

**V(A). Planned Program (Summary)**

**Program # 1**

**1. Name of the Planned Program**

Agriculture

- 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
112	Watershed Protection and Management	5%			
205	Plant Management Systems	10%			
213	Weeds Affecting Plants	5%			
216	Integrated Pest Management Systems	10%			
301	Reproductive Performance of Animals	5%			
302	Nutrient Utilization in Animals	10%			
307	Animal Management Systems	10%			
308	Improved Animal Products (Before Harvest)	5%			
311	Animal Diseases	5%			
312	External Parasites and Pests of Animals	5%			
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals	5%			
403	Waste Disposal, Recycling, and Reuse	5%			
601	Economics of Agricultural Production and Farm Management	10%			
602	Business Management, Finance, and Taxation	5%			
604	Marketing and Distribution Practices	5%			
	<b>Total</b>	100%			

**V(C). Planned Program (Inputs)**

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

Year: 2014	Extension		Research	
	1862	1890	1862	1890
<b>Plan</b>	10.0	0.0	0.0	0.0
<b>Actual Paid</b>	9.4	0.0	0.0	0.0

<b>Actual Volunteer</b>	15.9	0.0	0.0	0.0
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**2. Actual dollars expended in this Program (includes Carryover Funds from previous years)**

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
937147	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
474720	0	0	0

**V(D). Planned Program (Activity)**

**1. Brief description of the Activity**

MSU Extension agents and specialists work one-on-one with producers, landowners, land managers, youth and consumers to identify and address individual problems and solutions. They answer specific questions through phone calls and emails and are a first contact for many Montanans. Agents and specialists also offer classes, workshops, Webinars, group discussions, demonstrations, field tours/trials and more. Agents, specialists and volunteers disseminate knowledge to non-typical clientele through farmer's markets, fairs and other community events.

MSU Extension also utilizes PSA's, listservs, blogs, websites, newsletters, MONTGuides, Television, eXtension, AgAlerts, radio and other media.

**2. Brief description of the target audience**

- Livestock Producers
- Commodity Associations
- Land Managers/Owners (small and large)
- Weed Control Professionals
- County Weed Boards
- Small Grain Producers
- Native American Youth
- Tribal leadership
- Native American producers
- Farm and ranch families
- Beginning farmers and ranchers
- Gardeners and horticulturist
- Landscape and nursery professionals
- Vo-Ag teachers and others interested in Ag education
- Allied industry stakeholders

### 3. How was eXtension used?

Agents and specialists utilized eXtension to provide webinars and programming, share fact sheets, evaluate courses and programs (Moodle), conduct radio interviews, create Extension documents and as a general resource.

#### V(E). Planned Program (Outputs)

##### 1. Standard output measures

2014	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
<b>Actual</b>	60543	525622	3389	20456

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

###### Patent Applications Submitted

Year: 2014  
 Actual: 0

###### Patents listed

##### 3. Publications (Standard General Output Measure)

###### Number of Peer Reviewed Publications

2014	Extension	Research	Total
<b>Actual</b>	97	0	0

#### V(F). State Defined Outputs

##### Output Target

##### Output #1

###### Output Measure

- Livestock: Number of producers attending meetings/workshops/clinics aimed at increasing profitability and knowledge of environmentally sustainable practices. Number of producers utilizing ration-balancing.

<b>Year</b>	<b>Actual</b>
2014	5064

**Output #2**

**Output Measure**

- Crops: Number of producers attending workshops, field days, research plot sites and research center summaries. Number of people adopting conservation practices. Number of producers using pulse crops in rotation.

<b>Year</b>	<b>Actual</b>
2014	12186

**Output #3**

**Output Measure**

- Range: Number of people participating in range monitoring programs and the Range Management Institute. Number of requests to identify or record new weeds found.

<b>Year</b>	<b>Actual</b>
2014	29

**Output #4**

**Output Measure**

- Weed and Pest Control: Number of people attending workshops, training, and/or tours. Number of people attending meetings on pesticide control and applicator training. Number of people being certified and re-certified for pesticide use.

<b>Year</b>	<b>Actual</b>
2014	9607

**Output #5**

**Output Measure**

- Master Gardener/Horticulture: Number of people who become certified Master Gardeners. Amount of food donated and number of hours volunteered.

<b>Year</b>	<b>Actual</b>
2014	34506

**Output #6**

**Output Measure**

- Junior Ag Loan Program: Number of youth completing quality assurance training and receiving loans.

<b>Year</b>	<b>Actual</b>
2014	83

**V(G). State Defined Outcomes**

**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Livestock: Increase number of producers using Extension information to successfully balance rations for the least-cost formulation. Increase number of people who successfully use knowledge gained through Extension interaction to improve profitability, meat quality and use of environmentally sustainable practices.
2	Crops: Increase in number of producers who improve their understanding of nutrient cycling, weed control, variety selection and alternative crop possibilities. Increase in number of farm operators who implement best practices to increase profitability and enhance long-term sustainability.
3	Range: Increase in number of producers and small acreage landowners who are aware of insect, weed and disease infestations as they begin so they can make timely management decisions. Increased number of producers/ranch managers who implement range monitoring activities which lead to improvement in resource management strategies.
4	Weed and Pest Control: Increase in number of applicators who are certified and employ safety precautions and risk management while using pesticides in the most environmentally and economically effective manner. Increased use of the Schutter Diagnostic Lab and specialists to identify pest, disease and plants in a timely manner, and provide appropriate recommendations.
5	Master Gardener/Horticulture: Increased number of certified Master Gardeners, increased amount of food donated to community partners and increased number of volunteer hours.
6	Junior Ag Loan Program: Youth who complete the finance and beef management training, successfully obtain a loan and use it for the purchase of livestock to begin or expand their herd.
7	2014 Farm Bill Education and Outreach.

## **Outcome #1**

### **1. Outcome Measures**

Livestock: Increase number of producers using Extension information to successfully balance rations for the least-cost formulation. Increase number of people who successfully use knowledge gained through Extension interaction to improve profitability, meat quality and use of environmentally sustainable practices.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Action Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	5064

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

Beef cattle production results in the greatest share of agriculture cash receipts in Montana. Volatile cattle and feed markets, as well as rising input costs, provide challenges to sustainable production. Extension is actively engaged with producers at all levels. The sheep industry has been directly tied to MSU Extension for more than 100 years. From generations-long breeding programs, to expansive grazing and weed control initiatives, to wool quality and marketing, Montana has crafted a niche in the wool and lamb industry through careful research and impactful engagement at all levels. Extension Livestock programs are part of the foundation of Montana's successful agricultural industry.

#### **What has been done**

Extension agents and specialists hosted classes, workshops, Webinars and one-on-one interventions with producers to improve profitability while applying the most current research-based best practices for specific client locations. They used social media, AgAlerts, press releases and personal contact to communicate urgent information related to weather. They used ration-balancing, alternate feedstuff analysis, nitrate testing and general nutritional information to prevent livestock loss, increase efficiency, lower costs and be environmentally friendly. They hosted the Annual Sheep Shearing School. Largely due to Extension's new reporting system, reported direct contacts related to livestock increased from 2555 in 2013, to 5064 in 2014, with more than 10,000 additional indirect contacts.

#### **Results**

Extension specialists are working with producers on a research project to identify the most

effective nitrate testing kits for providing quantitative estimates of nitrates in forage. Through this project, Extension is directly helping to manage nitrate toxicity which is proven to prevent loss of forage and negative health implications for livestock. Producers and agents who attended the Nutrition Conference and Livestock Forum reported overall satisfaction of 4.29 out of 5 with 5 being very satisfied and 1 being very unsatisfied. They reported increased knowledge of treating low quality forages, mitigation of impacts from the Atlas Blizzard and how to use social media to reach consumers.

Producers reported saving three percent on feed bills, or around \$35/head, due to Extension-provided information. This can vary widely depending on location, but with 2.6 million cows, the potential impact is huge. At least 20 graduates of the MSU Sheep Shearing School are currently working with Montana-based commercial shearing contractors.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
301	Reproductive Performance of Animals
302	Nutrient Utilization in Animals
307	Animal Management Systems
308	Improved Animal Products (Before Harvest)
311	Animal Diseases
312	External Parasites and Pests of Animals
314	Toxic Chemicals, Poisonous Plants, Naturally Occurring Toxins, and Other Hazards Affecting Animals
403	Waste Disposal, Recycling, and Reuse
601	Economics of Agricultural Production and Farm Management

**Outcome #2**

**1. Outcome Measures**

Crops: Increase in number of producers who improve their understanding of nutrient cycling, weed control, variety selection and alternative crop possibilities. Increase in number of farm operators who implement best practices to increase profitability and enhance long-term sustainability.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
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2014

12186

### 3c. Qualitative Outcome or Impact Statement

#### Issue (Who cares and Why)

Field crops are an important foundation for Montana Agriculture. Faculty work one-on-one with producers to increase efficiencies while producing safe crops with the best possible yields. Cereal viruses represent a growing and complex threat to the sustainability of the cereal cropping system. The wheat curl mite vectors multiple viruses among grassy weeds and cereal crops. While wheat, barley, corn, oats and rye are all susceptible to viruses including Wheat streak mosaic virus, the impact of the more recently identified Wheat mosaic virus and Triticum mosaic virus are unknown. Understanding the spread of cereal viruses is critical as no effective chemical (acaricide) or genetics based (plant-breeding) management options exist.

#### What has been done

County agricultural agents work with local producers to provide direct, specific impacts. Specialists bring research to the agents/producers. As an example, one specialist working on research related to cereal viruses released 20 AgAlerts (emailed to 800 subscribers), three press releases, 23 presentations with 1529 participants, two outreach activities with 3100 participants and appeared on Montana PBS's Montana Ag Live eight times with an estimated audience of 10,000 per appearance. This specialist routinely responds to 750 contacts (phone, email and text) annually, mostly with disease questions. In 2014, Extension conducted five experiments related to NIFA funded proposals. Forty-six samples were submitted to the Schutter Diagnostic lab for wheat streak mosaic virus in wheat, up from three in 2013.

#### Results

The Schutter Lab identified an unprecedented, severe epidemic of Fusarium head blight (scab) on dryland winter wheat in northern Montana. The Lab offered management recommendations for future crops and confirmation of the vomitoxin, deoxynivalentol, in grain. They offered information on low quality seed, postharvest management and testing resources for moldy grain. This advice saves dollars and increases future production. Similar information about stripe rust in 2011 saved \$100 million in crop losses. Recommendations from the wheat virus studies include: timing and risk level in different locations around the state with pre-harvest volunteer wheat; final stages of testing for an insecticide for wheat curl mite management; variety susceptibility information; and nitrogen management. The Schutter Lab identified samples of Ascochyta blight in chickpeas and recognized widespread resistance to Headline and Xemium. The data is being used to encourage growers to rotate modes of action of fungicide when managing disease in their crops. Producers use this kind of Extension-based resources daily to make decisions that positively affect the profitability and sustainability of their operations.

### 4. Associated Knowledge Areas

KA Code	Knowledge Area
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

### **Outcome #3**

#### **1. Outcome Measures**

Range: Increase in number of producers and small acreage landowners who are aware of insect, weed and disease infestations as they begin so they can make timely management decisions. Increased number of producers/ranch managers who implement range monitoring activities which lead to improvement in resource management strategies.

#### **2. Associated Institution Types**

- 1862 Extension

#### **3a. Outcome Type:**

Change in Action Outcome Measure

#### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	29

#### **3c. Qualitative Outcome or Impact Statement**

##### **Issue (Who cares and Why)**

Rangeland comprises 70 percent of the land area in Montana and is found in every Montana county. In an economy where input costs of production on ranches are extremely high, ranches with livestock production enterprises rely heavily on rangelands to support their livelihood. As production costs and incidence of out-of-state landowners in Montana rises, there is an increased need for in-depth knowledge of rangeland ecology and management principles by public servants to assist landowners, land managers and producers in making important, efficient, and effective management decisions.

##### **What has been done**

The MSU Extension Range Management Institute was developed after the 2010 Extension Annual Conference where MSU county agents expressed need for more training and education on the subject. Currently, only 10 percent of Montana agents with agricultural responsibilities have academic training in rangeland ecology and management. The MSUE Range Management Institute provides field faculty with the hands-on, detailed information needed to be able to effectively provide range-related assistance to livestock producers and land managers. In 2014, 20 agents attended 11 sessions on topics including grazing animal behavior; grazing management systems; establishment and management of dryland and seeded pastures; and controlling native invasive plants on Montana rangelands.

##### **Results**

Participants of the Institute increased their foundational rangeland management knowledge from 73 percent on pre-tests to 84 percent on post-tests. Participants noted that the institute created

useful dialogue among agents, where there had previously been some contention. Use of the knowledge gained from the seminar helps agents serve as a vector to help ranchers more sustainably manage their native pasture resources and maintain their livelihoods by maximizing production in a low-input system. Helping ranchers be successful reduces land fragmentation which is helpful to overall landscape health and to preserving the heritage of rural communities in Montana. The MSUE Range Management Institute has increased the ability of county agents to assist ranchers, as well as to guide land managers and those who are new property owners in methods to take care of their land.

#### 4. Associated Knowledge Areas

KA Code	Knowledge Area
112	Watershed Protection and Management
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
307	Animal Management Systems
601	Economics of Agricultural Production and Farm Management

#### Outcome #4

##### 1. Outcome Measures

Weed and Pest Control: Increase in number of applicators who are certified and employ safety precautions and risk management while using pesticides in the most environmentally and economically effective manner. Increased use of the Schutter Diagnostic Lab and specialists to identify pest, disease and plants in a timely manner, and provide appropriate recommendations.

##### 2. Associated Institution Types

- 1862 Extension

##### 3a. Outcome Type:

Change in Action Outcome Measure

##### 3b. Quantitative Outcome

Year	Actual
2014	9607

##### 3c. Qualitative Outcome or Impact Statement

###### **Issue (Who cares and Why)**

The MSU Pesticide Education Program provides training and program licensing to approximately 6,100 private applicators across Montana. According to a Memorandum of Understanding

between the Montana Department of Agriculture and MSU Extension, MSU Extension is responsible for managing the private applicator program. Without this license, producers could lose the ability to manage pest outbreaks thus causing significant revenue losses. The program also trains applicators in non-target toxicity, security of pesticides, and the safe and effective use of pesticides to minimize negative environmental impacts and poisonings across the state.

**What has been done**

Delivered 40 presentations statewide and approved 350 private applicator program requests. Rewrote and updated many manuals and MontGuides. Worked closely with the Northern Cheyenne Reservation for extensive educational programming.

**Results**

As a result of pesticide applicator training, 40 percent more applicators understand how to calibrate their sprayers to prevent overspray and non-target toxicity while saving money from reduced waste. Additionally, there was a 50 percent increase in the number of applicators who indicated they would improve the storage of their chemicals since they better understood the potential danger to children and the unintended and mis-use that can occur through theft.

**4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
601	Economics of Agricultural Production and Farm Management

**Outcome #5**

**1. Outcome Measures**

Master Gardener/Horticulture: Increased number of certified Master Gardeners, increased amount of food donated to community partners and increased number of volunteer hours.

**2. Associated Institution Types**

- 1862 Extension

**3a. Outcome Type:**

Change in Action Outcome Measure

**3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	34506

**3c. Qualitative Outcome or Impact Statement**

### **Issue (Who cares and Why)**

There is a need for consumer horticulture and integrated pest management (IPM) information in the counties and reservations. During the growing season, calls to a county Extension office are over 50 percent horticulture- or IPM- related and in some counties the percent is upwards of 90 percent. Master Gardener curriculum, written and produced by the MSU Extension Horticulture professional staff, has a goal of educating the general public in horticulture, yard and garden maintenance and IPM. This education will benefit the agents as those successfully completing the course will educate others in the community. The Master Gardener program requires participants to volunteer as condition of becoming certified.

### **What has been done**

The Master Gardener program has three levels of classes. Level 1 (16 hours of class/20 hours volunteer commitment) includes basic and intermediate curriculum, Level 2 (16 hours of class/30 hours volunteer commitment) includes a large emphasis on integrated pest management and Level 3 (30 hours of class and 40 hours of volunteer commitment) is a three-day intensive training held on the MSU campus in Bozeman. In addition, many counties offer horticulture and urban forestry classes and projects in a fashion that meets the direct needs of their communities. Agents in all counties respond to regular drop-ins, phone calls and emails related to horticulture questions and many offer weekly columns and/or set up booths at Farmer's markets to answer questions.

### **Results**

The more Master Gardeners that are certified, the harder it gets to keep track of their work. Many continue to contribute long after they finish their classes. Agents reported that 481 certified Master Gardeners (at all 3 levels) completed 28,221 hours of volunteer work in 2014. Including Master Gardener hours, the total number of horticulture related volunteers in 2014 was reported at 660, with 30,042 hours contributed. At \$22/hour, this equates to \$660,924 in economic value to communities as a result of Extension horticulture programming. A sample of how these hours were served includes: developing community gardens, revitalizing farmer's markets, designing flower beds and landscaping for public spaces, working with children in greenhouses or after-school programs, growing food for food banks and community programs, planting trees and shrubs in boulevards and along city streets, visiting schools and organizations and sharing information and fresh produce.

## **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
205	Plant Management Systems
213	Weeds Affecting Plants
216	Integrated Pest Management Systems
602	Business Management, Finance, and Taxation

## **Outcome #6**

### **1. Outcome Measures**

Junior Ag Loan Program: Youth who complete the finance and beef management training, successfully obtain a loan and use it for the purchase of livestock to begin or expand their herd.

### **2. Associated Institution Types**

- 1862 Extension

### **3a. Outcome Type:**

Change in Condition Outcome Measure

### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	83

### **3c. Qualitative Outcome or Impact Statement**

#### **Issue (Who cares and Why)**

It is difficult for Native American youth and young adults to get started in the agricultural business. Families are unable to provide resources for the younger generation to purchase land or livestock to begin their businesses. Through an application, the Jr. Agriculture Loan Program and Rural Assistance Loan Program provide limited resources for purchase of livestock. For many, this is their start in establishing a viable business.

#### **What has been done**

Those receiving loans attended workshops focused on animal body condition scoring, animal production, and financial record keeping. All participants filled out and submitted a loan proposal to the Montana Department of Agriculture. Each applicant has individual consultations with professionals to establish a business plan, set goals, complete financial statements, establish record keeping systems and develop business agreements between appropriate parties, as well as caring for the animals.

#### **Results**

On the Blackfeet reservation 83 youth and two adults received certification through 4-H Livestock Quality Assurance Training. Thirty youth and their parents learned about the Jr. Agricultural program. Five successfully completed the process. These youth borrowed \$8500 each for the purchase of 34 bred cattle. The Rural Assistance Loan Program provided information and assistance to 28 adults. Ten successfully completed the process and collectively borrowed \$375,418 for the purchase of bred cattle and cost of operations.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
301	Reproductive Performance of Animals
307	Animal Management Systems
311	Animal Diseases
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

### **Outcome #7**

#### **1. Outcome Measures**

2014 Farm Bill Education and Outreach.

#### **2. Associated Institution Types**

- 1862 Extension

#### **3a. Outcome Type:**

Change in Action Outcome Measure

#### **3b. Quantitative Outcome**

<b>Year</b>	<b>Actual</b>
2014	2569

#### **3c. Qualitative Outcome or Impact Statement**

##### **Issue (Who cares and Why)**

The Agricultural Act of 2014, commonly known as the Farm Bill, is very complex legislation that created questions and concerns by farmers, ranchers, bankers and others working in agriculture-related business regarding how it would impact them and their profitability. Major constituent groups including the Montana Grain Growers Association, the Montana Farm Bureau and the Montana Farmers Union asked MSU Extension to provide educational tools and assistance to help producers understand insurance options and other relevant features.

##### **What has been done**

MSU Extension economists created workshops, decision tools and a one-stop website to inform constituents of new programs authorized through the Farm Bill. The workshops focused on the price-loss coverage and agricultural-risk coverage and supplemental coverage offered through the USDA's Farm Service Agency and Risk Management agency through federal crop insurance providers. Workshops were held in 28 communities (three reservations) with 2,489 participants. Additional workshops were provided for 50 producers and 30 agency staff. The web page <http://www.montana.edu/farmbill/> has been utilized extensively. A series of workshops is planned on each reservation in 2015 to explore unique opportunities for Native American farmers.

### **Results**

Pre- and post- surveys were distributed at each workshop and a telephone survey of a sample of participants is planned. The major impact will be determined by increased profitability that is recognized to be caused by the Farm Bill. Analysis of all this information is currently underway and initial data will be ready for the 2015 Annual Report. In addition, FRTEP agents have hosted workshops with Native American producers to share information and aid in decision-making. The website: <http://www.montana.edu/nafarmbill/> was created to address unique considerations for this population.

### **4. Associated Knowledge Areas**

<b>KA Code</b>	<b>Knowledge Area</b>
601	Economics of Agricultural Production and Farm Management
602	Business Management, Finance, and Taxation

### **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
- Other (High cost of fuel, fertilizer)

#### **Brief Explanation**

### **V(I). Planned Program (Evaluation Studies)**

#### **Evaluation Results**

Montana production agriculture is largely dependent on small grains and livestock. MSU Extension is committed in every county and reservation across the state to providing the latest scientific-based research and technologies to Montana's people.

- Producers and agents who attended the Nutrition Livestock Conference and Livestock Forum reported overall satisfaction of 4.29 with 5 being very satisfied and 1 being very unsatisfied.
- Producers reported saving \$35/head, due to Extension provided information. This can vary widely depending on location, but with 2.6 million cows, this is a clear economic impact.
- Twenty graduates of the MSU Extension Sheep Shearing School are currently working with Montana-based sheering contractors.
- Schutter Lab identified unprecedented, severe outbreak of Fusarium head blight on dryland winter wheat and offered clear management recommendations to mitigate damage and save future crop losses.

- Schutter Lab research is leading the development of best practices for wheat curl mite.
- Extension professionals improved their knowledge of rangeland management principles from 73 percent pre-test to 84 percent post-test because of the Range Management Institute.
  - Fifty percent more of participants in Private Pesticide Applicator training indicated they would store their chemicals more safely; and 40 percent more were able, after the class, to properly calibrate their sprayers.
- Volunteers through Extension horticulture programs including Master Gardeners contributed 30,242 hours in community service. This is an economic value of \$660,924 and represents 14.5 FTE.
- Five youth received Jr. Ag Loans totaling \$42,500 to purchase 34 bred cattle.
- Ten young Blackfeet borrowed a combined \$375,418 to purchase bred cattle and for the cost of operations on new ranches.

### Key Items of Evaluation

Three new specialists started work in 2014 thanks to funding from the Montana legislature. These include a second beef specialist, a forage specialist and an economics specialist. The Schutter Diagnostic Lab received 1976 samples from 50 counties for plant pest identification and 542 samples for insect identification.

- Twenty-four submissions were state-listed noxious weeds; three have caused millions of dollars of damage in neighboring states. Of these, two were the first state records of highly invasive weeds: garlic mustard and medusahead. Garlic mustard was eradicated and a management plan is in place to prevent the further spread of the medusahead.
- Ten plants were submitted by clients to verify if they were safe to consume. Four would have caused serious illness and one could have caused death within a few hours.
- Nine of 15 samples submitted were positively identified as bed bugs. Hotels, landlords and tenants used the information to solve disputes.
- A Bostrichid beetle was diagnosed in lumber allowing the builder to qualify for compensation for treatment.
- Twenty-nine plants were submitted to see if they were toxic to livestock. Five were, thus preventing livestock harm.

The direct economic impact of the Schutter Diagnostic Lab is estimated at \$523/client or \$900,000 on over 3.6 million acres. The Schutter Lab performs tests and provides research and information to all areas of Extension agriculture, energy and natural resources programming.