

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
101	Appraisal of Soil Resources			5%	
102	Soil, Plant, Water, Nutrient Relationships			5%	
104	Protect Soil from Harmful Effects of Natural Elements			5%	
125	Agroforestry			5%	
131	Alternative Uses of Land			5%	
205	Plant Management Systems			10%	
206	Basic Plant Biology			10%	
211	Insects, Mites, and Other Arthropods Affecting Plants			5%	
402	Engineering Systems and Equipment			10%	
511	New and Improved Non-Food Products and Processes			5%	
601	Economics of Agricultural Production and Farm Management			10%	
603	Market Economics			5%	
605	Natural Resource and Environmental Economics			10%	
610	Domestic Policy Analysis			5%	
723	Hazards to Human Health and Safety			5%	
	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	9.0	0.0
Actual Paid Professional	0.0	0.0	13.4	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	421989	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
0	0	421989	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

Our engineering and life science faculty have become heavily involved in the development of sustainable energy systems for the upper Midwestern US. Projects are ongoing in the areas of energy efficient construction technologies for farm buildings, textile material development with energy conservation applications, bioconversion of cellulose to fuel ethanol, value-added uses of byproducts of biofuel production systems, capacity building in support of bio-fuels outreach development, evaluation and production of various new bio-feedstocks, and carbon sequestration issues on private and public lands.

2. Brief description of the target audience

Integrated activity for our Formula Grant programs targets a broad group of stakeholder audiences in agricultural, natural resources, and the public. Examples can be seen in our stakeholder section information provided elsewhere in this report.

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	0	0	0	0

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

Year: 2012
 Actual: 1

Patents listed

Title: IMPROVED PROCESS TO PRODUCE FURFURAL IN HIGH YIELD FROM A FRACTIONATED BIOMASS

Inventors: Troy Runge, Anurag Mandalika

Hatch Grant #: 11-CRHF-0-6055

Date Reported to the Federal Government: 7/30/12

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2012	Extension	Research	Total
Actual	0	13	0

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Output measures for this project include patents, graduate students trained, and publications. This estimated output will be refined as we gain experience with this measure for Formula Grant supported work. Graduate Students Trained:

Year	Actual
2012	11

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	<p>Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria. Finally, we will use the Thomson ISI Essential Science for agricultural science as one of our measures of impact of our research program. Our target for these outcome measures is to be ranked in the top 5 institutions in the United States. We will continue to develop impact statements for individual projects which have shown exemplary and significant impact. Publications:</p>

Outcome #1

1. Outcome Measures

Outcome measures for this work are both qualitative and quantitative. We will rely on feedback from stakeholder groups, advisory boards, and individual constituents, as well as from UW Extension teams on the relevance, importance and impact of our research program. The output measures listed earlier will also serve as outcome measures in that patents graduate degrees and publications all include an element of critical review and assessment of uniqueness, originality, contribution to the science and knowledge base, or other performance criteria. Finally, we will use the Thomson ISI Essential Science for agricultural science as one of our measures of impact of our research program. Our target for these outcome measures is to be ranked in the top 5 institutions in the United States. We will continue to develop impact statements for individual projects which have shown exemplary and significant impact. Publications:

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2012	13

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The Wisconsin Agricultural Experiment Station has a broad list of stakeholders who potentially benefit from the research and extension/outreach from the Wisconsin Formula Grant program.

This list of stakeholders includes:

- *General agriculture
- *Food processing and marketing industry
- *Animal and dairy related agriculture
- *Plant and cropping system interests including vegetables
- *Green industry (turf, ornamentals, etc.)
- *Biotechnology
- *Bio-energy and bio-economy groups
- *Sustainable and organic food producers
- *Environmental groups and interests
- *Consumer and non-traditional groups
- *Governmental agencies and officials
- *Scientific community

What has been done

Each year through a competitive, investigator-driven, peer-reviewed process, the Wisconsin Agricultural Experiment Station funds approximately 131 research and integrated activity projects focused on national, regional, and local issues and priorities linked to stakeholder interests. In addition to serving stakeholder needs through these competitively funded projects (which address critical applied research as well as basic science questions), this program sets a priority on training our next generation of applied and science based professionals through its graduate student training mission.

Results

In fiscal year 2012, the Wisconsin Agricultural Experiment Station funded projects resulted in 239 publications, 10 patents, and 131 graduate students trained. The Wisconsin Agricultural Experiment Station also tracks the Thompson ISI Essential Science indicator as a measure of impact. Our goal is to remain in the top five. Examples of representative impacts resulting from individually funded projects within our portfolio are described, to the extent possible, in the Summary of this Annual Report.

4. Associated Knowledge Areas

KA Code	Knowledge Area
101	Appraisal of Soil Resources
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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

Brief Explanation

A variety of factors could affect the outcomes of this project including those listed above. However, the breadth of the program makes it unlikely that the outputs would be completely disrupted unless there was some major natural, economic, or public policy disruption. A major change in Federal policy or appropriation affecting the Formula Grant program could affect our ability to produce our outcomes. UW-Madison has implemented a policy change regarding tuition remission. Formula Grants have previously been exempt from tuition charges in the UW-System, but are no longer exempt. Since these funds do not allow tuition remission, we continue to discuss alternatives to meeting our Formula Grant missions in order to continue training graduate students. We continue to make graduate student training the priority of our program.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

N/A

Key Items of Evaluation

N/A