V(A). Planned Program (Summary)

Program # 4

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
402	Engineering Systems and Equipment	20%		0%	
601	Economics of Agricultural Production and Farm Management	80%		59%	
604	Marketing and Distribution Practices	0%		26%	
607	Consumer Economics	0%		15%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.3	0.0	1.0	0.0
Actual Paid Professional	0.4	0.0	0.7	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**
11600	0	227500	0
1862 Matching	**1890 Matching**	**1862 Matching**	**1890 Matching**
23954	0	20053	0
1862 All Other	**1890 All Other**	**1862 All Other**	**1890 All Other**
25305	0	2052	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Research - Consumer and farmer surveys indicate there is a strong support for electricity for solar panels, windmills and cow manure and the variations in the level of support and willingness to pay are associated with certain demographic factors.

Regionally-specific agronomic information on seeding rates and planting dates for canola and sunflower(s) are being developed. Farmers struggle with fuel, feed, and fertilizer prices and look for new crops to fit into rotations. Primary beneficiaries of this project are farmers interested in producing oilseed crops for their farms. Data collected will be invaluable to growers and agricultural service providers as they pursue on-farm biofuel production.

Extension - Education and outreach has been through Energy Crop Research Projects and Renewable energy workshops. Efforts continue working with greenhouse growers on alternative fuel and structures for efficient and effective production. A comprehensive manual is being completed. Significant effort is invested into eXtension.

One grant funded project focused in one county this year, planting 100 new acres of oilseed sun flowers. An unexpected outcome has been the community interest drawing many tourists and locals to stop and photograph the fields of sunflowers to the pleasure of some farmers and others not so much. Farmers involved want to continue with this project this year and other farming communities want to look into oilseed production.

2. Brief description of the target audience

- Agriculture: Crop Producers
- Agriculture: Farmers
- Agriculture: Service providers
- Small businesses
- Policymakers
- Consumers

3. How was eXtension used?

Contributing expertise by adding content and providing leadership. Staff have taken leadership roles in CoP.

V(E). Planned Program (Outputs)

1. Standard output measures

2012	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	60	0	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	0	5	5

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Research Projects

Year	Actual
2012	19

Output #2

Output Measure

- Workshop - single session

Year	Actual
2012	2

Output #3

Output Measure

- Comprehensive manual

Year	Actual
2012	1

Output #4

Output Measure

- Economic feasibility study

Year	Actual
2012	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Number of farmers who implement a new practice to begin production or to improve current oilseed production yield and quality
2	Identify key factors of economic performance of biofuels in Vermont and across the U.S.

Outcome #1

1. Outcome Measures

Number of farmers who implement a new practice to begin production or to improve current oilseed production yield and quality

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	21

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)
High fuel costs and fuel security can challenge the sustainability of farm business. Growing one's own oilseed for fuel is an option in most areas but growing oilseed crops is new to many Vermont farmers.

What has been done
With funding assistance from the Vermont Sustainable Jobs Fund a project focused on one county where some experience, cropping equipment, a biodiesel processing facility and technical assistance existed. Ten growers participated and over 69 acres were planted with oilseed sunflowers producing oil and meal for biodiesel. Farm Fresh Fuel signs were posted providing information on "producing our own fuel, food, and animal feed."

Results
One notable aspect of the project was the amount of tourist attention the sunflower fields attracted prompting numerous inquiries and interest. Oil and meal produced from this project is estimated to displace 2,400-3,000 gallons of fossil fuel. Plans are underway for year 2 with most growers wanting to be involved again as well as inspiring other farming communities to look into oilseed production for their own fuel security.

4. Associated Knowledge Areas

KA Code	Knowledge Area
402	Engineering Systems and Equipment
601	Economics of Agricultural Production and Farm Management

Outcome #2

1. **Outcome Measures**

Identify key factors of economic performance of biofuels in Vermont and across the U.S.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Government Regulations

Brief Explanation

Research-
Financial supports from government agencies is a key factor of economic performance of oilseed and farm-scale biodiesel production in Vermont. Economic returns depend upon market factors.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Two studies;

- Feasible for Vermont farmers to grow certain oilseeds and produce biofuels
- Large farms can convert oilseeds into electricity

Key Items of Evaluation

Rapid growing interest in biofuels in Vermont and the potential of biofuels providing renewable energy.