

V(A). Planned Program (Summary)

Program # 3

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
131	Alternative Uses of Land	15%			
133	Pollution Prevention and Mitigation	10%			
205	Plant Management Systems	45%			
605	Natural Resource and Environmental Economics	15%			
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	10%			
903	Communication, Education, and Information Delivery	5%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	0.0	0.0	0.0	0.0
Actual Paid Professional	0.5	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
13611	0	0	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
13611	0	0	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
16120	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct applied research into alternative crops as potential biofuels and methods of production that are well-suited for Nevada.
- Report on and adapt research to educate producers outlining benefits and costs.
- Educate the public about sustainable practices, renewable energy use, and environmentally responsible lifestyles.

2. Brief description of the target audience

Target audiences include agricultural producers, general public, citizen and special interest groups, related industries, and federal, state, and local government agencies.

3. How was eXtension used?

eXtension was not used in this program; it is not useful for program delivery and support.

V(E). Planned Program (Outputs)

1. Standard output measures

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	0	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	Number of individuals who gain knowledge about sustainable energy and environmentally responsible lifestyles.
2	Number of individuals who implement practices related to or in support of sustainable energy and environmentally-responsible lifestyles and practices.

Outcome #1

1. Outcome Measures

Number of individuals who gain knowledge about sustainable energy and environmentally responsible lifestyles.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Applied research and educational programs are needed to educate the public about sources of sustainable energy. This includes discovery of a portfolio of programs to develop biomass used for biofuels, design optimum crops for bioenergy production, and produce value-added, bio-based industrial products. It also includes enhancing public awareness of alternative land uses as natural resources for environmentally-responsible lifestyles.

What has been done

UNCE faculty completed a series of cellulosic biofuel field experiments in 2013, providing the only source of replicated data in Nevada regarding production of cellulosic biofuels. UNCE faculty collaborated with Nevada producers in identifying high value, lower water use crops that can be produced as alternatives to hay production. These crops include food crops, forage crops, and industrial crops with the potential of biofuels. A second priority is developing re-vegetation techniques and identifying adapted perennial plant species that can be used to reclaim abandoned farmlands in Nevada.

Results

The results of these cellulosic biofuel field experiments demonstrated conclusively that, while yields obtained from both cool and warm season grasses were relatively high, this production came only with maximum applications of water and regular fertilizer applications. Canola trials results have been statistically analyzed and a preliminary report and fact sheet are in preparation. Public demand has increased seven-fold for information on canola production techniques.

4. Associated Knowledge Areas

KA Code	Knowledge Area
131	Alternative Uses of Land

133	Pollution Prevention and Mitigation
205	Plant Management Systems
605	Natural Resource and Environmental Economics
803	Sociological and Technological Change Affecting Individuals, Families, and Communities
903	Communication, Education, and Information Delivery

Outcome #2

1. Outcome Measures

Number of individuals who implement practices related to or in support of sustainable energy and environmentally-responsible lifestyles and practices.

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Other (grant funding availability)

Brief Explanation

Each of these factors challenges advancement in the program area.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

Although few in number, the programs UNCE faculty offer to date in this NIFA priority area include quantified evaluative data for crop field trials where results are used to educate producers and document impacts. Evaluations in 2013 of these three programs include results of cellulosic biofuel research and trials.

Key Items of Evaluation

Evaluation studies of cellulosic biofuel production in Nevada indicate prohibitive high input costs and unacceptable low product values. Evaluation of this project provides solid evidence precluding economically viable production of cellulosic biofuel products in northern and western Nevada. This information is extremely valuable for anyone contemplating an investment in commercial production cellulosic biofuels in Nevada. Formal evaluations of pre-test and post-test scores measuring knowledge increases in response to the question "How to decide if cellulosic biomass is a potential alternative crop" revealed a statistically significant increase on a 1-5 scale following

educational workshops in Pershing County (pre= 1.43, post= 3.43) and in Churchill County (pre = 1.75, post =4.00). UNCE faculty presented results at the 2013 American Society of Agronomy, Crop Science Society, Soil Science Society annual meeting.