

V(A). Planned Program (Summary)

Program # 20

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
102	Soil, Plant, Water, Nutrient Relationships	10%	0%	10%	0%
111	Conservation and Efficient Use of Water	10%	0%	10%	0%
201	Plant Genome, Genetics, and Genetic Mechanisms	0%	0%	50%	0%
205	Plant Management Systems	40%	0%	10%	0%
402	Engineering Systems and Equipment	30%	0%	20%	0%
606	International Trade and Development	10%	0%	0%	0%
	Total	100%	0%	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	1.0	0.0	1.0	0.0
Actual Paid Professional	1.4	0.0	4.9	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
6846	0	86996	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
6846	0	444648	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
56178	0	412739	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

AgriLife Extension

Agricultural producers and the energy industry have a keen interest in the role that agriculture will play in contributing to renewable energy for America, and are looking to AgriLife Extension to help define which second generation crops will fit this market and how they will be produced. Texas is a major livestock feeding state and faces a feed grain deficit at current production levels, making second generation crops the only practical feed stocks for bioenergy. AgriLife Extension has responded by applied and demonstrations of candidate oilseed and lignocellulosic feedstock crops; holding workshops and field days for agricultural producers, by meeting with commercial interests from the energy sector to interpret potential for a variety of plant based bioenergy options. As crop-based bioenergy other than the traditional ethanol from feed grains is still in its infancy, actual adoption of second generation bioenergy is limited. Research involved the development of cropping system BMPs, testing and development of novel dedicated oilseeds and lignocellulosic bioenergy crops, advanced plant breeding systems, micro- and macro-algae, logistics and conversion technologies. Our focus is on second generation oilseeds and lignocellulosic feed stocks rather than on corn, soybeans, and other crops that can be used for food and feed. Drought and salinity tolerance, adaptation to marginal growing conditions and wide hybridization are emphasized in research in order to increase adaptation and sustainability of alternative energy systems. Organic residuals at livestock production systems offer a concentrated source of feedstock for the bioenergy production. Demonstration of identification, selection, harvesting and transportation of quality organic residuals for entering bioenergy production is critical to ensuring a sufficient energy resource.

AgriLife Research

Research involves cropping systems, dedicated energy crops, advanced plant breeding systems, micro- and macro-algae, non-traditional oilseeds, logistics and conversion technologies. Our focus is on lignocellulosic and unique plant oil feedstocks for liquid motor fuels rather than on corn, soybeans, and other crops that can be used for food and feed. Drought tolerance and wide hybridization are emphasized in breeding research in order to increase adaptation and sustainability of alternative energy systems. Best management practices are needed to identify, collect, separate, transport and process these organic residuals. Development of best management practices will ensure to availability of quality organic residuals for entering bioenergy production. Research also involved development of novel technologies to convert municipal solid waste and organic solids from dairy lagoons to electricity.

2. Brief description of the target audience

The target audience includes traditional petroleum and natural gas energy companies, farmers, seed companies, start-up companies in bioenergy, electric generating companies, and the general public.

3. How was eXtension used?

eXtension was not used in this program

V(E). Planned Program (Outputs)

1. Standard output measures

2013	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: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	62	62

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- # of educational programs conducted.
Not reporting on this Output for this Annual Report

Output #2

Output Measure

- # of research-related projects.

Year	Actual
2013	7

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	# of people reporting knowledge gained through participation in educational activities.
2	# of people reporting a willingness to adopt practices through participation in educational programs.
3	# of national/international collaborations aimed at providing sustainable energy for the future.

Outcome #1

1. Outcome Measures

of people reporting knowledge gained through participation in educational activities.

Not Reporting on this Outcome Measure

Outcome #2

1. Outcome Measures

of people reporting a willingness to adopt practices through participation in educational programs.

Not Reporting on this Outcome Measure

Outcome #3

1. Outcome Measures

of national/international collaborations aimed at providing sustainable energy for the future.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	2

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Energy independence in Europe is crucial to world peace. Texas A&M AgriLife Extension has been instrumental in providing education and research to key leaders in Poland to embrace the new technology available to develop an energy industry. Poland provides the key to energy independence for the EU and Extension has provided the leadership to help educate the opinion and political leaders in this region.

What has been done

The Texas A&M AgriLife Extension Leadership Unit has been directly involved with Mexico and

Poland providing energy education and research to help them secure energy independence. As a result of Extension's outreach and personal relationships, Extension has been asked to provide leadership and coordination concerning energy.

Extension's leadership unit was contacted by the Under Secretary for Economic Development from the Governor's office in State of Nuevo Leon, Monterrey, Mexico to provide an opportunity to build cooperation and collaboration between Texas A&M University and Monterrey Tech University and Nuevo Leon University. The Mexican government is interested in research, faculty and student exchanges in the Mechanical Engineering, Aerospace Dynamics and Petroleum Engineering with Texas A&M University. As a result of Extension's Leadership Unit hosting the Under Secretary for 3 days in College Station, Dr. Kathy Banks, Vice Chancellor for Engineering and faculty will travel to Monterrey to discuss opportunities to exchange research, faculty and students to support the existing industries and provide assistance to the energy industry. Mexico has just changed the constitution and will now allow private companies to drill in Mexico. Prior to this, only the Mexican government could drill and this will become a game changer for the economy of Mexico. Extension has provided the bridge between Texas and Mexico to connect the key educators and researchers to help Mexico develop the energy industry.

Results

Recently, the Extension leadership unit hosted 28 key agriculture producers from Poland to study agriculture and oil & gas in Texas to see how they both work in tandem. The Extension leadership unit has served as the conduit between Texas and Poland to provide education and research to help Poland understand their environmental concerns about the petroleum industry. Poland has a 500 year supply of natural gas and could be energy independent, but education is needed to educate the populace about the new technology that is safe and environmentally sound. Recently, Poland has changed the corporate tax structure and other limitations suggested by the energy companies to encourage them to come back to Poland and develop the industry to secure Poland and the EU's energy independence from Russia. Currently, the EU is dependent on Russia's energy supplies and the attitude about the environment has changed with the political situation in the Ukraine. Poland could provide the EU with energy independence and especially land locked countries such as the Czech Republic, Slovakia, Austria, Hungary and others. Extension has been asked to organize a team of experts to provide information to the Polish Parliament (Sejm) as a result of the program information learned during the 2 week visit to Texas. The program provided by Marathon Oil was outstanding and this one day session changed the mindset of the entire group including the Vice Chairman of the Sejm Agriculture Committee. Extension has hosted over 75 key agricultural leaders, governors, professors and young farmers in Texas showcasing how oil & gas works in tandem with no environmental or surface problems to the land owners the past 3 years. The average farm size of these farmers was 1500 acres and the average farm size of Poland is 30 acres. These are the key opinion leaders of the country and Extension has played a major role in education and outreach. In addition, the Extension leadership unit has initiated a meeting between the Polish Ambassador and Governor Rick Perry to discuss exporting Shale Gas to Europe. Energy independence is crucial to world peace in this region of the world.

4. Associated Knowledge Areas

KA Code	Knowledge Area
606	International Trade and Development

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes

Brief Explanation

No external factors affected this program.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

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Key Items of Evaluation

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