

V(A). Planned Program (Summary)

Program # 5

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
101	Appraisal of Soil Resources	10%	0%		
102	Soil, Plant, Water, Nutrient Relationships	20%	0%		
216	Integrated Pest Management Systems	20%	0%		
402	Engineering Systems and Equipment	20%	0%		
403	Waste Disposal, Recycling, and Reuse	20%	0%		
603	Market Economics	10%	0%		
	Total	100%	0%		

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	2.0	0.0	0.0	0.0
Actual Paid Professional	1.0	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
5839	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
17371	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
120505	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

The project consisted of programs and demonstrations that 1) increased production of energy feedstocks (corn, soybeans, rapeseed, cottonseed, wheat and biomass); 2) worked with municipalities to produce biodiesel from used cooking oil; 3) worked with entrepreneurs to develop renewable energy manufacturing plants; 4) worked with petroleum distributors, farmers and the general public to increase usage of renewable fuels; 5) worked on renewable energy opportunities and 6) increased crop production fuel efficiency

2. Brief description of the target audience

The activities of the sustainable Energy Program target the following groups of stakeholders 1) feedstock producers and their representative groups that include, but are not limited to, the Alabama Soybean Producers, the Alabama Wheat and Feed Grains Producers, the Alabama Soybean and Corn Association and the Alabama Forestry Association; 2) fleet managers; 3) energy entrepreneurs; 4) municipalities, county governments and other public organizations; 5) feedstock production advisors including ACES agents and specialist, public and private agronomy advisors; 6) public policy makers requesting energy information; 7) governmental agency personnel including ADECA, DOE, USDA and NRCS; and 8) homeowners and others interested in energy conservation.

All educational programming efforts target audiences without exclusion or discrimination, as specifically defined by ACES policy guidelines.

3. How was eXtension used?

Certified Biomass Procurement Specialist/Switchgrass

This free eXtension online course is funded by a grant from the United States Department of Agriculture's National Institute of Food and Agriculture. The course is a part of the Southeastern Partnership for integrated Biomass Supply Systems.

This course is designed to train students to work with farmers and landowners to produce switchgrass that will be used as the feedstock for a biorefinery.

The idea for this program came from observing the poultry industry. In the poultry industry, poultry companies contract with growers to grow the chickens they need. Farmers cannot show up at the processing plant any time they want with whatever kind and size of chicken they happen to have. The poultry companies hire specialists that work with the growers. These specialists make sure that they have the exact type and the exact size of chicken the processor needs at the time they need it.

As a certified biomass procurement specialist, graduates will work for a biorefinery that's making fuel or other bio-products. Like the poultry field specialist, graduates insure that their employer has the inputs it needs to keep the plant running.

Graduates will work with the farmers and landowners to produce switchgrass in an environmental and socially accountable way that meets the specifications of the biorefinery. These specifications are sure to include size, amount and delivery time.

The course consists of four separate two hour units with the objective of giving students a working understanding of the fundamentals of sustainable feedstock production practices. There is a test on each unit and students that make 80 or above on the test receive a certificate.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	1191	414928	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	3	0	3

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Participants reached
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- video produced
Not reporting on this Output for this Annual Report

Output #3

Output Measure

- web pages developed

Year	Actual
2013	2

Output #4

Output Measure

- Energy Tree Production

Year	Actual
2013	3

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Knowledge gained
2	recomendations addopted
3	Energy saved and produced

Outcome #1

1. Outcome Measures

Knowledge gained

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The high cost of seed, fertilizer and crop protection chemicals has increased the need for farmers to know all the agronomic and economic benefits associated with each input decision they make. Soybeans are the dominate feedstock for biodiesel production.

The more soybeans that are produced the more soybean oil will be available for biodiesel.

What has been done

An educational program was conducted to inform soybean producers of what was discovered with the soybean production test on fertilization.

Results

\$20 per acre added profit due to using the data from these test .

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
403	Waste Disposal, Recycling, and Reuse
603	Market Economics

Outcome #2

1. Outcome Measures

recomendations addopted

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Soybean seeding rates. Producers want to cut production cost and maximize yield by adopting correct seeding rate.

What has been done

An educational program was conducted to inform soybean producers of what was discovered with the seeding rate and row spacing field test.

Results

Almost a two bushel per acre increase in yield equaling \$25 extra profit. That is an additional three gallons of biodiesel capacity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
603	Market Economics

Outcome #3

1. Outcome Measures

Energy saved and produced

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Increased soybean yield could result in increased biodiesel production

What has been done

2013 soybean demonstrations showed how to increase yield 19.3 bushels per acre.

Results

27 gallons of biodiesel per acre increase. (19.3 bushels per acre X 1.4 gallons of biodiesel per bushel.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
603	Market Economics

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

Discovery of abundant natural gas decreased demand for renewable fuels.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Certified Biomass Procurement eXtension Course - Five test students took the course and found several glitches mainly with how the test are given and graded. These glitches were corrected

Key Items of Evaluation

eXtension course test students.