

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Sustainable Energy

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
123	Management and Sustainability of Forest Resources	15%	0%	0%	
131	Alternative Uses of Land	15%	0%	0%	
204	Plant Product Quality and Utility (Preharvest)	20%	0%	0%	
403	Waste Disposal, Recycling, and Reuse	20%	0%	0%	
404	Instrumentation and Control Systems	30%	0%	0%	
	Total	100%	0%	0%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	4.0	1.0	0.0	0.0
Actual Paid Professional	1.2	0.0	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
11539	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
11539	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

No information at this time. Team is just forming that will identify specific activities

2. Brief description of the target audience

General public
 Agricultural producers/growers
 Business
 Community government

3. How was eXtension used?

{No Data Entered}

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	26142	59448	0	0

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

Patent Applications Submitted

Year: 2013
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	4	0	0

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	Changes in Knowledge related to bio-energy: Sustaining and fueling Florida
2	Changes in behavior related to Bio-Energy: Sustaining and Fueling Florida
3	Change in Conditions related to Bio-energy: Sustaining and Fueling Florida

Outcome #1

1. Outcome Measures

Changes in Knowledge related to bio-energy: Sustaining and fueling Florida

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

Changes in behavior related to Bio-Energy: Sustaining and Fueling Florida

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

Change in Conditions related to Bio-energy: Sustaining and Fueling Florida

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 still heavily impacted by the economic downturn and although the economy appears to be improving it is expected that sequestration will be an issue and this is delaying a stronger economy. Public education in Florida has lost more than 50% of state funding and has been impacted by other losses or increases such as the failure of tuition to be increased to bring the state more into line with other state tuitions. Counties across the state are impacted by devolution from the state level and this also has a direct impact on the land-grant universities.

Natural and national disasters can also affect the number of volunteers available to work with youth and Florida citizens and this is an area that the land-grant universities use

to support programs. Natural disasters such as hurricanes, fires, storms and flooding are common within the state leading to many issues that impact the land-grant colleges.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

In the area of bio-energy Extension worked closely within the bio-energy industry. Of those survey following educational training 576 increased their knowledge, 241 made changes to their behavior related to sustaining and fueling Florida and 273 of people working within the industry made changes that impacted the larger communities around them.

Key Items of Evaluation

Issue or Situation & Target Audiences:

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 prudent that the state explore the bioenergy and bio-products arena and the potential for improving self-sufficiency, providing 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 diverse, fast-growing, high-yielding biomass feedstocks year round. 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.

What we have done to solve it:

UF researchers have evaluated feedstocks, enhanced development of processing and conducted economic analyses:

- A new biofuels crop, *carinata*, has been grown in Florida for the past two years. It has an oil content of near 42% and has been shown to produce from 3-4,000 lbs/A. At this rate, as much as 200 gallons of fuel could be produced per acre making this crop a viable crop for winter crops before summer row crops are planted. This has the potential to provide much of the needed fuel mandated by the DOD from the SE U.S.
- High-yielding, smut resistant varieties of energy cane have been developed and are in trials.
- A new effort was started to investigate production of pine terpenes harvested from slash pine trees for utilization as advanced biofuels for military aircraft. If successful, the project could result in significantly increased supplies of biofuels from non-food commodity sources.
- Research was conducted to determine the risk of invasive behavior of energycane cultivars. It was confirmed that the risk of invasive behavior is low in West Florida due to the lack of viable seed production. Field days were conducted to educate growers about considerations of biofuel crop selections including yield potential and environmental impact. Growers valued IFAS efforts to diversify Florida Panhandle's cropping systems

including biofuel crops.

- A study was completed on feasibility of developing a biofuels industry in Hendry County, Florida. The study considered use of sugarcane, sweet sorghum as feedstocks for ethanol production. Workshops conducted with stakeholder groups revealed a high level of interest in this bioenergy development.
- Engineering support was provided for preliminary design of the Stan Mayfield Bio-refinery Pilot Plant during the period of June 2010-June 2011. The Bio-refinery Pilot Plant is now in trial production and the main processes (pretreatment and fermentation stages) are operating successfully.

Outcome or Impact: Two key results of the activities described above are as follows: First, the BP cellulosic ethanol plant at the Lykes Bros. facility in Highland County requires 25,000 acres of energy cane feedstock. BP was planning on using released energy cane clone L 79-1002 from Louisiana as the feedstock. However, after seeing the smut susceptibility of L 79-1002, and smut resistance and high yields of new UF developed clones BP has decided to abandon L 79-1002 and is presently negotiating a material transfer agreement to multiply and test UF's energy cane clones at Lykes Bros. and elsewhere. Second, the successful rollout of the Stan Mayfield Bio-refinery Pilot Plant has stimulated a company (SCF Processing Ltd.) to open a new business in Gainesville initiating a project to produce low-cost materials (PLA-sugarcane bagasse residues composites) from bio-refinery residues using twin extruder.