

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Create and Maintain Resource Effective Landscapes: The Smart Way to Grow

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	5%	0%	0%	
102	Soil, Plant, Water, Nutrient Relationships	5%	0%	0%	
112	Watershed Protection and Management	5%	0%	0%	
133	Pollution Prevention and Mitigation	5%	0%	0%	
201	Plant Genome, Genetics, and Genetic Mechanisms	5%	0%	0%	
204	Plant Product Quality and Utility (Preharvest)	5%	0%	0%	
205	Plant Management Systems	5%	0%	0%	
206	Basic Plant Biology	5%	0%	0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%	0%	0%	
212	Pathogens and Nematodes Affecting Plants	5%	0%	0%	
213	Weeds Affecting Plants	5%	0%	0%	
216	Integrated Pest Management Systems	5%	0%	0%	
405	Drainage and Irrigation Systems and Facilities	5%	0%	0%	
602	Business Management, Finance, and Taxation	5%	0%	0%	
603	Market Economics	5%	0%	0%	
604	Marketing and Distribution Practices	5%	0%	0%	
608	Community Resource Planning and Development	5%	0%	0%	
610	Domestic Policy Analysis	5%	0%	0%	
723	Hazards to Human Health and Safety	5%	0%	0%	
802	Human Development and Family Well-Being	5%	0%	0%	
	Total	100%	0%	0%	

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	40.0	0.0	0.0	0.0
Actual	83.0	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
886255	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
886255	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
886255	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Florida is one of the most populous and rapidly growing states. Population growth and development pose increasing stress on natural systems and environmental well-being. Currently Florida has over 5 million acres of lawns and urban landscapes. Residents place great importance on landscape appearance and research has shown that well designed landscapes contribute 7 to 11 percent toward the sale value of residential property in the U.S. (Behe et al). Attractive landscapes in commercial settings also contribute to the high amenity values associated with Florida as a tourism destination. The nursery and landscape services industry in Florida in 2007 had total sales of \$6.82 billion, which generated \$6.57 billion in value added (income) impacts and supported over 140,000 jobs (Hodges and Rahmani, 2009, available at <http://edis.ifas.ufl.edu/fe800>).

Many Florida homeowners, landscape professionals, builders, developers and residents are not well-informed about the economic and environmental impacts of landscaping practices. Management of urban landscapes with high levels of mowing, fertilization, irrigation and pest control treatments poses challenges to environmental sustainability, and the high cost of environmental mediation may present challenges to their economic sustainability. UF/IFAS recommendations for reduced input use have been widely adopted by commercial growers, but are not commonly followed by landscape professionals or homeowners. Difficult business conditions, including increasing costs of inputs, scarcity of qualified and legal workers, and lack of professionalism in the industry also pose challenges to the economic sustainability of many commercial nursery and landscape companies. Better information is needed on the economic costs and benefits of sustainable nursery production and landscape management practices and the aesthetic values of low-input landscapes. Educational programming by UF/IFAS extension can help to raise awareness about the importance of these practices, and to assist stakeholders in making appropriate choices.

2. Brief description of the target audience

Nursery and greenhouse plant producers
 sod producers
 landscape service providers
 allied trades professionals
 commercial developers/builders
 property appraisers
 Ag Business and Industry
 Florida Residents
 Government and Regulatory Agencies
 UFIFAS Faculty & Staff

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	5000000	6000000	0	0
Actual	897942	1690233	0	0

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

Patent Applications Submitted

Year: 2010
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	35	0	
Actual	100	0	100

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 Commercial Horticulture/Urban Forestry Services
2	Change in Behavior Commercial Horticulture/Urban Forestry Services
3	Change in Condition Commercial Horticulture/Urban Forestry Services
4	Change in Knowledge Residential Landscapes including Florida Yards and Neighborhoods (FFL/FYN)
5	Change in Behavior Residential Landscapes including Florida Yards and Neighborhoods (FFL/FYN)
6	Change in Condition Residential Landscapes including Florida Yards and Neighborhoods (FFL/FYN)

Outcome #1

1. Outcome Measures

Change in Knowledge Commercial Horticulture/Urban Forestry Services

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	50	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

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, Sri Lanka weevil, pink hibiscus mealybug and Asian citrus psyllid.

What has been done

This program was delivered to twelve locations throughout Florida and Texas via interactive video conferencing technology. It included a four-hours of presentations including Do's and Don'ts of Pesticides; Quarantines, Import and Export issues; Weed Management in the Nursery, Using Banker Plants and Other Biological Control Methods; Chilli Thrips Control; and Scouting in the Nursery. Presentations and supportive reference materials were provided to attendees. Representatives from product manufacturers provided updates on key products to meet nursery pest management challenges. Support materials and product labels were distributed at each program site. Those attending the programs were highly encouraged to participate in program pre- and post-testing.

Results

On March 9, 2010 the program was delivered to 9 Florida counties and 3 Texas counties. The Florida counties included all major nursery production areas and spanned from Miami-Dade County in south Florida to Gadsden County in north Florida, thus demonstrating statewide appeal. Approximately 150 people attended. At all sites, the pre- and post-test results indicate an increase in knowledge and potential behavior change. The average percent increase in knowledge was 22% for those responding. The intention to change behavior was especially successful with an average of 84% for participants at all program sites. Geographically, this program had wide appeal and impact with participation from numerous counties throughout Florida and three in Texas with similar plant production problems.

Additionally, although the program was targeted to growers and production practices, approximately half of those attending were employed in the landscape industry. This indicates the critical need for basic pest information and training within the landscape industry, and should result in good participation in the 2011, landscape industry focused program. Nursery participation in 2010 may have indicated the need to explore other ways to more fully reach this audience. A major impact upon nursery attendance was likely the nearly catastrophic drop in plant production and related staffing, and a need to reduce all costs including pest and disease management as a result of the current economic recession.

4. Associated Knowledge Areas

KA Code	Knowledge Area
201	Plant Genome, Genetics, and Genetic Mechanisms
205	Plant Management Systems
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
603	Market Economics

Outcome #2

1. Outcome Measures

Change in Behavior Commercial Horticulture/Urban Forestry Services

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	50	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Some counties and municipalities in Florida have adopted strict regulations limiting the amount of fertilizers that can be applied to residential landscapes. The Green Industry Best Management Practices (GI-BMP) program is intended to address the need for professional certification of landscape service providers, in order to reduce adverse impacts of fertilizer and pesticide application. Florida Senate Bill 494 requires that all commercial fertilizer applicators have a

license from the Florida Department of Agriculture and Consumers Services by January 2014. To get a license, Green industry workers must be trained in BMPs and receive a certificate of completion from UF-IFAS and Florida Department of Environmental Protection. The goal of the program is to train and certify 100,000 Green industry professionals working in urban landscapes. UF-IFAS faculty in at least 10 counties are leading this educational effort.

What has been done

Green Industry BMP educational curriculum was developed in collaboration with the Florida Department of Agriculture and Consumer Services and the Florida Department of Environmental Protection. The curriculum includes 5 separate class modules. Classes are offered at Extension offices, as special sessions for large companies and by some companies themselves if trainers have completed required certification. In some counties, the classes were offered in English and Spanish, to make the information accessible to typical landscape workers. Tests are administered to measure student learning. Also, pre- and post-program evaluations are conducted by extension faculty to measure behavioral changes. Students successfully passing the class received certification documentation, which entitles them to obtain FDACS certifications and legally apply fertilizer in urban landscapes beginning January 1, 2014.. Also, a train-the-trainer approach is used, with over 200 students recruited to assist in further training of others in their own companies.

Results

In 2010, extension faculty in Florida reported that nearly 2,700 Green industry workers received training under this program. Increase in knowledge of BMPs, as measured by pre- and post-test evaluations averaged 21%, or typically doubled. Surveys of program trainees conducted in some counties indicated that 95% of participants were satisfied with the class, and 78% stated that their landscape practices changed as a result of the training, although a lower percentage of respondents (40 to 70%) reported that they had reduced fertilizer application rates. Overall, 84% of students passed the final exam. Most participants reported little or no decrease in plant health due to reduced fertilization.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
112	Watershed Protection and Management
133	Pollution Prevention and Mitigation
201	Plant Genome, Genetics, and Genetic Mechanisms
204	Plant Product Quality and Utility (Preharvest)
205	Plant Management Systems
206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems

Outcome #3

1. Outcome Measures

Change in Condition Commercial Horticulture/Urban Forestry Services

Not Reporting on this Outcome Measure

Outcome #4

1. Outcome Measures

Change in Knowledge Residential Landscapes including Florida Yards and Neighborhoods (FFL/FYN)

2. Associated Institution Types

- 1862 Extension
- 1890 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	100	0

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Trenholm et al. (2009) indicated that Florida's Friendly Landscaping TM protects natural resources through water conservation, waste and pollution reduction, erosion prevention, and creation of wildlife's sustaining habitats. However, prior to 2010, no Florida's Friendly Landscaping TM youth curriculum existed. In addition, according to the U.S. National Headquarters website (2010), "America faces a future of intense global competition with a startling shortage of scientists. In fact, only 18 percent of U.S. high school seniors are proficient in science (NAEP 2005) and a mere 5 percent of current U.S. college graduates earn science, engineering, or technology degrees compared to 66 percent in Japan and 59 percent in China."

What has been done

These needs were addressed by developing Florida's Friendly Landscaping TM Curriculum (FFL), and support materials, as research indicates that clientele exposure to Extension education information usually leads to adoption of environmental landscape practices (Brown, 2009).

FFL is designed to enhance students' environmental awareness and stewardship. It

also allows youth to explore the scientific process, including data collection and analysis, interpretation, and protocol formulation and application. FFL Curriculum fosters environmental stewardship among youth and allows them to engage in conserving water, soil, and vegetation resources from an early age.

Results

The results of initial pilot studies in Broward County are as follows: 71.1% (n=27) felt that as a result of FFL they were able to improve their community. Twenty-one (55.3%, N=38) youth indicated they had changed their behavior in planting/gardening, pesticide use elimination, feeding birds and planting flowers, water conservation and recycling practices as a result of participating in FFL Curriculum pilot test. Youth gained life skills by participating in hands-on activities designed to increase their understanding of hypothesis formulation, experimental design, and data collection management.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
102	Soil, Plant, Water, Nutrient Relationships
206	Basic Plant Biology
211	Insects, Mites, and Other Arthropods Affecting Plants
212	Pathogens and Nematodes Affecting Plants
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
608	Community Resource Planning and Development

Outcome #5

1. Outcome Measures

Change in Behavior Residential Landscapes including Florida Yards and Neighborhoods (FFL/FYN)

Not Reporting on this Outcome Measure

Outcome #6

1. Outcome Measures

Change in Condition Residential Landscapes including Florida Yards and Neighborhoods (FFL/FYN)

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

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

Brief Explanation

Florida is presently being affected by the economic issues plaguing the world. There are also public policy changes, government regulations and reduced appropriations affecting Extension and the land-grant university as a whole. There are competing programmatic challenges and the general public tired from years of stress and uncertainty are also reacting negatively as they try to save their jobs and homes. Florida has also been told to expect another 3 to 6% reduction in legislative funds and as counties are also being cut back by the state it is expected that IFAS and especially Extension will be seriously impacted.

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

1. Evaluation Studies Planned

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

Evaluation Results

In some locations or regions the quantity of irrigation water for agriculture is restricted. During times of limited rainfall, additional restrictions are imposed. Concomitantly, environmental agencies are demanding that nutrient concentrations of natural waters return to natural levels. Extension personnel have direct access and training using research-based information that will help the nursery and greenhouse clientele, adopt and implement changes to comply with new regulations and reduced water consumption. Change is necessary for clientele to remain economically viable and environmentally compliant in a rapidly urbanizing state.

Key Items of Evaluation

There are approximately 7000 nurseries registered in Florida with the Division of Plant Industry. In the most recent economic study conducted by Hodges and Haydu of the University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS), farm gate value

of nursery plants was 3 billion dollars with approximately 58,000 acres of container production and 23,000 acres of field or in-ground production. Many container nurseries are located close to urban markets. Consequently, there is competition for limited water resources. In addition, production practices must be used that result in the least environmental impact and do not contribute to impairment of natural waters. Best Management Practices (BMPs) regarding water use (quantity) and environmental impacts (quality) have been adopted by state of Florida rule.

In some locations or regions the quantity of irrigation water for agriculture is restricted. During times of limited rainfall, additional restrictions are imposed. Concomitantly, environmental agencies are demanding that nutrient concentrations of natural waters return to natural levels. Extension personnel have direct access and training using research-based information that will help the nursery partners, adopt and implement the best practices or changes to comply with new regulations and reduced water consumption. Change is necessary for partners to remain economically viable and environmentally compliant in a rapidly urbanizing state. Nursery and greenhouse operations (83 firms 3074 acres) enrolled in state BMP program. Practices are used (action) that warrant their enrollment.