County, 85% (52) of the 61 participants correctly described environmental factors favoring the development of orange rust pustules and correctly identified the six sugarcane varieties (which occupy 80% of the sugarcane acreage) that are currently most susceptible to the orange rust pathogen and openly discussed the environmental factors that contributed to 2012 being a very heavy orange rust year.

Results
As a result of numerous informal group field visits to infested fields and scheduled field days to sugarcane orange rust fungicide demonstration trials, 100% of the grower and crop consultant participants (93 participants) could correctly identify sugarcane orange rust pustules on leaf tissues, discerned them from prior brown rust infections, and understood the region within the sugarcane plant canopy where orange rust infections typically appear first.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
216	Integrated Pest Management Systems

Outcome #8

1. Outcome Measures

Change in Behavior Protecting Florida from Existing and Emerging Pests and Diseases

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	2462

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
In Hillsborough County Environmental Horticulture Extension one agent does extensive field visits that yield returns to producers who follow the recommendations from the agent.

What has been done
This agent will calculate a return on programmatic activity if information is taught (disease ID, pest ID, treatment options, cultural recommendations, etc.) to a producer, the producer receives that information, the producer adopts Extension recommended practices, and a successful result or outcome occurs.

Results
With this in mind the agent has had a few successful educational contacts with positive outcomes. One grower has switched fertilizer and water application timings based on extension recommendations to correspond to root flushes during the year. His calculations have reaped about $10,000 per year in accelerated growth and inventory turns. Another grower has successful rooted cuttings based on site visits and educational information to gain $1,080 in increased production. Another grower has adopted management practices to save $6,000 on cedars that were starting to die from fungal pathogens. Another grower learned that his employees were potting liners too deep and lost about 40% of his plants during the potting stage. This will now be corrected from the agent?s visit and will save thousands of dollars in lost plants, inputs, and wasted labor costs. It will also save impact in the environment by stopping unnecessary fungicidal root drenches in the future.

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

Outcome #9

1. Outcome Measures

Change in Condition Protecting Florida from Existing and Emerging Pests and Diseases

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	5895

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
The future of the Florida Citrus Industry is threatened by the presence of Huanglongbing (aka greening) which was first detected in Florida in 2005. To manage the spread of this disease, citrus growers have dramatically increased the use of pesticides to control the insect vector (the Asian citrus psyllid) of the bacterium that causes this disease. Despite increased use of pesticides, growers have found it difficult to keep psyllid populations at low levels due to the movement of this pest between neighboring groves.

What has been done
In partnership with Florida citrus growers, UF/IFAS/Extension developed and implemented what is now known as the Citrus Health Management Area (CHMA) program. The CHMA program functions to help growers coordinate their psyllid control efforts with that of neighboring growers to provide the area-wide control needed to maintain psyllid populations at low levels to reduce disease spread. Through the CHMA program, UF/IFAS/Extension delivers educational programs to aid growers in developing effective coordinated management strategies. This includes defining individual CHMAs (areas) in which coordinated sprays should take place and the timing and most effective product choices for those treatments.

Results
Since communication is key to success of this effort, a website www.flchma.org was established with pages for each CHMA to for growers to stay up to date on the latest planned coordinated sprays for their CHMA. Psyllid scouting data collected from 6,000 blocks of citrus every 3 weeks by USDA and FDACS is provided on the website in an easily accessible format for growers to stay up to date on psyllid populations in their areas. This also serves to convince additional growers to participate in the CHMA program after seeing the benefits of coordinated spray efforts in terms of reduced psyllid numbers. In 2012 the website was visited more than 107,000 times.

To date, working with Florida citrus growers, 38 CHMAs have been established statewide encompassing more than 486,000 acres of commercial citrus groves. Since the startup of the CHMA program in 2011, psyllid populations have been reduced statewide an average of 68% in 2012. Due to this success, the CHMA program in FLorida continues to grow and is also now being used as a model for psyllid control strategies being developed in Texas, California and Brazil.

4. Associated Knowledge Areas

KA Code	Knowledge Area
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Florida is still being heavily impacted by the economic situation. Public higher education in Florida has 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. These can include appropriations.

Natural and national disasters can also affect the number of volunteers available to work with youth. Florida is a state located in the tropics. Natural disasters such as tropical storms and hurricanes are common annual occurrences in this state. Severe weather conditions such as droughts frequently led to large-scale fires. We also have other weather extremes such as floods leading to large scale damage especially along the coastal regions. All of these can have a direct and indirect impact on Extension programs.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Dealing with global security and hunger requires constant vigilance. First in the protection of our food supplies and second the need to be aware of hunger in the world and how best to cope with the need for increasing food supplies. Since Florida is one of the

few states able to grow food year round in the United States many truck crops as well as fruits and vegtables during those months are supplied by Florida. Because we are a port state we also must be aware of the many threats related to invasive plants, pest and disease that can enter into the state. It has been stated that the U.S. is attacked by at least one new invasive plant, pest or animal on a monthly basis. As a port state that also has multiple international airports Florida must be on guard at all times and find ways to fight those that have invaded as well as those that have not yet arrived, but could potentially threaten Florida agriculture, the environment or the people who live in or visit the state.

Because the need for increasing food crops and dealing with food security issues there is a great deal of UF/IFAS and FAMU/CAFS Extension educational programs taking place in this area. In 2012 in surveys completed 70,843 clientele attending Extension programs in this area increased their knowledge in world hunger and protecting food supplies. 19,559, many of them involveded in agricultural industry changed their behaviors in ways that increased scouting efforts and other methods that protect Florida from existing and emerging pests and diseases, using bio-energy to sustain and fuel Florida, and protect our food supplies while increasing crop productions with better BMPs or using newly developed and more disease resistant cultivars.1115 people working within the ag industry increased their knowledge in processing, distribution, safety and the security of food systems. 172 who were surveyed said that they made behavioral changes that improved the safety of food and 173 had braoder impacts on their community through the changes that they made.

Key Items of Evaluation

The nonstop onslaught of new ornamental pests and diseases into Florida has created severe plant production and economic challenges for nurseries and landscape managers. Some recent and especially difficult or severe examples include ficus whitefly, Rugose spiraling whitefly, Bondar's nesting whitefly, silverleaf whitefly, Sri Lanka weevil, pink hibiscus mealybug and Asian citrus psyllid.

One issue in solving invasive pest issues is related to communication. Most communications come from the top down. Communication can be impeded for a number of reasons including lack of trust and language barriers (jargon or foreign languages). People look to local sources as well as the University of Florida for guidance. If these sources are uninformed, inappropriate information can be disseminated. Over time, local and state land grant institutions develop educational materials in the interim, problems may be present as a result of misinformation. Over time, local and state land grant institutions develop educational materials in the interim, problems may be present as a result of misinformation.

In an effort to test these assumptions, we initiated a local task force in Palm Beach, Florida to address the invasive whitefly issues developing on the island where the city of Palm Beach is located. One taskforce in Palm Beach, Florida decided to see if a different method of communication might be more effective. A coordinated multi-agency outreach effort in support of research and development was critically needed to mitigate public perception pertaining to the state of Florida, USDA, and University of Florida's role in managing and responding to invasive species problems. A task force was developed that included the Garden Club of Palm Beach, USDA, Palm Beach Shiny Sheet, the Division of Plant Industry (DACS), the Town of Palm Beach, UF/IFAS, the UF/Palm Beach County Extension, office, and members of the media who helped with outreach. Outreach and educational materials needed deployment, but updates will continually occur as new research developments can

be delivered to the public. The synergistic partnership between UF/IFAS, FDACS/DPI, and USDA-APHIS-PPQ will further enhance the overall goal of mitigating and controlling these very destructive pests as the eventual overall programmatic success will be partially dependent upon public opinion.

Milestones:

1-An appropriate Ordinance was adopted by the city council.

2-Garden Club hosted a town meeting where every household in the City (8,000+) received a mailer inviting them to our meeting. This was done at their expense. They requested one talk to address how they had gotten into this mess. They were astonished by the facts: Florida averages more that 1 or 2 new arthropods becoming established each month, that more that 80% of all flowers imported into the US enter via Miami and that the exponential increase in the number of new pests in Florida can be associated with adoption of international trade agreements.

3- Identified methods to reach and educate professional landscapers and pest management companies (LCO's). This group has historically been very difficult to gain assess to. Developed educational programs for this group. (see http://www.flwhitefly.org).

4-Trained LCO's in the proper methods for managing invasive whiteflies and developed a system that would allow the general public to find licensed personnel that demonstrated they understood the training. The general public wanted the pests controlled safely using the most appropriate techniques. (see http://www.flwhitefly.org).

5- Developed and publicized websites and training materials and made them readily available. The aim was to present as much science based unbiased information as possible in an effort to quail the spread of rumors and misinformation.

6-We had a very little time before people began to get hysterical to begin the educational process. We feel that once the population begins to receive "bad" information and they have become emotional about the subject, education and training is far more difficult. Education concerning controversial subjects, such as those often encountered when managing an invasive pest is severely hampered once the audience becomes emotionally involved. We feel training on what could happen under various scenarios should begin before an invasion. It should be handled as much as possible using local educators or trainers. We see that an excellent model to possibly use for this situation might be the one used by EPA and often called Train-the-Trainer.