

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			30%	
403	Waste Disposal, Recycling, and Reuse			70%	
	Total			100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2012	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.2	0.0
Actual Paid Professional	0.0	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
0	0	26143	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	550000	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

One research project is covered in this planned program area. The project reached the design

phase for an aerobic composting facility, raised donor funding to build the composting facility, and evaluated machines to produce animal bedding from cord wood.

2. Brief description of the target audience

In the Northeastern U.S., dairy farmers and equine operations require large amounts of animal bedding. These stakeholders are interested in the overall goals of this project, using woodlots to provide animal bedding and using aerobic composting to produce soil amendments, capture heat for various farm operations, while reducing off-farm inputs for animal bedding and reducing emissions of the greenhouse gas.

3. How was eXtension used?

eXtension was not used in 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	6	4	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	0	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of undergraduate students directly involved in the projects

Not reporting on this Output for this Annual Report

Output #2

Output Measure

- Number of university courses in which project results have been incorporated
- Not reporting on this Output for this Annual Report

Output #3

Output Measure

- Number of workshops, training sessions and presentations to non-scientific stakeholders

Year	Actual
2012	2

Output #4

Output Measure

- Number of websites in which project results have been incorporated

Year	Actual
2012	1

Output #5

Output Measure

- Number of graduate students directly involved in the research.

Year	Actual
2012	1

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	New and improved knowledge about compost-based renewable energy systems for small animal operations available to peers and stakeholders.

Outcome #1

1. Outcome Measures

New and improved knowledge about compost-based renewable energy systems for small animal operations available to peers and stakeholders.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	1

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In the Northeastern U.S., the cost of off-farm inputs for animal bedding and energy are economic constraints for the viability of the farming operation as are the ecological impacts of managing animal manure. Aerobic composting presents an alternative method of extracting energy for farm operations, potentially reducing greenhouse gas emissions, and producing aged compost for pasture improvement.

What has been done

- researchers contributed to the design of the novel aerobic composting facility.
- Several types of industrial wood chippers, grinders, and shavers were evaluated for cost, ease of use, and time requirements.
- A one-acre test plot was logged to set aside wood for bedding preparation in the next year.

Results

- The design attracted the interest of Brian Jerosse of Waste Not Resources Solutions, Enosburg Falls, VT. Subsequently, Mr. Jerosse became an active partner in the facility design.
- A wood shaver was identified as the most appropriate means to produce animal bedding.

4. Associated Knowledge Areas

KA Code	Knowledge Area
403	Waste Disposal, Recycling, and Reuse

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Government Regulations
- Competing Programmatic Challenges
- Other (Competing time demands)

Brief Explanation

The PI for this project serves as the University Provost. This limits his availability on a day to day basis. The primary delays were to meet State and University regulations for building design and to raise \$550,000 in construction costs, from a single donor.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

The goal is provide farmers with an easy to use model to evaluate whether it would be profitable to invest in a wood shaver or perhaps initiate a regional co-op to invest in the machinery. The economic model for "on-farm animal bedding" is still being developed. The model will be tested once wood shaving and large scale aerobic composting of manure and waste bedding have been initiated.

Key Items of Evaluation