

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Climate Change - Natural Resources and Environment

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%			
121	Management of Range Resources	20%			
123	Management and Sustainability of Forest Resources	10%			
136	Conservation of Biological Diversity	10%			
213	Weeds Affecting Plants	20%			
216	Integrated Pest Management Systems	10%			
605	Natural Resource and Environmental Economics	20%			
	Total	100%			

V(C). Planned Program (Inputs)

1. Actual amount of professional FTE/SYs expended this Program

Year: 2010	Extension		Research	
	1862	1890	1862	1890
Plan	5.0	0.0	0.0	0.0
Actual	3.3	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
78740	0	0	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
50953	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

- Conduct workshops that will address specific topics such as forest stewardship and controlling pests for Extension professionals and clientele
- Provide training so people will be able to calibrate spray equipment and making management plans
- Work with the media to educate the public on natural resource topics
- Partner with local associations, agencies and organizations with common interests and goals
- Prepare MontGuides (fact sheets) on related topics
- Conduct tours and demonstrations when that is an appropriate method for teaching the topic
- Conduct workshops on water quality and safety

2. Brief description of the target audience

- Private Forest Land Owners
- Graduates of the Forest Stewardship Program
- County Weed Boards
- Farmers, ranchers and ag producers
- Private Land Owners
- Producers who operate Animal Feed Operations
- Professional loggers and foresters

V(E). Planned Program (Outputs)

1. Standard output measures

2010	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	7000	10000	200	150
Actual	5694	7000	170	120

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

Patent Applications Submitted

Year: 2010
 Plan: 0
 Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2010	Extension	Research	Total
Plan	1	0	

Actual	4	0	4
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V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Forestry: Number of private forest owners who attend one/two workshops so they will understand the timber sale process allowing them to complete a successful timber sale. Number of people attending the forestry mini-college, a one-day educational program that includes 10 forestry related courses that provide attendees with knowledge or sources of assistance necessary to implement their forest stewardship plans.

Year	Target	Actual
2010	350	221

Output #2

Output Measure

- Small Acreage Lands: Number of one-on-one consultation and group workshops for small acreage land owners on pest control, weed management and other topics. Number of people who participate in Field Days and demonstration opportunities for land owners to observe techniques and best practices. Number of subscribers to Big Sky Small Acres Publication.

Year	Target	Actual
2010	400	473

Output #3

Output Measure

- Environmentally Sensitive Management Systems: Provide one-on-one assistance for developing management plans. (Forestry, Animal Feeding Operations, etc.) Number of consultations. Number of demonstrations of sprayer calibrations, GPS usage, and other technical practices that provide environmental protection. To provide up-to-date guidance for operators through an AFO/CAFO website and electronic library, MontGuides publications, and field days.

Year	Target	Actual
2010	500	4500

Output #4

Output Measure

- WATER QUALITY: Number of people starting a file to track water quality Number of people attending Well Educated program To guide private well owners through the process of testing their water quality complete with materials to help interpret results and insight on ways to help protect ground water resources. To educate land owners and the public about the effects and impacts of Coal Bed Methane Development using resources such as the documentary Prairies & Pipelines: Issues in Coal Bed Methane Development, MontGuides, news articles and

educational forums

Year	Target	Actual
2010	350	500

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Forestry: Participants will learn the necessary steps for selling timber and what resources are available to them for assistance. Attendees will receive information they can use to meet their individual forest stewardship objectives. Landowners will develop a plan and implement activities that will enhance the sustainability of their forests. Landowners will implement activities for their individual stewardship objectives Montana's private landowners will be managing their forests to meet their individual stewardship objectives and so the forests lands continue to provide environmental, economic and social benefits to Montana citizens.
2	Small Acreages: Producers and small acreage landowners will become aware of insect, weed and disease infestations as they are developing so they can make management decisions in a timely manner. Applicators will learn the risks associated with applying pesticides and safety precautions recommended to mitigate those risks, while at the same time, learn techniques in applying chemical appropriately. Producers will learn to use the GPS in locating weed or other problem areas.
3	Environmentally Sensitive Management Systems: Producers will understand the current rules and regulations relative to animal feeding operations and how to evaluate their own operation. This also applies to forestry plans, grazing land plans and any other plans appropriate to the individual operation. Producers will learn to identify and manage their particular IPM issue or natural resource concern. Landowners will implement best management practices in addressing weed issues. Number of producers/small landowners who have adopted weed, crop, pest and forage management strategies. Local landowners will become more profitable while protecting the environment Producers/Landowners will adopt practices outlined in their CNMP plans. (applies to other planning efforts) Producers/landowners will adopt practices that will address their specific IPM problem. All operations that develop and implement a CNMP protect ground and surface water, apply manure at agronomic rates, and utilize technologies that allow them to better operate and/or monitor their operation. All operations will remain economically viable and environmentally friendly.
4	Water Quality: Participants will learn the importance of and steps to do well testing. Percent of forage producers/participants who learn proper timing and implementation of control techniques and methods appropriate to their operations. Number of wells tested and recommendations followed as a result. Distribution of information from water projects, such as Water Monitoring Activities, Well and Septic DVD and Prairie and Pipelines: Issues in Coal Bed Methane Development as well as information retrieved from the accompanying mail in survey.
5	RENEWABLE ENERGY: Number of people attending educational opportunities on alternative/renewable energy sources.

Outcome #1

1. Outcome Measures

Forestry: Participants will learn the necessary steps for selling timber and what resources are available to them for assistance. Attendees will receive information they can use to meet their individual forest stewardship objectives. Landowners will develop a plan and implement activities that will enhance the sustainability of their forests. Landowners will implement activities for their individual stewardship objectives. Montana's private landowners will be managing their forests to meet their individual stewardship objectives and so the forests lands continue to provide environmental, economic and social benefits to Montana citizens.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	350	221

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

National statistics show that all family forested lands are under tremendous influences that would change the role they play with respect to providing wildlife habitat, wood fiber, clean water, recreational opportunities and aesthetic landscape appeal. A summary of the factors that are contributing to these changes are: urban areas are expanding into outlying forests, a large percentage of forest landowners are aging, sustainable forest management certification is becoming a required process in order for forest landowners to sell wood, climate changes and the associated insect, disease and wildfire perturbations.

What has been done

Montana Forest Stewardship program helps non-industrial private forest landowners develop forest management plans. Landowners are taught basic concepts of forest ecology, inventory, silviculture and management followed by landowners themselves developing management plans for their properties with the guidance of a professional forestry/natural resources teaching team. Approximately 28% of Montana family owned forestland has been impacted by this program. Additionally, professional loggers have graduated from the adapted Forest Stewardship Class for Loggers.

Results

A survey completed by landowners following the Forest Stewardship classes indicates 80% of participants have more confidence in making management decisions such as when/if to sell their timber, whether or not to graze their forest lands, whether or not to apply for cost share funds.

Eleven Forest Stewardship Graduates (1992-2004) were visited in 2010 to determine the effectiveness of the program. All still had their original plans and most had completed or are continuing management to achieve their goals. Half have modified their plans as their management has progressed or the situation of their forest has changed. Management completed included a total of 1,487 acres of timber harvest and salvage treatments, 779 acres of pre commercial thinning, 50 acres of tree planting, 1,204 acres of weed control, 250 of wildlife habitat improvement, 200 acres of fire hazard reduction and defensible space, several miles of road maintenance, and 1,250 acres of grazing.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
123	Management and Sustainability of Forest Resources
605	Natural Resource and Environmental Economics

Outcome #2

1. Outcome Measures

Small Acreages: Producers and small acreage landowners will become aware of insect, weed and disease infestations as they are developing so they can make management decisions in a timely manner. Applicators will learn the risks associated with applying pesticides and safety precautions recommended to mitigate those risks, while at the same time, learn techniques in applying chemical appropriately. Producers will learn to use the GPS in locating weed or other problem areas.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	400	473

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

The 2007 Census of Agriculture determined that small farms account for 91% of all US farms. A small farm has less than \$250,000 in agricultural sales annually, but operators of small farms with sales of less than \$10,000 annually, typically work off the farm for their main income. Many of the people involved with small farming/acreages lack knowledge and skills to manage land while preserving the natural resources. Soil erosion, overgrazing, water contamination/waste, decreased/fragmented wildlife habitat, noxious weed infestations, poor domesticated animal health, air quality issues, pesticide overuse, riparian area issues are some of the problems that

can result.

What has been done

Workshops/classes/individual consultations are conducted for people who are involved with small acreages. Topics of discussion range from range management and weed control to animal health and air quality. The people involved with small acreage farming appreciate the opportunity to obtain materials (electronic or printed) to help them address issues they face. The Extension Service collaborates with other agencies and organizations to publish the Rural Living in Montana: Big Sky Small Acres magazine which has a distribution of over 200 readers. Flyer/pamphlets/circulars (MontGuides) address single topic issues and are a good resource to those who live on small acreages.

Results

Several counties in Montana have small acreage resource assistance programs that help small acreage landowners with issues related to their properties. For example, in one county a resource technician was hired to provide small acreage education, conduct site visits and provide management recommendations. The technician made 80 site visits during the summer months and prepared a summary report for the landowner following each visit. To date, more than 80 site visits with over 90 different landowners have been done, 5 subdivision Homeowner Associations had consultations which reached over 200 landowners, recommendations were made for management of 1400+ acres, and phone and in-office consultations provided information for an additional 85 landowners. For those who live in forested areas, hazardous fuels reduction information was discussed.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
136	Conservation of Biological Diversity
605	Natural Resource and Environmental Economics

Outcome #3

1. Outcome Measures

Environmentally Sensitive Management Systems: Producers will understand the current rules and regulations relative to animal feeding operations and how to evaluate their own operation. This also applies to forestry plans, grazing land plans and any other plans appropriate to the individual operation. Producers will learn to identify and manage their particular IPM issue or natural resource concern. Landowners will implement best management practices in addressing weed issues. Number of producers/small landowners who have adopted weed, crop, pest and forage management strategies. Local landowners will become more profitable while protecting the environment Producers/Landowners will adopt practices outlined in their CNMP plans. (applies to other planning efforts) Producers/landowners will adopt practices that will address their specific IPM problem. All operations that develop and implement a CNMP protect ground and surface water, apply manure at agronomic rates, and utilize technologies that allow them to better operate and/or monitor their operation. All operations will remain economically viable and environmentally friendly.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	500	4500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

During 2010, pesticide safety education programs will be highlighted in this program area. These programs focus on regulations for pesticide use for private applicators including insecticide, fungicide, rodenticide, and herbicide. Without proper handling of these chemicals, human and environment issues can surface to be sizeable in scope. Private applicator certification is necessary for individuals to be able to apply these chemicals.

What has been done

A minimum requirement for certification, a private applicator must show he possesses the practical knowledge of the pest problems and pest control practices associated with his operation; proper storage, use, handling and disposal of the pesticides and containers; and his related legal responsibility. The pesticide safety program ensures that all local pesticide applicator training coordinators have the tools necessary to train applicators to meet these requirements. Extension personnel update manuals, send out critical updates, write pesticide news bulletins for applicators, and stay current on the latest mandated laws and training materials which in turn are provided to private applicators.

Results

The pesticide education program conducted pesticide safety presentations which targeted tribal applicators. Four pesticide education programs were conducted for over 150 tribal members of the Flathead Reservation, 3 pesticide program target 50 tribal members of the Fr. Peck Indian Reservation. One hundred eighty programs were conducted during 2010 targeting over 4500 applicators with topics including pesticide safety, environmental concerns, IPM, calibration, private applicator license, pesticide laws, and reading the pesticide product label. Surveys indicate over 80% of the applicators learned new perspectives which will assist them in protecting themselves, their families, or the environment from pesticide misuse. Fifty-five of the participants confirmed they would change their behavior patterns as a direct result of pesticide safety/environmental concern presentations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
216	Integrated Pest Management Systems
605	Natural Resource and Environmental Economics

Outcome #4

1. Outcome Measures

Water Quality: Participants will learn the importance of and steps to do well testing. Percent of forage producers/participants who learn proper timing and implementation of control techniques and methods appropriate to their operations. Number of wells tested and recommendations followed as a result. Distribution of information from water projects, such as Water Monitoring Activities, Well and Septic DVD and Prairie and Pipelines: Issues in Coal Bed Methane Development as well as information retrieved from the accompanying mail in survey.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	350	500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

In Montana, there is currently no effort to coordinate ground water protection and stewardship. Private wells are a large part of the concerns related to the lack of protection and monitoring. There is a high percentage of the population living in rural areas making well and septic issues a priority across the state. Additionally, water quality and quantity have been identified as priorities through a needs assessment done by Tribal Colleges. Specifically, water science education capacity building is listed at the top of the needs assessment list however, the ability of the faculty to teach the courses is lacking.

What has been done

The Well Educated program is being delivered in 32 counties across the state and has reached over 500 households. The program empowers private well owners to monitor, assess, protect and treat the quality of their drinking water. It provided kits that include sample bottles, a parameter cost sheet, and sampling instructions for conducting sampling. Analysis is conducted by Energy Lab with results being mailed to well owners that include interpretation materials, parameter fact sheets and an educational DVD. A teaching package of 25 lessons with instructor notes, assignments, supplemental reading resource guides, tests and videos was developed for use by the tribal colleges.

Results

As a result of the Well Educated Program, people are starting well and septic files, testing water quality, identifying issues with their water systems and addressing problems. Mail evaluations revealed approximately 22% of the participants identified a potential problem with their well or

septic system and 78% said they increased their knowledge about well and septic systems as a result of the program. The Tribal College teaching package was introduced to 20 educators from tribal institutions from 9 states. 94% of the participants said the teaching package increased their capacity to teach water quality and 82% said they used the package to teach water quality at their institutions; 88% of tribal college faculty said that before watching the film on The Clean Water Act In Indian Country (one of the lessons in the package), they did not have a good understanding of how the Clean Water Act is administered in Indian Country; 100% said the video helps prepare students to explore water quality monitoring and management on their reservations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
102	Soil, Plant, Water, Nutrient Relationships
136	Conservation of Biological Diversity

Outcome #5

1. Outcome Measures

RENEWABLE ENERGY: Number of people attending educational opportunities on alternative/renewable energy sources.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2010	{No Data Entered}	248

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Energy is a sizable input cost for agricultural producers and a significant expense for nearly all Montanans. Energy prices have been volatile in recent years. Environmental concerns are growing due in part to concern about greenhouse gas levels. Both of these factors have encouraged Montanans to utilize energy more effectively. Unfortunately, many Montanans do not have quality information about benefits and costs associated with alternative energy in the state. Resources developed in other parts of the country may not be accurate for Montana. To meet this need educational materials related to biofuels have been developed and presentations have been provided across the state.

What has been done

Extension personnel have prepared materials (electronic/printed) specific to Montana that discuss

alternative energy opportunities. These include biofuels, wind, solar and so forth. Work has been done with the Fort Peck Community College on the Ft. Peck Indian Reservation, to address energy and economic issues. Workshops and classes have been conducted across the state to provide information to landowners and others about alternative energy sources as a way to help them make energy related decisions.

Results

Based on a participant polling done during the workshops, 66% of the participants indicated their interest in biodiesel declined when they learned that it has historically been priced higher than petroleum diesel. Based on conversations with biodiesel workshop participants (immediately following the workshop), most decided that biodiesel would not benefit their operation. The number of participants who did not change their fuel buying habits was increased due to the biodiesel workshops. One audience member reported that for the first time they were able to understand and evaluate the economics and policy implications of various biodiesel proposals and opportunities.

4. Associated Knowledge Areas

KA Code	Knowledge Area
605	Natural Resource and Environmental Economics

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Brief Explanation

{No Data Entered}

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- Before-After (before and after program)
- During (during program)
- Time series (multiple points before and after program)
- Case Study
- Comparison between locales where the program operates and sites without program intervention

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}