

2015 Montana State University Combined Research and Extension Plan of Work

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I. Plan Overview

1. Brief Summary about Plan Of Work

The Montana Agricultural Experiment Station (MAES) and Montana State University Extension are pleased to present this joint Plan of Work for 2015-2019.

MAES's mission is to "generate and disseminate superior knowledge and technological solutions to increase the competitiveness of communities capturing value from Montana's agricultural and natural resources, preserve environmental quality, and improve the quality of life for all our citizens."

MSU Extension's mission is to, "improve the lives of Montana citizens by providing unbiased research-based education and information that integrates learning, discovery and engagement to strengthen the social, economic and environmental well-being of individuals, families, and communities."

For more than 100 years, MAES and Extension professionals have worked closely together and collaborated with the people of Montana to address problems with practical solutions and to proactively look forward to a better quality of living and improved future. This is an effective and harmonious partnership that will continue in the next five years and beyond.

Determining research, teaching and Extension priorities and how to distribute limited resources has always been conducted in close relationship with stakeholders. Extension and MAES work cooperatively with individuals, families, businesses, state and federal agencies and non-profit organizations through focus groups, community meetings and one-on-one visits held regularly throughout the state to identify the greatest needs that can be addressed through research, education and outreach. MAES and Extension laboratories include formal classrooms, farms and ranches, town hall buildings, greenhouses, fields and forests.

There are seven agricultural research centers and two USDA-ARS facilities located across Montana. MSU Extension has 92 agents and 34 specialists living and working in more than 60 offices and communities statewide. Extension's Federally Recognized Tribes Extension Program (FRTEP) hosts agents on five of Montana's reservations: Blackfeet, Flathead, Fort Belknap, Fort Peck and Northern Cheyenne.

The Montana State University College of Agriculture (COA) provides further strength to the combined efforts with modern facilities, world-class faculty and growing undergraduate and graduate enrollment. Being part of the fabric of Montana's communities and counties allows MAES, Extension and COA to fully engage with communities through multi-disciplinary, collaborative efforts that address both long term concerns and emerging needs.

Agriculture continues to be Montana's primary economic industry and is part of the heritage and culture of the state. Approximately 29,000 farms and ranches comprise more than 66 percent of Montana lands. Montana's top five commodities are wheat, cattle/calves, barley and pulse crops (beans, peas, lentils, etc.) and hay. Additionally, Montana ranks 2nd in the U.S. in acres devoted to agricultural enterprises, with annual crop and livestock cash receipts that exceed \$3 billion annually. According to

2013 Montana Agricultural Statistics, published by the Montana Department of Agriculture and the US Department of Agriculture, the total value of agricultural sector production was \$4.7 billion in 2012.

Montana also plays a key geographical role as the site of the headwaters for the Missouri, Yellowstone and Columbia Rivers with a growing tourism industry. It has also experienced significant growth recently as a result of Bakken Oilfield development. While Montana remains committed to agriculture, it is also keenly tied to tourism and the recreational activities centered on waterways and scenic outdoors, and on the responsible use of abundant natural resources.

Montana is home to 12 tribal nations (Assiniboine, Blackfeet, Chippewa, Cree, Gros Ventres, Kootenai, Little Shell, Northern Cheyenne, Pend D'Orielle, Salish, Sioux) and seven reservations (Blackfeet, Crow, Flathead, Fort Belknap, Fort Peck, Northern Cheyenne, Rocky Boy's). The Little Shell Band is currently "landless" but is seeking federal recognition and to establish its own land base. The tribal nations govern their reservations which comprise nine percent of Montana's land base. Each tribal government has sovereignty and establishes services for its citizens. There are also many Indian people who live off-reservation in communities across Montana.

Recognition of American Indian cultural heritage (§ Mont. Code Annotated 20-1-501) is a constitutionally declared policy of Montana to recognize the distinct and unique cultural heritage of American Indians, and to be committed in its educational goals to the preservation of their cultural heritage. The Montana State Constitution binds every public educational agency, and all educational personnel, to work cooperatively with Montana tribes when providing instruction and implementing educational goals, and to include information specific to the cultural heritage and contemporary contributions of American Indians. Particular emphasis of such is placed on Montana Indian tribal groups and governments.

Thus, at every turn, COA, MAES and Extension cooperatively design and implement programs that best align with Montana's sovereign Indian Nations. Because this demographic is largely underserved and underrepresented, programs and goals are targeted to generate strong and beneficial interactions regarding respective Montana reservation struggles, priorities and needs. MAES and Extension work with tribal councils and colleges across the Rocky Mountain region, and agents and educators provide a variety of academic programs and opportunities within tribal communities. Cooperative efforts provide resources and training in livestock management, childhood obesity, food preservation and safety, pasture restoration, environmental stewardship, sustainable agricultural practices, resource and risk management, pesticide certification and more. American Indians and other minorities regularly participate in MAES and Extension programming that is not on reservations or targeted toward tribal needs, as well. Cultural sensitivity and inclusiveness is a priority for all COA, MAES and Extension programming.

The continental divide runs north to south through the state and the rugged mountains often impact weather patterns resulting in very different conditions between the eastern and western parts of Montana. The average frost free zones vary from 30 days to 125 days depending on location and altitude. Weather plays a key role in crop selection and production in Montana. Researchers are also concerned about areas where diminished water resources place constraints on crop growth, and the impact of rising timberlines on range and croplands.

Knowing that changes in the climate will impact agriculture, researchers at MSU, COA and MAES are exploring new varieties of crops and continue introducing new varieties of barley and wheat. Investigators expect barley, one of the most durable cereal crops, to perform exceedingly well in a drier, warmer climate. They are also exploring the vegetation and microbes growing in the thermal pools of the Yellowstone ecosystem. By studying the mechanisms of growth to native plants in geothermal-modified soils they gain a better understanding of limitations and opportunities increasing temperatures may present in agricultural production. The changing climate has significantly impacted Montana insects which in turn

impact the ecosystem. Researchers are studying the biology, distribution and systematics of insects.

MAES and COA researchers are committed to helping reduce food-borne illnesses and assisting producers in providing a safer food supply. Consumers are demanding healthier, safer food free from harmful chemicals and pesticides, and the global market is driving industry changes with constraints on grain and animal products.

Maintaining profitable enterprises while sustaining ecological systems has become a complicated balancing act that often becomes political. MAES, Extension and the COA are highly regarded for delivering non-biased, science-based solutions in these and other highly politicized areas.

MAES and the COA conduct research (integrated with teaching) to enhance economically viable and sustainable agricultural systems relevant to agriculture and producers in Montana with globally transferable solutions. The research focuses on issues and concerns relevant to fields traditionally outside agricultural parameters, but which involve similar advanced knowledge acquisition such as cancer research and energy development. They focus on interdisciplinary studies with far reaching impacts in science, technology, energy consumption, food security, safety and hunger.

Through collaborative research projects and cooperation with rural, urban, and scientific communities, MAES and Extension faculty continue learning as they focus on diversity and efficiency in agricultural and allied industry operations that bolster Montana's economy. The tripartite approach between MAES, Extension and the Montana State University College of Agriculture (COA) demonstrates a commitment to leading the way toward being better stewards of our natural resources, and creating and maintaining effective programs that seek to develop intellectual and human capital across generations.

In addition to an agricultural focus, Extension offers extensive resources for youth and adult development; healthy living, nutrition and food safety; housing and built environments; and community development.

In this 2015-2019 Plan of Work, MAES and Extension have organized a framework surrounding nine program areas to which valuable resources (personnel and financial) will be expended. These areas were determined based on interactions with stakeholders and represent priorities of Montana's public.

1.) **LIVESTOCK:** As Montana's primary economic industry, as well as the cultural identity for many Montanans, livestock remains a central field of focus. Since 1893, the COA/MAES has been committed to its role as the sole public research institution for the state of Montana in all things livestock and equine related. Extension has provided support and educational programs relating to livestock for its entire 100 years.

Ensuring that Montana farm and ranch owner/operators have the latest scientific information available to help them produce adequate and safe food, care properly for animals, generate a profit and achieve a desirable quality of life, are significant goals of all institutions. Each program provides a firm foundation in the biological and natural sciences, animal breeding, reproductive physiology, nutrition, and livestock production and management. Emphasis is placed on ruminant nutrition, physiology, microbiology and genetics.

2.) **FIELD CROPS AND RANGELANDS:** Field crops and rangelands encompass a large percentage of Montana's landscape and of the state's total commodities and cash receipts. These fields include managing the interaction of livestock and wildlife in rangeland habitats, in addition to managing soil, water and vegetation. Healthy habitat ecology is essential to livestock production and management, thus many programs, faculty research and public outreach efforts are dedicated to field crops and rangelands. Rangeland ecology remains a highly important field for MAES/COA research efforts and

Extension programs, as managing the soil-plant-animal complex is at the forefront of complete and sustainable resource management. Programs and research are primarily orientated toward applied forage crop management including; establishment, irrigation, fertilization, pests, harvesting, and forage integration of many grass species. The production of field crops, practical and applied crop management, and best-practice principles are examined by COA/MAES researchers, and are brought to the public in a variety of ways through Extension. In a united effort, COA, MAES and Extension continue to support the understanding of crop management principles, application of problem solving capabilities, methods of surveying and measuring vegetation and field crop management for Montana's private producers.

3.) FARM AND RANCH MANAGEMENT: Researchers and faculty in MSU COA, paralleled with statewide Extension programs, are focused on supporting and teaching individuals how to manage farms, ranches, and similar enterprises. Agricultural specialization, business management, accounting, taxation and capitalization are a few of the specialties agents, faculty and researchers work within. Additionally, content and programs relating to purchasing, government programs and regulations, operational planning and budgeting, contracts and estate planning each help to provide foresight and confidence in the management of crops and animals, marketing, finance and business organization for Montana farm and ranch success. Extension and COA researchers provide a foundational support and vital set of management skills for those working in agricultural production. They continue to be a central vein of information in regard to the often complicated business aspects of farming and ranching that demand familiarity in marketing, finance, and business management. The highly used Extension Farm Management program provides educational materials on farm and ranch management, financial and economic implications of production agriculture, agricultural policy and commodity support programs, risk management and decision support software for agriculture.

4.) HORTICULTURE: The science of growing and maintaining plants for food, enjoyment and improvement of the human environment continues to be of primary significance to COA, MAES, and Extension efforts. MSU faculty and researchers continue to garner national notoriety in their horticulture research in biology, chemistry, plant materials and physiology, plant pathology, plant reproduction and arboriculture. Horticulture's general application through research has led to improved varieties of plants that benefit the state's agricultural producers. COA, MAES faculty and Extension agents conduct and lead programs in cereal quality, genetics, cropping systems, molecular and conventional approaches to plant improvement, plant breeding, molecular genetics, biochemistry and agronomy. Much of the current research conducted in campus labs and in fields across the state are centered on disease resistance through genetics, bacterial diseases and the biochemistry and molecular genetics of plant diseases. Many research projects are problem oriented and pertain to major plant pathological problems in the state. MSU Extension's horticulture programs, publications and links provide expert yard, garden and urban integrated pest management resources for individuals and businesses throughout Montana.

5.) ENERGY AND NATURAL RESOURCES: According to the Montana Department of Commerce, Montana has more potential for energy development from existing and untapped diversified sources than any other state in the nation. From coal deposits, oil, wind farms and geothermal energy potential, energy and natural resources have played a vital role in Montana's history and continue to be a priority for MAES and Extension. MSU COA and MAES are focused on disseminating knowledge and finding technological solutions to increase the competitiveness of communities that capture value from Montana's natural resources, while preserving environmental quality and improving the quality of life for all citizens. Education and unbiased, scientific information are critical to Montana's ability to form sound policy and decisions in this realm of energy and natural resources. COA, MAES and Extension are a trusted and reliable source for this information.

6.) YOUTH AND ADULT DEVELOPMENT: Montana 4-H is the largest youth development organization in the state and has been a trusted source of education and skill building activities for youth and volunteers for more than 100 years. Focused on citizenship, healthy living and science, 4-H members

enhance life skills development that are heightened through participation. This contributes to the development of youth who are competent, connected, confident, caring, with character, and who give back to their communities. Adults who are faced with parenting and caregiving issues also have clear needs. As Extension is already deeply involved in the family unit through youth, there is a natural bridge that connects Extension with adult development as well. Education in these areas empowers Montanans to be strong citizens, who can manage their finances and build strong families to be supported through their aging years. This continues to be a high priority.

7.) **HEALTHY LIVING, NUTRITION and FOOD SAFETY:** Statistics show that the American population is becoming more sedentary and heavier in weight. From children to the elderly, costs related to obesity have dramatically increased in the last ten years and quality of life has decreased with problems including high blood pressure, heart disease and chronic illness increasing. Education and outreach is critical to the well-being of Montanans and MSU Extension will continue to focus efforts in this area. Additionally, MSU Extension, COA and MAES have become the primary places Montanans look to ensure food safety and security and to learn about food preservation. Food production and sustainable food systems are the center of current research priorities. Students studying agriculture with MSU COA and MAES are introduced and in many cases, even required, to study and participate in many kinds of public health, food and nutrition and food safety courses. As agriculture production and agribusiness is quickly changing, public health and food safety remain a top priority and MAES and Extension collectively work to engage and promote this field.

8.) **HOUSING AND BUILT ENVIRONMENTS:** Education and outreach in the area of housing and residential energy has been shown to significantly reduce energy costs and consumption. MSU Extension will continue to play a key role in weatherization and safe housing for Montana's residents. MSU, COA and MAES will continue their research on energy production and consumer consumption.

9.) **COMMUNITY DEVELOPMENT:** MSU Extension provides the only extensive education and training for Montana's elected and government officials at the local and county level. Over the next ten years, a large transfer of wealth will be taking place across Montana and the future of many towns and communities is at stake. MSU Extension will assist Montana communities to use proven economic and community development strategies that will improve the conditions impacting business, family life and the health of the community as a whole.

Estimated Number of Professional FTEs/SYs total in the State.

Year	Extension		Research	
	1862	1890	1862	1890
2015	31.0	null	268.0	null
2016	31.0	null	268.0	null
2017	31.0	null	268.0	null
2018	31.0	null	268.0	null
2019	31.0	null	268.0	null

II. Merit Review Process

1. The Merit Review Process that will be Employed during the 5-Year POW Cycle

- Internal University Panel
- External Non-University Panel
- Expert Peer Review
- Other (Dept. Head External to PI's Dept.)

2. Brief Explanation

Montana State University Extension uses an external panel to review the annual report of accomplishments. The panel will also review the new 2015 Combined Research and Extension Plan of Work. This will allow the panel to follow the planning process into the next year so they can assess sequential educational efforts, progress on program goals and plans for gathering impact data.

Jim DeBree (33 years with Montana and Wyoming Extension, retired as Director of Wyoming Extension), Jim Knight (33 years with MSU and New Mexico Extension including as a wildlife specialist and as Associate Director) and Charles Rust (retired agricultural economist and interim Director of MSU Extension) have agreed to serve on the Merit Review Panel. Knight and Rust have both had MAES appointments, as well. They have been selected because of their understanding of the mission of Extension and the meaning of outreach from the land-grant university to youth and adults throughout the state. Each one has had experiences that are important to developing a comprehensive review of the MSU Extension program.

Department heads within COA/MAES review HATCH Projects at the department level. A committee of peers then reviews the project and passes it to the director for final approval. The peer review committee, selected by the director after consultations with COA department heads, includes the principal investigator's (PI) department head, MAES administrator, one department peer reviewer and two additional faculty external to the PI's department. Researchers present seminars to the review committee and interested stakeholders, including faculty, staff, students, and constituents. The director requires researchers to propose new projects for a three year period, while researchers with favorably reviewed ongoing projects continue for five years. Because there are not any Montana Agricultural Experiment funds allocated outside of the COA, expert reviews occur with Montana State University faculty external to the COA, as a requirement of the review process. Reviewers provide written recommendations on the following: relevance of importance of the project; relationship of the project to previous research; objectives; approach and methods; scientific and technical quality; resources; environmental, economic, and/or social impacts. The MAES administrator and department head share the responses with the PI. If the projects do not meet the expectation, the director will not approve them and will defer them until the researcher meets the key elements satisfactorily. Local advisory committees to the research centers provide seasonal, annual and long-term guidance.

While the review is not complicated, it provides valuable feedback for program considerations and is subject to changing and adapting in regard to program priorities.

III. Evaluation of Multis & Joint Activities

1. How will the planned programs address the critical issues of strategic importance, including those identified by the stakeholders?

Montana is active in planning and delivering programs in collaboration with other states in the region and nationally. The state is situated among rural states that share similar issues, so partnering on program development and delivery is logical and practical.

The stakeholder input process used by MSU Extension and COA/MAES involves continual communication by professional faculty in Montana counties and those neighboring states and regions. It is not unusual to find clientele from "across the borders" using the closest county office or Experiment Station for a resource or information that may not be available in their own state.

Additionally, Extension specialists and MAES researchers from around the country form collaborations to address common and shared concerns. They work to stay abreast of emerging issues and develop educational efforts that bring them to the attention of those who will be impacted.

Extension, MAES and COA obtain stakeholder input on research priorities and programs. Stakeholder committees include the Sustainable Agriculture Focus Group, Montana Association of Counties, MAES State Advisory Council, Montana Extension Advisory Council, Ag Coalition and other state and local groups. MAES Scientists, Extension Agents, Specialists and Natural Resource Conservation Service (NRCS) often work together to provide training and expertise.

The Ag Coalition consists of representation from the Agricultural Business Association, Farm Bureau Federation, Montana Stockgrowers, Montana Farmers Union, Montana Water Users, Montana Wool Growers, Seed Growers and the Seed Trade.

Meetings for all of these groups are advertised via news releases, newsletters, individual letters and announcements at group meetings. Extension agents use county profile information to ensure those invited to the sessions reflect the diversity of the area.

MAES and Extension respond to stakeholder inputs by considering their proposals at research planning meetings with scientists, advisory groups and administrators. Administrators and faculty also solicit stakeholder input during the strategic planning process and as programs are developed, implemented and sometimes redesigned.

2. How will the planned programs address the needs of under-served and under-represented populations of the State(s)?

Montana has a small population and a growing number of under-served and under-represented populations. COA, MAES and Extension are actively engaging in collaborative research, education and outreach. Many of these efforts address American Indian issues. Recognition of American Indian cultural heritage (§ Mont. Code Annotated 20-1-501) is a constitutionally declared policy of Montana State to recognize the distinct and unique cultural heritage of American Indians, and to be committed in its educational goals to the preservation of their cultural heritage. The Montana State Constitution binds every public educational agency, and all educational personnel, to work cooperatively with Montana tribes when providing instruction, implementing an educational goal, and to include information specific to the cultural heritage and contemporary contributions of American Indians. Particular emphasis

of such is placed on Montana Indian tribal groups and governments. Thus, at every turn, COA, MAES and Extension cooperatively design and implement programs that best align with Montana's sovereign Indian Nations. Because this demographic is largely under-served and underrepresented, programs and goals are targeted to generate strong and beneficial interactions regarding respective Montana reservation struggles, priorities and needs. Extension works closely with Reservation County Agents to identify key problems, that, if they align with our expertise and resources, will result in research and outreach that address key issues and problems.

Additionally, because of the recent and dramatic population increase in eastern Montana due to economic opportunity in the Bakken Oil Field, there has been a sharp increase in the demographics of this changing population. The potential of these individuals to be underserved is increasing as well. While the demographics and census data are challenging to track, it is clear the diversity of the area's people is growing. The need for service programs to accommodate the drastic growth is a pressing challenge.

A multi-state collaboration often shares techniques that have been effective in reaching underserved or underrepresented audiences. These "best practices" are proven techniques that work. Armed with these ideas and practices, planned programs can be more targeted to particular audiences. Examples of the programs currently targeting an under-served or under-represented audience are the SNAP-Ed and EFNEP. On reservations, Juinor Ag Loans are one of many examples of providing resources.

3. How will the planned programs describe the expected outcomes and impacts?

MSU COA, MAES and Extension research, education and outreach must demonstrate actual or potential economic impact to Montana's economy, and ultimately solve local and state problems. Each institution uses the "logic model" approach as the primary planning tool, with outcomes and impacts identified at the beginning of the planning process. Working alongside each other as multi state entities and joint collaborators on planned programs and deliverables, each institution begins their work with the collaborative end goal in mind.

Training on using effective evaluation tools to determine outcomes is a continuing process. The "how" to collect the "what" is being established during the planning process. Other states commonly share successful evaluation techniques and/or replicate studies that describe the impact of program efforts and provide valuable insight.

MSU MAES, COA and Extension have recently updated institutional strategic plans, and each incorporate measurement of the impact of engagement in the community as a priority. As new tools and processes are developed, increased training for personnel will occur. Specialists are expected to provide evaluation processes/tools and impact statements to be used with programs offered on a statewide basis.

4. How will the planned programs result in improved program effectiveness and/or

The process of problem identification includes meeting with agricultural and natural resource organizations, securing funding for research operations, and reporting to state and federal officials. This process assists in modifications that lead to improved program effectiveness in delivering research results which, in many cases, enhance agricultural efficiency through new or alternative practices. Research programs take the inherent initial risk and stakeholders ultimately weigh in on program effectiveness through adoption of new technologies and approaches that provide additional income, reduce risk, and sustain the enterprise. Montana stakeholders provide the impetus for continued and growing financial

support through MAES, COA and Extension planned programs.

Past experience has shown that by working closely with stakeholders throughout the planning and implementation of programs, problems are solved quickly, and redundant and/or inefficient use of resources and time are eliminated. Having strong relationships allows MSU professionals and stakeholders to share honest and immediate feedback and leads to more comprehensive and efficient programs.

IV. Stakeholder Input

1. Actions taken to seek stakeholder input that encourages their participation

- Use of media to announce public meetings and listening sessions
- Targeted invitation to traditional stakeholder groups
- Targeted invitation to non-traditional stakeholder groups
- Targeted invitation to traditional stakeholder individuals
- Targeted invitation to non-traditional stakeholder individuals
- Targeted invitation to selected individuals from general public
- Survey of traditional stakeholder groups
- Survey of traditional stakeholder individuals
- Survey of the general public
- Survey specifically with non-traditional groups
- Survey specifically with non-traditional individuals
- Survey of selected individuals from the general public
- Other (Educational outreach programs)

Brief explanation.

MAES, COA and Extension continually seek and obtain stakeholder input on and participation in research and program priorities. People who attend Extension programs or are referrals from other agencies are asked to indicate which issues are important to them, their families and communities. Radio, newsletters, newspapers and electronic distribution lists are used to inform clientele about the opportunity to make requests for Extension assistance. Informational booths are set up at agricultural trade shows, home and garden shows and health fairs allowing for discussions with people who often are not regular clientele of Extension. These conversations reveal concerns/issues that might not be heard. When common issues surface through these methods, they are considered in the program planning process.

Stakeholder committees include the sustainable agriculture focus group, MAES State Advisory Council, Ag Coalition, MEAC and other state and local groups. MAES scientists routinely participate with this group and NRCS to provide training and expertise in the geospatial sciences. The Ag Coalition consists of representation from the Agricultural Business Association, Farm Bureau Federation, Montana Stockgrowers, Montana Farmers Union, Montana Water Users, Montana Wool Growers, Seed Growers, and the Seed Trade. It meets periodically with the dean and director to review program priorities, new initiatives, fundraising efforts, and legislative activities. The COA and Extension advertise meetings via news releases, newsletters, individual letters, and announcements at group meetings. Extension agents also use county profile information to ensure those invited to the sessions reflect the diversity of the area. MAES, COA and Extension respond to stakeholder input by considering their proposals at research planning meetings with scientists, advisory groups, and administrators. Administrators and faculty solicit stakeholder input during the strategic planning

process as programs are developed, implemented, and sometimes redesigned.

2(A). A brief statement of the process that will be used by the recipient institution to identify individuals and groups stakeholders and to collect input from them

1. Method to identify individuals and groups

- Use Advisory Committees
- Use Internal Focus Groups
- Use External Focus Groups
- Open Listening Sessions
- Needs Assessments
- Use Surveys

Brief explanation.

MAES's seven agricultural research centers have local advisory groups that meet multiple times per year. A MAES State Advisory Council meets three times per year to discuss program focus and direction, Montana legislative priorities, and productivity/impact regarding research and program priorities. These meetings are open to the public. Administrators and faculty in the COA/MAES and Extension serve on agricultural association committees that annually direct and fund research and outreach activities. These committees use a variety of collection methods, but the most common are face-to-face meetings, telephone, and some video conferencing.

Membership on county advisory groups is generally achieved by sending an invitation to traditional stakeholder groups requesting the name of an individual who can represent their views and provide input for Extension programming. A similar invitation is sent to non-traditional groups. With personal contact made to explain the role of the representative. During programs targeted at certain audiences such as SNAP-Ed and EFNEP, attendees are asked directly for input or may be asked to serve on a specific advisory committee for the program area.

Membership on the Montana Extension Advisory Council (MEAC) is based on geographic representation, areas of interest and some previous relationship with Extension. Recruitment from specific sectors such as health care, government agencies and community development are also targeted. County Extension agents, state specialists, Extension program leaders and regional department heads are asked to make recommendations for membership to MEAC. Those who are selected serve a 3 year term and meet biannually.

2(B). A brief statement of the process that will be used by the recipient institution to identify individuals and groups who are stakeholders and to collect input from them

1. Methods for collecting Stakeholder Input

- Meeting with traditional Stakeholder groups
- Survey of traditional Stakeholder groups
- Meeting with traditional Stakeholder individuals
- Survey of traditional Stakeholder individuals

- Survey of the general public
- Meeting specifically with non-traditional groups
- Survey specifically with non-traditional groups
- Survey of selected individuals from the general public

Brief explanation.

Through direct participation with agricultural stakeholder groups, broad participation in committees, and directed meetings, MAES and Extension listen to and consider defined problems or questions that research, outreach and education programs can address. Each institution also targets selective meetings with non-traditional groups on an annual basis.

The most common method of gathering stakeholder input is from conversations with the regular clientele of MSU Extension and MAES. Often this occurs in intentional program planning sessions to which these people are invited, requested to attend or are required to be present by their role or position. Examples of groups that fall into this category are county/reservation councils, 4-H councils, livestock associations, weed boards, human resource coalitions, local and state agricultural organizations, Ag Research Center advisory committees and special interests groups. Some of these groups have offices or directing boards that are asked for specific input.

County and state advisory committees are also used to gather input. Advisory groups are generally comprised of a cross section of the leadership and citizens in the county. Efforts are made to involve the under-served and under-represented clientele by contacting agencies and organizations that work with this audience regularly. They are asked for input and/or for names of people who could provide input. Local Extension agents follow up with personal conversations to explain the goals of the organization and process. Two annual MEAC meetings serve as another venue for gathering valuable stakeholder input.

At the state level, one of the most valuable sources of input is the Montana Association of Counties (MACo). Extension makes presentations during MACo's Annual Meeting, followed by an open session for mutual dialogue. These types of discussions also happen during the newly elected county commissioner's orientation and have proven very beneficial. Extension administration, through regional department heads (RDH's), also gathers stakeholder input from county commissioners during regular and systematic visits at the county level between the RDH's and county commissioners.

Surveys are used to gather information at either the local or state level. They may be hard copy, although electronic formats are being used in some program areas. Additionally, Montana's open meeting law requires inviting the public, and the organizer must publish an agenda. § Mont. Code Annotated 2-3-101.

3. A statement of how the input will be considered

- In the Budget Process
- To Identify Emerging Issues
- Redirect Extension Programs
- Redirect Research Programs
- In the Staff Hiring Process

- In the Action Plans
- To Set Priorities
- Other (Create a basis for additional resources)

Brief explanation.

As a land grant institution, Montana State University has a solid foundation of past and future program initiatives that promote stakeholder input and strong interactive dialogue through which the COA, Extension and MAES administrators, faculty, scientists and staff set the tone for this collaborative environment. In a collective manner, the COA, MAES and Extension serve as the primary conduit for connection and delivery of education and new knowledge throughout Montana.

Information gathered through the stakeholder input process is used to determine program needs and direction. In some cases, educational teams made up of county extension agents, specialists, clientele and researchers are formed to develop and implement programs.

The statewide Extension advisory committee Montana Extension Advisory Council (MEAC) meets twice a year. MAES Advisory Committees and the Ag Coalition Committee meet several times throughout the year to offer input and feedback. The Director of Extension and the Dean and Director of MAES and COA, also provide a system-wide updates and discuss program priorities and funding.

Montana stakeholders indicate they are concerned about similar issues receiving attention across the nation. Many worry about job security and accessing health care in their communities. Agriculture producers are concerned about a positive profit margin and combating detrimental pests. Rural families wonder if local schools will remain open, or conversely if overcrowding and transiency will continue to cause issues. Farming and ranching communities wonder if they can afford vaccines and healthcare for their livestock. In those areas where education and research can help address the issue, Montanans look to Extension and MAES as a resource for education and information so they can make choices and decisions that are best for their families, businesses and communities.

Budgets and staffing decisions are influenced, and aligned accordingly, from the input provided by the aforementioned groups.

V. Planned Program Table of Content

S. No.	PROGRAM NAME
1	Livestock
2	Field Crops and Rangelands
3	Farm and Ranch Management
4	Horticulture
5	Energy and Natural Resources
6	Youth and Adult Development
7	Healthy Living, Nutrition and Food Safety
8	Housing and Built Environments
9	Community Development

V(A). Planned Program (Summary)

Program # 1

1. Name of the Planned Program

Livestock

2. Brief summary about Planned Program

Producing the highest quality animals and obtaining the highest profit potential are essential for Montana. Promoting and maintaining animal health (cattle, sheep, horses) has led to advances in genetics, reproductive science and improved animal performance. By understanding immune systems and parasite development in livestock, and by developing novel genes and new biochemical routes of activity for drugs and vaccines, ranchers can better manage economically important diseases like coccidiosis, shipping fever, and brucellosis. Montana has developed an integrated network to track calves from Montana ranches to feedlots and packing plants in other states. Tracking provides both source and process verification for easy track-back in case there is a disease outbreak. Extension's visible presence statewide enables almost immediate communication when timely transportation of information is necessary.

Cattle research focuses on disease control, reproductive enhancement, and animal productivity. Scientists will continue investigating vaccines for rotavirus, strangles, respiratory diseases, and mastitis. Researchers are using feed studies with barley, camelina meal, and supplements to evaluate varying rations for calves and cows, and to continue producing superior feeder stock to markets outside of Montana. Scientists are devising research to understand the cause and development of immunity to bovine shipping fever and to develop novel strategies for the prevention and control of this disease complex.

Researchers in the sheep industry are studying targeted grazing strategies to increase the competitiveness of Montana's lamb and wool in the world market. They are also studying the impact of sheep grazing in weed management programs. Scientists are initiating studies about Blue Tongue and Cache Valley Virus, which are both critical diseases for sheep populations.

MSU Extension specialists and agents are active in bringing the latest knowledge and techniques from the researchers to the producers, and also bringing the latest concerns and successes from the producer to the researchers. The cycle is free flowing and symbiotic with all parties contributing to the overall success of the industry.

The Sustainable Food and Bioenergy Systems (SFBS) minor in the COA adds education and research opportunities for students and faculty in the areas of sustainable production; distribution and consumption of nutritious food; and bioenergy, by developing a new generation of leaders through collaborative learning and hands-on experience. The SFBS program combines classroom learning, research opportunities and meaningful field experiences to prepare students for careers that will impact the future of food and energy production.

Global economic changes, fertilizer prices, drought and fire, weeds and pests, expanding export markets, market volatility and cultural changes all contribute to a challenging path for producers to remain profitable and sustainable in the industry. MSU Research, Extension and COA are partners with producers to address issues and meet the needs of Montana's agricultural sector.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
121	Management of Range Resources	10%		10%	
301	Reproductive Performance of Animals	5%		5%	
302	Nutrient Utilization in Animals	5%		5%	
303	Genetic Improvement of Animals	0%		7%	
305	Animal Physiological Processes	0%		4%	
306	Environmental Stress in Animals	5%		5%	
307	Animal Management Systems	5%		8%	
308	Improved Animal Products (Before Harvest)	5%		5%	
311	Animal Diseases	10%		15%	
312	External Parasites and Pests of Animals	0%		2%	
315	Animal Welfare/Well-Being and Protection	10%		7%	
503	Quality Maintenance in Storing and Marketing Food Products	0%		5%	
511	New and Improved Non-Food Products and Processes	0%		2%	
603	Market Economics	5%		0%	
604	Marketing and Distribution Practices	5%		0%	
711	Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources	0%		5%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%		5%	
901	Program and Project Design, and Statistics	0%		5%	
902	Administration of Projects and Programs	0%		5%	
903	Communication, Education, and Information Delivery	35%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Livestock products represented 37 percent of the cash receipts in 2012 with the majority being cattle and calves. Montana is among the top ten producers of beef cows and sheep in the nation and excels

in wool production. The sheep and lamb inventory was 222,000 head in January, 2014 down six percent from January 2013. The value of wool production for 2013 was \$3.9 million, up four percent from a year earlier. Producers received \$2.20/pound compared to \$2.10/pound in 2012.

Livestock production results in the greatest share of agriculture cash receipts in Montana. Volatile cattle and feed markets, as well as rising input costs and persistent drought conditions provide challenges to sustainable beef cattle production. The sheep industry has similar challenges with additional complications related to wool harvesting and marketing and the use of sheep for grazing and weed management. Livestock producers seek out MSU Extension and MAES for the latest scientific-based information on how to adapt and remain profitable.

Losses due to environmental stresses, diseases, and mortality create the need for an improved understanding of the factors affecting Montana livestock. Promoting and maintaining animal health (cattle and sheep) has led to advances in genetics, performance, and reproduction technology.

Studying infectious diseases is important to Montana researchers because of the economic losses for producers and food safety concerns. The Department of Microbiology and Immunology focuses a great deal of research on animal health, and particularly infectious cattle diseases. The Departments of Microbiology and Immunology and Animal and Range Sciences have several joint research projects developing and testing new drugs, vaccines, and diagnostic tools for fighting infectious diseases of livestock, humans, and wildlife, as well as zoonotic diseases that can be transmitted to humans.

To address the needs of stakeholders and those who rely on COA, MAES and Extension recommendations, the following priorities have been established:

- Develop and distribute knowledge about effective livestock disease control methods
- Improve beef production practices and evaluate genetics to improve herds
- Identify and mitigate the transmission of diseases between livestock and wildlife
- Increase wool and lamb competitiveness
- Implement targeted grazing strategies
- Evaluate nutritional impact of grazing on sheep and cattle
- Determine how factors, such as herd size and supplement intake, influence growth and development of cattle grazing native rangelands
 - Address methods to improve and document ranch biosecurity and bio-containment protocols
 - Create new value-added agricultural business opportunities for rural communities
 - Increase knowledge and management of insects affecting animals and humans
 - Monitor and enhance nutritional impact of grazing on sheep and cattle
 - Improve traceability of livestock

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- The Agriculture industry will continue to be a high priority for Montana
- Livestock production challenges, including rising input costs, volatile markets, and natural disasters will continue
 - Industry organizations, livestock associations, companies, and other agencies will continue to provide insight and input into priorities and activities
 - Full-time staff and part-time assistants will be available to maintain appropriate progress
 - Funding and technical support will be maintained from partnering institutions and cooperators

2. Ultimate goal(s) of this Program

- Discover novel vaccines for prevention of livestock diseases
- Maintain status as a leading university in animal production and rangeland stewardship research
- Provide genomic research to help Montana producers stay competitive
- Provide improved production management recommendations to Montana producers
- Produce safe, nutritious livestock products in sufficient quantity to meet U.S. and world demand
- Increase profitability
- Increase knowledge and use of environmentally sustainable practices

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	3.0	0.0	71.6	0.0
2016	3.0	0.0	71.6	0.0
2017	3.0	0.0	71.6	0.0
2018	3.0	0.0	71.6	0.0
2019	3.0	0.0	71.6	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Meet one-on-one with producers, landowners and consumers to identify and address individual problems and solutions
 - Encourage email and phone conversations with members of the public
 - Offer classes, workshops, group discussions, demonstrations, field tours/trials, webinars
 - Share information at farmer's markets, county fairs and other community events

- Attend and present information at professional conferences, county meetings and state conventions
- Prepare and distribute public service announcements, newsletters, MONTGuides, Television (Montana PBS Montana Ag Live), eXtension, listservs, blogs, radio and other media
- Create readily available and easily accessible databases for producers and researchers
- Prepare research articles, fact sheets and news releases for scientists and statewide media
- Host strategic planning meetings with state agricultural groups
- Develop systems that ensure food safety and agricultural security
- Integrate best practices for beef quality assurance in programs

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • TV Media Programs • eXtension web sites • Web sites other than eXtension

3. Description of targeted audience

- Livestock producers
- Commodity Associations
- Land managers/owners (small and large)
- Weed Control Professionals
- State Agencies
- County Weed Boards
- Colleagues and related stakeholders
- Animal health businesses
- Legislators, county commissioners and other elected officials
- Rodeo team and related partners
- Tribal land managers

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of research citations
- Number of publications on infectious disease and vaccines research
- Number of presentations on infectious disease research
- Number of undergraduate and graduate students trained in animal science and biotechnology
- Number of producers attending meetings/workshops and clinics
- Number of producers utilizing ration-balancing
- Number of Native American Youth completing quality assurance training and receiving Junior Ag Loans
- Number of outreach, training and education events

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Extension and MAES Beef Cattle Programs -Increase the number of producers using Extension and MAES information to successfully manage animal health and well-being issues. -Increase the number of producers who successfully utilize Extension and MAES programs to improve profitability. -Increase the number of producers who successfully utilize Extension and MAES to improve environmentally sustainable practices.
2	Extension and MAES Sheep Programs -Improve profitability of producers in the sheep and wool market through increased participation in and knowledge gained from seminars, classes and other educational opportunities; and expanding wool pools, wool delivery and marketing.
3	Identification of critical infection and disease resistance
4	Number of improvements to vaccines developed
5	Identification of genetic correlations and other factors influencing residual feed intake and feed efficiency; and education of producers and industry leaders with latest the scientific information
6	Conduct basic and applied infectious disease research -Increase the quality of meat, milk and fiber products -Reduce non-predator deaths in calves

Outcome # 1

1. Outcome Target

Extension and MAES Beef Cattle Programs

- Increase the number of producers using Extension and MAES information to successfully manage animal health and well-being issues.
- Increase the number of producers who successfully utilize Extension and MAES programs to improve profitability.
- Increase the number of producers who successfully utilize Extension and MAES to improve environmentally sustainable practices.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 306 - Environmental Stress in Animals
- 307 - Animal Management Systems
- 308 - Improved Animal Products (Before Harvest)
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection
- 603 - Market Economics
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Extension and MAES Sheep Programs

- Improve profitability of producers in the sheep and wool market through increased participation in and knowledge gained from seminars, classes and other educational opportunities; and expanding wool pools, wool delivery and marketing.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 307 - Animal Management Systems
- 315 - Animal Welfare/Well-Being and Protection
- 603 - Market Economics
- 604 - Marketing and Distribution Practices
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Identification of critical infection and disease resistance

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 303 - Genetic Improvement of Animals
- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection

4. Associated Institute Type(s)

- 1862 Research

Outcome # 4

1. Outcome Target

Number of improvements to vaccines developed

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 311 - Animal Diseases
- 315 - Animal Welfare/Well-Being and Protection

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Identification of genetic correlations and other factors influencing residual feed intake and feed efficiency; and education of producers and industry leaders with latest the scientific information

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 308 - Improved Animal Products (Before Harvest)
- 315 - Animal Welfare/Well-Being and Protection
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 6

1. Outcome Target

Conduct basic and applied infectious disease research

-Increase the quality of meat, milk and fiber products

-Reduce non-predator deaths in calves

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 301 - Reproductive Performance of Animals
- 302 - Nutrient Utilization in Animals
- 303 - Genetic Improvement of Animals
- 305 - Animal Physiological Processes
- 311 - Animal Diseases

- 315 - Animal Welfare/Well-Being and Protection
- 711 - Ensure Food Products Free of Harmful Chemicals, Including Residues from Agricultural and Other Sources

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Populations changes (immigration, new cultural groupings, etc.)
- Other (high cost of fuel, fertilizer)

Description

The weather will always be a factor for livestock production. The national economy and various health related issues play a role in the industry as more people become interested in growing their own food, or concerned about how their food is grown. The generational shift as the population changes is also a factor. Extension and MAES play a stabilizing role in the industry as they seek proactive solutions, and provide unbiased, science-based information.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies will be conducted annually through the issuance of surveys, published peer review materials and secured peer reviewed grant proposals. In most cases where Extension/MAES provide training, participant evaluations and pre and post tests are utilized, as well.

V(A). Planned Program (Summary)

Program # 2

1. Name of the Planned Program

Field Crops and Rangelands

2. Brief summary about Planned Program

Agriculture is a fundamental part of Montana's history and heritage and continues to be Montana's number one industry. Ranked second in the nation for the amount of acres in farm and ranchland, and in the top 10 nationally for production agriculture, Montana plays a key role in the nation's agricultural economy as well.

To be effective, many producers recognize the need to have the latest scientific-based information at their fingertips. Extension and MAES fill a critical role in connecting the most current knowledge and best practices with the producer. The ability of specialists and researchers to collaborate to find solutions and proactively address concerns, and, for Extension to deliver that information to farmers and ranchers, is critical to the ongoing success of Montana agriculture.

Small grain producers face challenges with higher input costs (fuel, fertilizer, and equipment), pest control and damage and increased irrigation costs. Producers know profit margins fluctuate as they face roller coaster incomes and expenses. Operators must gain proficiency, not only at producing a commodity, but also at marketing systems, environmental regulations, market quality requirements and financial/business management. Extension and MAES provide critical information and resources and are a lifeline and partner in the success of Montana farmers.

The largest expense for ranchers in this region is the winter feeding program. Perennial forages such as alfalfa provide advantages for nutrient recycling and disrupting pest cycles in crop rotations. Growing annual crops for pasture or hay provides excellent opportunities for low-cost forage production, weed control and water conservation in dry land systems. In irrigated forage systems, there continues to be a need for efficient forage rotations that reduce fuel, fertilizer or other inputs. With rangeland covering the majority of Montana's landscape, landowners and property managers need to have the latest knowledge related to appropriate management. Extension and MAES fill that role.

Most land managers agree the spread of invasive plants is the primary environmental threat to western wildlands/ranges. Noxious weed invasion reduces the ecological integrity of land and water, alters ecosystems, impacts wildlife habitat and threatens survival of native plants. MSU Extension manages the Private Pesticide Applicator Training Program for the Montana Department of Agriculture. Both Extension and COA/MAES actively participate in research projects on the subject and interact with producers, landowners and property managers to share the latest information.

Nowhere is farming and ranching more important than on Montana's reservations where a focus on improving the quality of life is centered around agriculture and related traditions. The ability for youth and first-time farmers/ranchers, as well as longstanding producers, to be involved in sustaining and expanding the agriculture industry is important economically and culturally. Extension and MAES programs assist youth and first time farmers/ranchers in establishing new operations.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

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	10%		5%	
121	Management of Range Resources	10%		5%	
132	Weather and Climate	0%		5%	
135	Aquatic and Terrestrial Wildlife	0%		3%	
201	Plant Genome, Genetics, and Genetic Mechanisms	0%		10%	
202	Plant Genetic Resources	0%		5%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	0%		5%	
204	Plant Product Quality and Utility (Preharvest)	10%		10%	
205	Plant Management Systems	10%		5%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		5%	
212	Pathogens and Nematodes Affecting Plants	0%		5%	
213	Weeds Affecting Plants	10%		5%	
215	Biological Control of Pests Affecting Plants	10%		5%	
216	Integrated Pest Management Systems	10%		5%	
502	New and Improved Food Products	0%		9%	
601	Economics of Agricultural Production and Farm Management	5%		7%	
901	Program and Project Design, and Statistics	0%		1%	
903	Communication, Education, and Information Delivery	20%		5%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

In Montana and throughout the U.S., maintaining profitable agricultural enterprises while sustaining ecological systems has become a difficult balancing act. In a semi-arid state most crops are dependent upon irrigation from surface water and groundwater. Irrigated agriculture is the largest user of freshwater in Montana with 1.7 million acres under irrigation using approximately nine million acre-feet of water annually. Education and research activities have precipitated a general trend toward more efficient irrigation systems and more drought tolerant crops.

Integrated Pest Management (IPM) programs optimize grower profitability and natural resource sustainability through the development, selection, and implementation of economically sound and environmentally acceptable pest management strategies. MSU researchers explore less chemically dependent systems and are addressing the economic feasibility and environmental impact of alternative controls and the growth of organic methods, and water management issues that help produce high quality crops and mitigate pest problems.

Research is focused on how to control troublesome weeds and insects more effectively. Noxious weeds impact productivity and compromise the ecological integrity of Montana's land resources. To address this, researchers are investigating the use of biological control for the management of noxious weeds.

As the third leading producer of wheat products in the United States, Montana continues researching new and better varieties of wheat cultivars and has made significant advances in both the spring and winter wheat breeding programs. Solid stems, high yields and good end-use quality are primary selection targets. A goal over the next few years is to make crosses with diverse lines from other programs to increase genetic diversity. Researchers will continue developing new cultivars of small grains that are marketed globally.

Researchers are investigating high yielding crop varieties resistant to insects and diseases that will perform well in the Northwest Region. The agricultural community and allied industries depend on new cultivars to remain competitive in the world market place. Primary breeding objectives include increasing yield potential, improving winter hardiness, enhancing wheat stem sawfly resistance and improving dual-purpose quality grains. MSU's intensive genomic research will help Montana producers stay competitive and provide improved cultivars adapted to Montana's climactic conditions and cropping systems.

Researchers continued to advance malting barley lines and improved feed, hay, and food barley varieties.

Researchers are also exploring the feasibility of growing a variety of crops including pulse crops (peas, lentils, chickpeas and soybeans) herbs mustard, safflower, sunflower, canola, turf grass, and specialty grains. MSU research provides technology that improves plant production systems while adding value and enhancing food security for stakeholders. Initiatives will provide new insights into food safety and risk assessment.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension

- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Corporate funding organizations, grain and livestock associations, companies and other agencies will continue to provide input into priorities and activities
 - Funding and technical support from partnering institutions will be maintained
 - Small acreage properties will continue to be purchased by first time farmers/ranchers with little knowledge about appropriate stewardship practices for the land

2. Ultimate goal(s) of this Program

- Develop drought tolerant crops suitable for growing in warmer and drier climates
- Identify plant mechanisms that allow plants to grow in geo-thermally modified soils
- Determine impact of climate on integrated pest management programs
- Increase the profitability of producers
- Increase the knowledge and use of environmentally sustainable and integrated pest management practices to control weeds and pests
 - Address the economic feasibility and environmental impact of biological control practices
 - Investigate crop rotation systems, production methods, and water management
 - Implement biological control practices and explore a multitude of science-based options
 - Optimize grower profitability and natural resource sustainability
 - Develop novel pest management systems that include biological control
 - Improve rangeland management by developing controls for exotic noxious weed species
 - Provide efficacious and cost effective pest control programs for producers
 - Increase yield potential for small grain production
 - Maintain status as a leading university for wheat and barley genetics research
 - Provide improved wheat and barley cultivars to Montana producers
 - Support food risk assessment education and research

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	3.0	0.0	110.3	0.0
2016	3.0	0.0	110.3	0.0
2017	3.0	0.0	110.3	0.0
2018	3.0	0.0	110.3	0.0
2019	3.0	0.0	110.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Develop new crops and cultivars suitable to a warmer and drier climate
- Explore the ecological impact of climate change on Montana grazing areas
- Study the impact of a changing climate on insects
- Develop, enhance and distribute pest management programs
- Continue investigating crops and management systems that rely on less water consumption
- Meet one-on-one with producers, landowners and consumers to identify and address individual problems and solutions
 - Encourage email and phone conversations with members of the public
 - Offer classes, workshops, group discussions, demonstrations, field tours/trials, webinars
 - Share information at farmer’s markets, county fairs and other community events
 - Attend and present information at professional conferences, county meetings and state conventions
 - Prepare and distribute public service announcements, newsletters, MONTGuides, Television (Montana PBS Montana Ag Live), eXtension, listservs, blogs, radio and other media
 - Create readily available and easily accessible databases for producers and researchers
 - Prepare research articles, fact sheets and news releases for scientists and statewide media
 - Host strategic planning meetings with state agricultural groups and Extension advisory groups
 - Develop systems that ensure food safety and agricultural security
 - Support FIFRA Section 18c products labeling requests
 - Release germplasm, new cultivars, and new genomics tools and techniques
 - Develop value-added, agriculturally based end-use products
 - Enhance partnerships among faculty across Montana institutions, producers, agricultural industry and other education institutions
 - Enhance agricultural production practices to enhance product quality
 - Investigate and educate producers on crops and management systems that consume less water

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • TV Media Programs • eXtension web sites • Web sites other than eXtension

3. Description of targeted audience

- Crop and livestock producers
- State agricultural advisory committees
- State and federal government agencies
- Commodity associations
- Weed control professionals and County Weed Boards
- Small acreage landowners
- Tribal councils and Native American producers
- Crop protection companies registration and research personnel

- Private and commercial pesticide applicators
- Domestic and foreign buyers of wheat
- Montana Wheat and Barley Committee, grain elevators operators

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of research citations
 - 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
 - Number of people participating in range monitoring programs and the Range Management Institute
 - Number of requests to identify or record new weeds and pests
 - Number of people attending workshops, training and tours related to pesticide control and applicator training. Number of people being certified and re-certified for pesticide use.
 - Number of foreign trade teams
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Crops: Increase in number of producers who implement 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	Range: Increase in number of producers and small acreage landowners who are aware of the identification of a new insect, weed and disease infestations, and quickly identify new problems so they can make timely management decisions. Increase the number of producers/ranch managers who implement range monitoring activities which lead to improvement in resource management strategies.
3	Weed and Pest Control: Increase in the number of applicators who are certified and employ safety precautions and risk management strategies 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 follow-up with appropriate recommendations.
4	Number of new stress tolerant crop recommendations or changes for Montana. Number of new or improved cultivar recommendations provided to Montana producers to maintain dominance in small grain markets
5	Number of new molecular techniques into breeding projects to improve outcomes
6	Increase average per bushel yield of Montana grains while maintaining product quality
7	Identify critical infection and disease resistance

Outcome # 1

1. Outcome Target

Crops: Increase in number of producers who implement 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. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

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

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Weed and Pest Control: Increase in the number of applicators who are certified and employ safety precautions and risk management strategies 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 follow-up with appropriate recommendations.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 205 - Plant Management Systems
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 212 - Pathogens and Nematodes Affecting Plants
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 601 - Economics of Agricultural Production and Farm Management
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Number of new stress tolerant crop recommendations or changes for Montana. Number of new or improved cultivar recommendations provided to Montana producers to maintain dominance in small grain markets

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 132 - Weather and Climate
- 201 - Plant Genome, Genetics, and Genetic Mechanisms

- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Research

Outcome # 5

1. Outcome Target

Number of new molecular techniques into breeding projects to improve outcomes

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)

4. Associated Institute Type(s)

- 1862 Research

Outcome # 6

1. Outcome Target

Increase average per bushel yield of Montana grains while maintaining product quality

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 201 - Plant Genome, Genetics, and Genetic Mechanisms
- 202 - Plant Genetic Resources
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 204 - Plant Product Quality and Utility (Preharvest)

4. Associated Institute Type(s)

- 1862 Research

Outcome # 7

1. Outcome Target

Identify critical infection and disease resistance

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 205 - Plant Management Systems
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 502 - New and Improved Food Products
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Other (High cost of fuel, fertilizer)

Description

The weather will always be a factor over which producers have no control. Funding changes and reduced support from partners could be a significant problem.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Evaluation studies will be conducted annually through the issuance and collection of surveys, published peer reviewed materials, and secured peer reviewed grants. Long term studies will be conducted throughout the state at various test sites, labs and greenhouses. Additionally, information will be obtained from field days, conversations, direct input, and annual funding discussions with the Montana Wheat and Barley Committee.

V(A). Planned Program (Summary)

Program # 3

1. Name of the Planned Program

Farm and Ranch Management

2. Brief summary about Planned Program

Managing and operating a private farm or ranch business requires sound confidence within a multifaceted skill set, demanded of few professions. Montana COA/MAES and Extension are committed to Montana's farming and ranching communities to provide the intricate and vast knowledge required to successfully operate and generate for profit private farming and ranching enterprises. The knowledge and expertise required to be successful in farm and ranch agribusiness is considered a baseline, chief priority on behalf of COA, MAES and Extension.

These three institutions are the essential vein of information and support for Montana's farming and ranching communities which is tasked with managing the complicated and challenging business of farm and ranch management. Providing the critical programs and information needs to sustain and support individuals and families is a priority. MSU COA, MAES faculty researchers and Extension agents regularly explore and conduct outreach in agricultural business management. MSU COA faculty researchers and Extension agents provide Montana's farm and ranch community with the skills required for critical analysis, logical problem solving, data and policy analysis and written and oral communications.

Extension and COA/MAES researchers provide foundational support and the management skills required to be successful in the agricultural production field, and continue to be a nucleus of information in regard to the complex business aspects of farming and ranching. Montana's Extension Farm Management program provides educational materials on: farm and ranch management, financial and economic implications of production agriculture, agricultural policy and commodity support programs, risk management and decision support software for agriculture.

Additionally, MSU COA/MAES and Extension provide content and programs relating to purchasing, government programs and regulations, operational planning and budgeting, contracts and estate planning. Each of these knowledge areas help to provide foresight and confidence in the management of crops, animals, marketing, finance and business organization for Montana's production agriculture industry.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

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	0%		5%	
104	Protect Soil from Harmful Effects of Natural Elements	0%		8%	
111	Conservation and Efficient Use of Water	0%		15%	
112	Watershed Protection and Management	5%		5%	
121	Management of Range Resources	5%		15%	
122	Management and Control of Forest and Range Fires	0%		5%	
132	Weather and Climate	0%		7%	
136	Conservation of Biological Diversity	0%		15%	
307	Animal Management Systems	5%		0%	
601	Economics of Agricultural Production and Farm Management	30%		0%	
602	Business Management, Finance, and Taxation	5%		5%	
609	Economic Theory and Methods	5%		6%	
610	Domestic Policy Analysis	5%		6%	
611	Foreign Policy and Programs	0%		3%	
903	Communication, Education, and Information Delivery	40%		5%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The ever changing face of agriculture continues to present many challenges in today's agricultural economy. Agriculture remains Montana's top-earning industry and many of the impacts and effects in environmental changes, policy mandates and market value affect the producer. Adapting to changing transitions with the influences of market value, changing prices, consumer demand and global macroeconomic conditions remain a constant challenge for individuals, families and communities. Thus, Montana COA/MAES and Extension is committed to providing tools for Montana's agricultural producers in an effort to meet and overcome these challenges. MSU specialists and agents fill a critical role in connecting the most current knowledge and best practices with the producer. The ability of specialists and researchers to collaborate with other research entities to find solutions and proactively address concerns and for Extension to deliver that information to farmers and ranchers in their fields is critical to the ongoing success of Montana Agriculture.

Researchers and agents work to improve the lives of Montana citizens and agricultural community by providing direct access and information to cope with factors such as inconsistent growing seasons, regulatory policy and risk management. Researchers and agents provide outreach and support within the extensive body of research that spans every aspect in the farming and ranching business management industry. Existing research and experience reveal current approaches and programs are highly demanded and well used.

To address the needs of stakeholders, Montana COA and Extension priorities remain influenced by criteria that respond directly to the public's needs. Priorities are also set in regard to trending economic and environmental conditions that may affect producers.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Extension
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Montana producers need access to complete and detailed information in regard to the challenging and changing aspects of private farm and ranch management. Losses and gains due to a multitude of stressors create the need for an improved understanding of the factors affecting Montana agribusiness. Promoting and maintaining financial security and a high profit margin for producers has led to advances in market research, understanding of tax and regulatory policy and business management. Assumptions for this program include:

The public will continue to demand accurate and detailed economic forecasts and foundational support for private agricultural production enterprises

Funding through industry organizations, farm and ranch organizations, companies and other agencies will continue to provide input into priorities and activities.

Program development will proceed as planned without major interruptions

Outreach methods will continue to expand and garner public interest

2. Ultimate goal(s) of this Program

Maintain status as a leading university in farm and ranch economic research

Provide research to the public in support of financial and business decision making in farm and ranch fields

Provide leadership in the latest agribusiness policy reform

Create and maintain new outreach programs

Continue support and integration of public support in economic and climate forecasts

Provide improved production management recommendations to Montana producers

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	1.5	0.0	13.5	0.0
2016	1.5	0.0	13.5	0.0
2017	1.5	0.0	13.5	0.0
2018	1.5	0.0	13.5	0.0
2019	1.5	0.0	13.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

MSU researchers and Extension agents will work one on one and in groups with producers, landowners and consumers to identify and address individual and industry challenges and solutions. They will regularly answer specific questions through workshops, phone calls, email and personal consultations. Agents and specialists will also offer classes, workshops, group discussions, demonstrations, field tours/trials and more. Agents, specialists and volunteers disseminate knowledge at every available chance via community events and meetings. MSU Extension utilizes PSA's, newsletters, MONTGuides, television, eXtension, listserves and other media. Additional activity priorities include:

- Publish peer reviewed articles contributing to the field
- Create and maintain outreach programs
- Provide improved information and research in relation to farm and ranch management
- Contribute to the understanding of complicated financial and management decisions
- Provide informational trainings and programs related to environment

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● eXtension web sites ● Web sites other than eXtension

3. Description of targeted audience

- Farmers/Ranchers/Ag producers
- Land Managers/Owners
- Livestock/Crop producers and related stakeholders
- Private forest land owners and public land managers
- Small acreage land owners
- Tribal farm and ranch community

Economists

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Provide transformational research and education to producers through outreach and Extension programs.
 - Publish research in peer-reviewed, scientific journals
 - Present research findings to the public and interested producers through seminars and workshops
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of new or improved management recommendations provided to and adopted by Montana producers.
2	Increase in number of producers, small and large acreage landowners who are aware of current programs and information related to farm and ranch business management, and make timely management decisions as a result.
3	Increase in number of producers/farm and ranch managers who implement range monitoring activities which lead to improvement in resource management strategies.

Outcome # 1

1. Outcome Target

Number of new or improved management recommendations provided to and adopted by Montana producers.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 132 - Weather and Climate
- 136 - Conservation of Biological Diversity
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Increase in number of producers, small and large acreage landowners who are aware of current programs and information related to farm and ranch business management, and make timely management decisions as a result.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Increase in number of producers/farm and ranch managers who implement range monitoring activities which lead to improvement in resource management strategies.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 122 - Management and Control of Forest and Range Fires
- 136 - Conservation of Biological Diversity

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Description

External factors which may affect outcomes include: Inadequate funding and technical support from partnering institutions and cooperators, inadequate moisture and drought for farm and ranch management to be successful, lack of full time staff and part time assistants, changes in global

macroeconomic trends and major interruptions in program development.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

MSU COA/MAES and Extension have recently completed strategic plans which focus on the integration of learning, discovery and engagement throughout all programming areas. Measure of the impact of these efforts is a primary focus and work is currently underway to identify methods and means for accomplishing this. Evaluation studies will be conducted through surveys and other methods along with published peer reviewed materials and peer reviewed grant awards.

V(A). Planned Program (Summary)

Program # 4

1. Name of the Planned Program

Horticulture

2. Brief summary about Planned Program

The science of growing and maintaining plants for food, enjoyment and improvement of the human environment is of primary significance to Montana COA, MAES, and Extension efforts.

Horticulture's research application continue to lead to improved varieties of plants that benefit state, country and global agricultural producers. Much of the current research conducted in campus labs and in fields across the state, is centered on disease resistance through genetics, the effects of bacterial diseases and the biochemistry and molecular genetics of plant diseases. Finding the answers to questions in regard to plant diseases that threaten billions of dollars of Montana's economy, and in turn, the national agricultural economy, is of paramount importance to the strategic plans and goals of MSU COA, MAES and Extension. Many Horticulture research projects are problem oriented and pertain to major plant pathological problems in the state.

Researchers, investigators, agents and faculty of MSU COA, MAES and Extension collectively and consistently garner national notoriety in horticulture research in biology, chemistry, plant materials and physiology, plant pathology, plant reproduction and arboriculture. Additionally, the research, programs and information produced and delivered from COA, MAES faculty and Extension agents continue to represent regional leadership in the Northern Rockies.

MSU Extension's horticulture programs, publications and links provide expert yard, garden and urban integrated pest management resources for individuals and businesses throughout Montana. Extension's Master Gardener and yard and garden programs and workshops integrate community teaching and learning through pesticide education, weed and plant diagnostics, yard and garden pests, soils and garden guides. Maintaining access of information to personal and community food growth at a local level remains a pillar of COA, MAES and Extension.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

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%		15%	
104	Protect Soil from Harmful Effects of Natural Elements	5%		5%	
111	Conservation and Efficient Use of Water	5%		10%	
112	Watershed Protection and Management	5%		15%	
203	Plant Biological Efficiency and Abiotic Stresses Affecting Plants	5%		13%	
206	Basic Plant Biology	10%		10%	
213	Weeds Affecting Plants	5%		10%	
215	Biological Control of Pests Affecting Plants	5%		12%	
216	Integrated Pest Management Systems	10%		9%	
501	New and Improved Food Processing Technologies	5%		0%	
608	Community Resource Planning and Development	10%		0%	
701	Nutrient Composition of Food	0%		1%	
724	Healthy Lifestyle	5%		0%	
903	Communication, Education, and Information Delivery	20%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)**1. Situation and priorities**

The work of MSU agents and researchers in horticulture science and research speaks to the myriad of economic, social and environmental aspects of food generation, process and supply.

Horticulture research and production is immensely important in regard to the need and opportunity for Montana citizens and to the sustainability of state and local food economies. Learning and understanding the intricacies and challenges in growing food supplies will continue to be an area of increasing demand and interest well into to the 21st century. Researchers and investigators at COA/ MAES are conducting and sharing globally relevant research in horticulture science. Investigators, producers and agents focus on identifying and managing weeds, responding to horticulture within environmental changes, preserving food systems, and teaching the challenges in pest and weed identification and diagnosis. Each of these fields contributes to and deepens the public understanding of horticulture's general application to quality of life skills.

Existing research and experience reveal that improving varieties of plants to advance plant and crop

production remains a globally relevant precedence in food production, sustainability and safety. Increased demand for public knowledge, and the pressure to find answers to economically debilitating pests through disease, genetics, biochemistry and molecular genetic research makes MSU researchers and agents a leading source for information in the Northern Rockies region.

Our tripartite mission, values and research surround the goals of:

- Providing horticulture research and information to the public
- Increasing national and international prominence of horticulture research
- Increasing service and outreach in the horticulture sciences
- Promoting sustainable stewardship and culture of growing and maintaining plants for food security and enjoyment.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Understanding of, knowledge and leadership within horticulture science.

Proposed research priorities directly respond to state plant pathology, disease and pest problems.

Communities can form coalitions to learn and respond to challenges in growing and maintaining their own food source.

Funding will be secure for a mature length of time.

Information exists in best practices of environmental horticulture training, programs, research and teaching.

External funds and agents can serve as catalysts for resource conservation, sustainable stewardship and community food production.

Proposed efforts for sharing the results of horticulture research and best practices with the public, results in new plant varieties for production and stronger local and state economies.

2. Ultimate goal(s) of this Program

The ultimate goals of this program are centered within the main goal of teaching, maintaining, and protecting agricultural biosecurity:

Diagnose and properly treat plant diseases

Develop and enhance pest management programs

Investigate crops and management systems that rely on less water consumption

Identify best practices for plant growth in Northern Rockies climate

Provide public educational opportunities, develop and continue hands-on training all levels of

Extension Master Gardener Program

Expand outreach, trainings, courses and services to the public and local gardeners

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	1.5	0.0	40.5	0.0
2016	1.5	0.0	40.5	0.0
2017	1.5	0.0	40.5	0.0
2018	1.5	0.0	40.5	0.0
2019	1.5	0.0	40.5	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- 1.) Conduct horticulture science research projects
- 2.) Share and disseminate research findings to the public
- 2.) Conduct workshops and public seminars for Master Gardener Program
- 3.) Provide training in horticulture management
- 4.) Provide support in disease and pest diagnosis
- 5.) Partner with specialists, community members and agents to engage and inform the public
- 6.) Facilitate research findings with program leadership
- 7.) Assess public interest in horticulture programs through agent input
- 8.) Work with state media to disseminate knowledge and programs
- 9.) Foster best practices in horticulture training and programs
- 10.) Develop pest management programs

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Group Discussion ● Demonstrations 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● eXtension web sites

3. Description of targeted audience

Community and professional gardeners
Horticulture research scientists
Plant pathology scientists
Extension agents
Farm and Ranch community
Agribusiness community
Local food producers

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of community members enrolled in Master Gardener Program
- Number of Extension agents assisting community members with plant pest diagnostics
- Number of plant pest and disease diagnostics performed for the public
- Number of public programs, trainings and seminars relating to plant pathology and horticulture
- Number of published, peer reviewed materials.

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Number of community members completing and becoming certified in Master Gardener Program
2	Number of extension agents assisting community members with plant pest diagnostics
3	Number of plant pest and disease diagnostics performed for the public
4	Number of public programs, trainings and seminars related to plant pathology and horticulture
5	Number of published, peer reviewed materials

Outcome # 1

1. Outcome Target

Number of community members completing and becoming certified in Master Gardener Program

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Number of extension agents assisting community members with plant pest diagnostics

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants
- 216 - Integrated Pest Management Systems
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Number of plant pest and disease diagnostics performed for the public

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Number of public programs, trainings and seminars related to plant pathology and horticulture

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 501 - New and Improved Food Processing Technologies
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 5

1. Outcome Target

Number of published, peer reviewed materials

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 203 - Plant Biological Efficiency and Abiotic Stresses Affecting Plants
- 206 - Basic Plant Biology
- 213 - Weeds Affecting Plants
- 215 - Biological Control of Pests Affecting Plants
- 216 - Integrated Pest Management Systems
- 501 - New and Improved Food Processing Technologies

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Inadequate funding and technical support from partnering institutions and cooperators
Inadequate moisture for consistent plant production
Lack of full time staff and assistants

Population and cultural change from those interested in process and health benefits of growing their own food

- Major interruptions in program development

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Both MSU COA/MAES and Extension have recently completed strategic plans which focus on the integration of learning, discovery and engagement through all programming areas. Measure of the impact of these efforts is a primary focus and work is currently underway to identify methods and means for accomplishing this. Evaluation studies will be also conducted annually through surveys, published peer reviewed materials, and secured peer review grants.

V(A). Planned Program (Summary)

Program # 5

1. Name of the Planned Program

Energy and Natural Resources

2. Brief summary about Planned Program

Montana citizens have long made use of abundant natural resources in order to make a living off the land. An increased interest in preserving and protecting these same resources that make Montana a unique state has steadily climbed within the last decade. Many Montanans own land but lack knowledge about how to best utilize the natural resources in a sustainable manner. For example, many industries, including livestock operations choose locations based on proximity to water sources; in spite of cases where these choices have had devastating consequences for the environment. MSU COA/MAES scientists and Extension agents work in collaboration with landowners, managers and industries to mitigate and avoid these issues.

Extension forestry and water quality programs touch the lives of Montanans across the state. Forests cover large areas of Montana and contribute to the economic base of the state while also serving as a critical natural resource for recreation, tourism, and cultural purposes. Continual management and stewardship is required to maximize potential outputs, as well as public safety, and to ensure a sustainable future. Water quality affects all entities and is an extremely important resource requiring intentional management strategies.

According to the Montana Department of Commerce, Montana has more potential for energy development from existing and untapped diversified sources than any other state in the nation. From coal and oil deposits to wind farms and geothermal energy potential, energy and natural resources have played a vital role in Montana's history and continue to be a research and knowledge priority for MSU COA, MAES and Extension. MSU COA, MAES and Extension are focused on disseminating knowledge and finding technological solutions to increase the competitiveness of communities that capture value from Montana's natural resources, while preserving environmental quality and improving the quality of life for all citizens. Education and unbiased, scientific information is critical to Montana's ability to form sound policy and decisions in this realm of energy and natural resources. COA, MAES and Extension are trusted and dependable sources for this information for Montana citizens and to make informed decisions related to the growing economy in energy and natural resources.

MSU/COA scientists are prioritizing research and exploring how the climate is affecting native plants, insects and wildlife. Other research priorities include water resource management and carbon sequestration.

The eastern part of Montana has seen tremendous growth and expansion due to energy exploration in the Bakken Oil Field. There are growing environmental, economic, social and community development challenges in the area. Many landowners are being approached to sell their water and mineral rights but have little knowledge of the process or consequences in making these decisions. MSU COA/MAES researchers and Extension agents are exploring how to best collaborate with others around these issues to be able to make informed, science-based, sound decisions, follow best practices and establish priorities and strategies for minimizing damages and maximizing outcomes.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

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	0%		10%	
104	Protect Soil from Harmful Effects of Natural Elements	5%		15%	
111	Conservation and Efficient Use of Water	0%		5%	
112	Watershed Protection and Management	5%		10%	
122	Management and Control of Forest and Range Fires	5%		0%	
123	Management and Sustainability of Forest Resources	5%		8%	
124	Urban Forestry	0%		2%	
131	Alternative Uses of Land	5%		5%	
132	Weather and Climate	0%		10%	
135	Aquatic and Terrestrial Wildlife	5%		3%	
136	Conservation of Biological Diversity	5%		10%	
141	Air Resource Protection and Management	0%		7%	
402	Engineering Systems and Equipment	5%		0%	
605	Natural Resource and Environmental Economics	10%		14%	
610	Domestic Policy Analysis	0%		1%	
903	Communication, Education, and Information Delivery	50%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Natural resources in Montana are being impacted by the changing climate. Good management of natural resources is necessary to keep pace with challenges brought on by evolving climate conditions. Forests and rivers are important in Montana because they provide timber products, clean water, recreation

and wildlife habitat. Much of the state's forest acreage is privately owned. Extension offers private landowners and managers, as well as public land managers, extensive training opportunities and support in creating sound management strategies. In addition, the eastern part of the state faces many unique challenges related to new discoveries of energy and natural resource development. Concerns of water quality including arsenic and nitrates have been noted as being at potentially dangerous levels in some wells. MSU Extension Water Quality programs help people feel comfortable that their drinking water is safe for their families by offering education and testing to consumers. Many farm operators and landowners are interested in learning about energy alternatives and methods for reducing energy costs. The MSU Extension E3A program offers extensive resources and training in this area. In addition, the eastern part of the state faces many unique challenges related to new discoveries of energy and natural resource development.

Researchers with MSU COA/MAES are exploring carbon sequestration in rangelands and croplands, the movement of energy and materials through agro ecosystems, and microbial ecosystems. The research is centered on developing new crops and cultivars suitable to a warmer and drier climate as well as exploring the ecological impact of climate change on natural wildlife habitats in Montana and grazing areas. Montana scientists have taken advantage of their close proximity to Yellowstone National Park to study flora growing in or near hot springs. Understanding the growth mechanisms of these native plants in geothermal-modified soils will help researchers understand the limitations and opportunities that increasing temperatures may present to agricultural production.

As the climate changes, the need for drought resistant cultivars of Montana crops increases. Therefore, researchers continue discovering and evaluating new crops and cultivars of spring wheat, winter wheat and barley suitable for a warmer and drier climate. They are also studying how climate change impacts insects throughout the state. MSU COA/MAES has expanded research in carbon sequestration in rangelands and croplands. Here, researchers learn more about climate change in areas of concern such as the potential impact on forests and rangelands and ecosystems. Experts warn that a warmer climate will likely result in more disturbances such as wildfires, floods, droughts, insect infestations, and an increase in invasive plants. While agriculture is vulnerable to climate change as diminished water resources constrain crop growth, it also must be considered in the context of rising timberlines, land use, and invasive species.

Combined priorities remain to investigate how climate change may impact crop production, water systems, and range and forestry management. Researchers are developing models and projects to ensure crop and livestock producers and land managers have timely and accurate information. Researchers must continue developing alternative crop varieties and high yielding cultivars that can grow in warmer and drier climates.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Environmental restrictions related to water, air and pesticides will continue to increase.
 Natural resources and environmental issues will continue to be a big influence on economic development and social and political decisions within Montana.
 Extension natural resources and environmental programs are necessary to provide scientific information to help the general public and decision makers understand the complex interrelationships and consequences of natural resource and environmental management from a sound, science-based, non-biased platform.
 Corporate funding organizations, grain and livestock associations, companies, and other agencies will continue to provide input into priorities and activities.
 Full-time staff and part-time assistants will be available to maintain appropriate progress.
 Funding and technical support will be maintained from partnering institutions and cooperators.
 Program development will proceed as planned without major interruptions.

2. Ultimate goal(s) of this Program

Increase the knowledge of landowners and managers so they are able to create and follow stewardship plans to carefully manage their forested acreage.
 Develop new crops and cultivars suitable to a warmer and drier climate
 Explore the ecological impact of climate change on Montana wildlife habitats and grazing areas
 Study the impact of climate change on insects
 Develop and enhance pest management programs
 Increase the knowledge of landowners and managers so they utilize best practices to manage their water resources for livestock, crops and industry
 Increase the number of homeowners who test and manage their wells, assuring safe drinking water
 Increase access of consumers to resources and educational opportunities regarding the latest science-based information on various energy alternatives and techniques for efficiency.
 Help consumers, industry, landowners and communities adapt to, and make research-based decisions regarding rapid development issues related to the Bakken Oil Fields.
 Develop carbon sequestration strategies that utilize new technologies

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	4.5	0.0	22.9	0.0
2016	4.5	0.0	22.9	0.0
2017	4.5	0.0	22.9	0.0
2018	4.5	0.0	22.9	0.0
2019	4.5	0.0	22.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

MSU researchers and Extension agents will work one on one and in groups with producers, landowners and consumers to identify and address individual and industry struggles and solutions. They will regularly answer specific questions through workshops, phone calls, email and personal consultations to address specific topics such as forest stewardship and water quality. MSU COA/MAES and Extension will partner with local and state associations and organizations that are concerned about natural resource issues. In particular, MSU Extension agents and COA/MAES specialists will engage with leaders concerned about natural resources in finding ways to provide meaningful resources and education/research while collaborating to solve problems and create strategies for future growth and development. Agents and specialists will offer classes, workshops, group discussions, demonstrations, and field tours/trials. Agents, specialists and volunteers will disseminate knowledge via community events and meetings. MSU Extension will also utilize PSA's, newsletters, MONTGuides, television, eXtension, listserves and other media.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> ● Education Class ● Workshop ● Group Discussion ● One-on-One Intervention ● Demonstrations 	<ul style="list-style-type: none"> ● Public Service Announcement ● Newsletters ● TV Media Programs ● eXtension web sites ● Web sites other than eXtension

3. Description of targeted audience

- Private forest land owners and public land managers
- Farmers/Ranchers/Ag Producers
- Small acreage landowners
- Community leaders
- Professional loggers/foresters
- Environmental scientists
- Community leaders
- State economists

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Number of research citations
 - Number of meetings/workshops/clinics aimed at forest stewardship. Number of landowners and managers who create and implement forest stewardship plans.
 - Number of people attending Well Educated programs, who track water quality, regularly test their wells and receive information on how to help protect ground water resources. Number of people attending workshops and seminars to learn about watersheds and environmentally sustainable best practices.
 - Number of consumers, landowners and industry professionals utilizing resources created and/or consolidated by MSU Extension's E3A program. Number of people successfully completing E3A trainings.
 - Number of workshops and resources provided to assist landowners with leasing of mineral and water rights and other legal issues related to development. Number of collaborations with industry, agriculture and community leaders in eastern Montana.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Increase number of private forest owners who create and implement forest stewardship plans that allow them to continue to provide economic, environmental and social benefits to Montanans. Increased number of people who gain knowledge about forestry management and sustainability issues and contribute to forest health.
2	Increased number of homeowners regularly testing wells and managing them for safe consumption and environmental soundness. Increased number of Montanans who utilize online Extension and other resources related to watershed protection, drinking water safety and other water quality topics.
3	Energy Efficiency and Alternatives: Increased number of consumers accessing and utilizing E3A resources and participating in training to improve efficiency, reduce environmental impacts and lower costs.
4	Natural Resource Development: Increased number of collaborations with partners in eastern Montana to explore benefits and challenges as a result of the Bakken Oil Field and related issues. Increase in the number of landowners who are educated and make sound decisions about water and mineral rights.

Outcome # 1

1. Outcome Target

Increase number of private forest owners who create and implement forest stewardship plans that allow them to continue to provide economic, environmental and social benefits to Montanans. Increased number of people who gain knowledge about forestry management and sustainability issues and contribute to forest health.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 104 - Protect Soil from Harmful Effects of Natural Elements
- 123 - Management and Sustainability of Forest Resources
- 131 - Alternative Uses of Land
- 132 - Weather and Climate
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 2

1. Outcome Target

Increased number of homeowners regularly testing wells and managing them for safe consumption and environmental soundness. Increased number of Montanans who utilize online Extension and other resources related to watershed protection, drinking water safety and other water quality topics.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 3

1. Outcome Target

Energy Efficiency and Alternatives: Increased number of consumers accessing and utilizing E3A resources and participating in training to improve efficiency, reduce environmental impacts and lower costs.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 132 - Weather and Climate
- 136 - Conservation of Biological Diversity
- 141 - Air Resource Protection and Management

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

Outcome # 4

1. Outcome Target

Natural Resource Development: Increased number of collaborations with partners in eastern Montana to explore benefits and challenges as a result of the Bakken Oil Field and related issues. Increase in the number of landowners who are educated and make sound decisions about water and mineral rights.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 104 - Protect Soil from Harmful Effects of Natural Elements
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 131 - Alternative Uses of Land
- 141 - Air Resource Protection and Management
- 903 - Communication, Education, and Information Delivery

4. Associated Institute Type(s)

- 1862 Extension
- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Description

Landowners have no control over the change in climate patterns. Some might reach the disaster level, but many are gradual. Natural resources are also greatly impacted by the factors over which we humans have little or no control leaving those who depend on these resources challenged to develop flexible management plans that ensure viability and profitability.

Accelerated growth in eastern Montana presents many challenges and opportunities which are and will continue to be affected by national and state policy changes, funding for energy development issues, taxation policies and more. These rapid changes result in a great need for Extension to provide sound science-based resources and facilitate community and leadership development to mitigate political and social factors. Other external factors include:

Inadequate funding and technical support from partnering institutions and cooperators
Inadequate moisture
Lack of full-time staff and part time assistants
Major interruptions in program development
Reduced support from Montana crop and animal agricultural groups, conservation and wildlife groups, private industry, private donations and other agencies

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

MSU Extension and COA/MAES recently completed new strategic plans which focus on the integration of learning, discovery and engagement through all programming areas. Measurement of the impact of these efforts is a primary focus and work is currently underway to identify methods and means for accomplishing this.

Some programs in this area are connected to research projects that have specific targets established and strategies outlined for collecting data. Pre and post surveys are completed in forestry and water quality classes, as well as with the E3A training programs.

Evaluation studies will be conducted annually through surveys, published peer reviewed materials, and secured peer reviewed grants. Long-term studies will be conducted throughout the State at various test sites, labs and greenhouses.

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Youth and Adult Development

2. Brief summary about Planned Program

Young people grow up with or without adult help. Youth development includes maturing and developing one's capacities, and it's far too important to be left to chance. A focus on positive youth development should contribute to an ongoing, inevitable process in which all youth are engaged and all youth are invested. Youth development includes maturing and developing one's capacities, and it's far too important to be left to chance. Positive youth development occurs from an intentional process that promotes positive outcomes for young people by providing opportunities, choices, relationships, and the support necessary for youth to fully participate. Youth development takes place in families, peer groups, schools and in neighborhoods and communities. Across the state, families are concerned with helping youth build skills and confidence to become competent, contributing and caring citizens. MSU Extension provides the support and framework for Montana's largest youth development organization, Montana 4-H.

To measure the impact of this diverse and multi-faceted system, 4-H is moving toward a national assessment of skills called Common Measures. Common Measures is a set of common outcomes and indicators for science, healthy living, citizenship, and overarching youth development work. They were created to identify a common core of child/youth outcomes and indicators that are included in the National Institute of Food and Agriculture Plan of Work system.

Adults also need opportunities for development. MSU Extension and MAES recognize that families do not come in one size or shape and offer resources and training to help them navigate diverse trials and tribulations. They desire resources that help them become better caregivers for the elderly and/or for disabled friends and family. They are also concerned about their own aging process and value resources to help take care of themselves and improve their quality of life. They often look to MSU Extension for solutions and resources.

Implementation of the Affordable Care Act (ACA) is a national initiative that requires states to provide targeted outreach to underserved, vulnerable, hard-to-reach populations. Montana is a model state for a high percentage of that population with nearly 200,000 uninsured, approximately 20 percent of the state's population. A number of state and federal agencies view the MSU Extension Service as an ideal delivery organization for ACA education and implementation because of the number of Extension agents and specialists at the grass roots level across the state with offices in every county.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
307	Animal Management Systems	5%		0%	
602	Business Management, Finance, and Taxation	5%		0%	
801	Individual and Family Resource Management	10%		0%	
802	Human Development and Family Well-Being	25%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	5%		0%	
806	Youth Development	50%		100%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)**1. Situation and priorities**

During stakeholder input processes, youth issues continue to surface as a priority of Montanans. The MSU Extension 4-H program provides opportunities for life skill and competency development focused on helping youth to become strong, contributing members of their families, communities, and world. Stakeholders recognize the 4-H program as an effective, proven venue for youth to explore topics related to citizenship, healthy living and science, as well as to learn about leadership, volunteerism and community service. Youth involved in 4-H learn how to lead, follow and be contributing members of a team and to apply their knowledge and skills in other environments. MSU Researchers also provide mentorship and learning opportunities to youth through Research Center activities and Field Days.

In the area of adult development, the general population of Montana is aging. The fastest growing age group in the state is individuals over 85. Along with extended life expectancy comes a variety of chronic illnesses. Most elderly Montanans live on their own or with a spouse, yet they often require either direct or managed care. MSU Extension offers resources for caretakers to help address health related issues.

From 1990-2000, there was a 53 percent increase in the number of grandparents in Montana responsible for caring for their grandchildren (9th nationally). The US Census (2010) reported 6,053 grandparents hold the primary responsibility for the basic needs of their grandchildren, while 11,098 grandparents lived in households with one or more grandchildren under the age of 18. Grandparents are faced with this responsibility for a variety of reasons: death of the parent, parental child abuse, neglect, abandonment, teen pregnancy, issues of divorcing parents, alcohol/drug problems, financial difficulties, illness and military deployment. The two-parent nuclear family structure no longer describes the majority of families. Parents and caregivers often need assistance. MSU Extension offers resources in this area to help in reducing the risk of abuse/neglect to children and/or the elderly, and strengthening the family unit.

Montanans are interested in the wise use and handling of their financial resources. Statistics reveal

that 70 percent of Montanans die without a will. The state legislature continues to change the intestate succession (dying without a will law) and contract laws that impact beneficiaries of real and personal property. Montana farmers/ranchers/owners of closely held businesses continue to be interested in intergenerational transfers. Congress has made changes in the federal estate and gift tax laws and education is needed to provide families, including those living on reservations, with information about the impact of these laws. Montana State University economists conduct research and outreach to offer the most current scientific-based information to Montanans.

2. Scope of the Program

- In-State Extension
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

There is a continuing need for youth to learn skills they can use over time to become contributing adults.

The 4-H program has been providing opportunities for positive youth development and teaching life skills to young people for over a century and will continue doing so in the future.

Youth need safe places and positive relationships with caring adults.

Families come in many shapes and sizes - single parent, grandparents raising grandchildren, combined families, traditional - and all have unique challenges and opportunities for growth and support.

The number of people caring for aging family members is increasing.

Families will continue to have concerns related to financial resources and having enough money to live comfortably in retirement years.

Estate planning is a difficult topic that many people avoid but is needed.

2. Ultimate goal(s) of this Program

Youth Competency Development: 4-H Youth programs will provide clubs, classes, training, camps and other activities which lead to the increased knowledge and aptitude of participants within specific competency areas like citizenship, healthy living, and SET.

Youth Life Skill Development: Opportunities provided through 4-H youth programs will lead to a demonstrated increase in specific life skills of participating youth.

Leadership/Volunteer Development: Youth and adults completing training will demonstrate improved leadership skills and adoption of positive youth development practices.

Military Partnerships: Partnerships with military and other organizations will be effective in providing resources for military families, as measured by increases in knowledge of how to access resources and increased ability to cope with deployments and other unique military related situations.

Parenting and Caregiving: Participants of parenting and caregiving classes will have increased knowledge and actively use skills learned through MSU Extension and Research programming.

Personal Finances: Montanans will have access to classes, seminars, online training and printed resources to assist them in making personal finance decisions related to saving, estate planning and more.

Reservations: Increased support for reservation goals will promote traditional culture and intergenerational pride through specifically targeted culturally sensitive programming that fosters healthy, meaningful relationships among youth, families and elders.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	8.0	0.0	0.0	0.0
2016	8.0	0.0	0.0	0.0
2017	8.0	0.0	0.0	0.0
2018	8.0	0.0	0.0	0.0
2019	8.0	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct workshops and clinics that provide active learning in subject matter related to projects
- Conduct meetings that focus on facilitation and leadership skills
- Develop curriculum and supporting teaching tools for volunteers to use
- Provide training for youth and adult volunteers
- Partner with youth serving groups on state and local levels
- Provide/develop web based education and information access
- Facilitate small support groups for caregivers
- Develop printed and online resources

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations • Other 1 (Field trips) • Other 2 (Camps) 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • eXtension web sites • Web sites other than eXtension • Other 1 (Facebook)

3. Description of targeted audience

- Youth aged 5-19
- Parents of youth involved in 4-H
- Adult and youth volunteer leaders

- Professionals involved with youth development
- School administrators and teachers
- Military families
- Rural Montana families, landowners and business owners
- Caregivers
- Healthcare providers and services
- Reservation populations

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Youth competency development: Number of 4-H programs and activities to provide youth with training and support to foster the development of skills and abilities in citizenship, science and healthy living.
 - Youth life skill development: Number of 4-H Youth programs which provides activities and projects to help youth build specific life skills.
 - Leadership/Volunteer Development: Number of classes, seminars and resources for youth and adults who volunteer in youth programs to help them become better, more effective leaders.
 - Military Family Partnerships: Number of positive interactions with military families through partnerships with other organizations and schools to access resources and support opportunities.
 - Parenting/Caregiving: Number of classes and support groups for parents and caregivers.
 - Personal Finances: Number of classes, training and resources that provide critical information related to personal finances and the Affordable Care Act (ACA).
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Youth competency development: Increased number of youth participating in 4-H projects and activities and demonstrating increased knowledge and ability in specific competency areas including but not limited to science, healthy living and citizenship.
2	Youth life skill development: Increased number of youth participating in 4-H activities and demonstrating increased knowledge and ability in specific life skill areas including but not limited to teamwork, communication skills and public speaking.
3	Leadership/Volunteer Development: Increased number of youth and adults who have received leadership training and demonstrate increased knowledge and ability as a result of the training.
4	Military Family Partnerships: Increased interaction with military families resulting in increased capacity of families to access resources and support.
5	Parenting/Caregiving: Increased number of parents and caregivers who access support and resources and increased knowledge and ability of participants as a result of those efforts.
6	Personal Finances: Increased number of participants in classes and training and increased knowledge and aptitude of those participants based on pre and post survey results. Number of ACA inquiries, referrals, resources developed and shared, workshops and enrollments.

Outcome # 1

1. Outcome Target

Youth competency development: Increased number of youth participating in 4-H projects and activities and demonstrating increased knowledge and ability in specific competency areas including but not limited to science, healthy living and citizenship.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Youth life skill development: Increased number of youth participating in 4-H activities and demonstrating increased knowledge and ability in specific life skill areas including but not limited to teamwork, communication skills and public speaking.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Leadership/Volunteer Development: Increased number of youth and adults who have received leadership training and demonstrate increased knowledge and ability as a result of the training.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being

- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Military Family Partnerships: Increased interaction with military families resulting in increased capacity of families to access resources and support.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Parenting/Caregiving: Increased number of parents and caregivers who access support and resources and increased knowledge and ability of participants as a result of those efforts.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

Personal Finances: Increased number of participants in classes and training and increased knowledge and aptitude of those participants based on pre and post survey results. Number of ACA inquiries, referrals, resources developed and shared, workshops and enrollments.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 602 - Business Management, Finance, and Taxation
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 806 - Youth Development

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

Natural Disasters can affect family finances as well as the health of the family structure. The economy and changes to government benefits could also be a factor as healthcare revisions and other changes are implemented. Military deployments and benefits could be affected by budgeting and government decisions.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Montana 4-H will continue to use Common Measures to collect and compile data from participants involved in activities focused on life skill development. This allows information to be gathered locally and then compiled at the state level. A similar system is used for recording the number of Montanans searching health insurance websites and who actually acquire insurance.

In addition, 4-H members are required to keep a 4-H Record Book (journal), which describes their involvement from beginning to end. They record the things they learn from the activities in which they have participated. These records are a source of information about the knowledge youth have gained, what behaviors they have learned and what changes they have made over time.

Pre and post surveys are utilized in most leadership, finance and other classes and opportunities including those for military families, parents and caregivers.

There is some "loss" of ability to measure impacts as Extension's direct involvement is minimized in caregiver programs due to the train-the-trainer approach. This is demonstrated by grandparents who

are parenting grandchildren as they learn about resources and form support groups, they often continue to meet, share and learn without direct Extension involvement, clearly a desired outcome that makes quantifying difficult.

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Healthy Living, Nutrition and Food Safety

2. Brief summary about Planned Program

Statistics show the American population is becoming more sedentary with increased weight gain. These statistics include all ages. The number of people considered obese has increased dramatically in the past ten years. Weight issues and lack of exercise are linked to a number of health problems including diabetes, high blood pressure and heart disease. Montana stakeholders acknowledge these trends and view health as a major concern for adults and children. This stakeholder input is substantiated with information from the 2010 census which indicates there are many health problems that can be attributed to nutritional deficiencies and poor food choices. Through education, MSU Extension and research have been committed to helping Montanans establish and maintain healthy lifestyles. The focus of these programs has largely been on food, nutrition and healthy living practices related decision-making to achieve a healthy lifestyle.

Programs delivered under this planned program category also focus on safe food. In this context, it involves food handling practices and protocols followed by food service managers/employees as well as food preservation techniques used in the home. Extension has long been recognized as one of the best sources of reliable information related to food safety, so it is appropriate to maintain a strong presence in this area.

It is important to note that the MSU COA and MAES also conduct important research and teaching related to growing and raising safe, nutritious food. For the purpose of this report, these projects are included under Programs 1: Livestock and Program 2: Crops and Rangelands.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : No

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
701	Nutrient Composition of Food	0%		3%	
702	Requirements and Function of Nutrients and Other Food Components	5%		50%	
703	Nutrition Education and Behavior	30%		15%	
704	Nutrition and Hunger in the Population	10%		15%	
721	Insects and Other Pests Affecting Humans	0%		5%	
722	Zoonotic Diseases and Parasites Affecting Humans	0%		5%	
724	Healthy Lifestyle	20%		0%	
801	Individual and Family Resource Management	10%		7%	
802	Human Development and Family Well-Being	20%		0%	
805	Community Institutions, Health, and Social Services	5%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

The societal costs of poor health due to the consequences of negative decision-making related to nutrition and physical activity are on the rise. When considering obesity and attributable medical expenditures alone, costs are estimated today at \$125 billion annually in the US. Related health concerns such as diabetes and heart disease compound the problems. To address these issues, Montana Extension provides educational programming to help youth and adults make well informed decisions about their health as it relates to nutrition, physical activity and basic health testing procedures. Through changes in health related attitudes and behaviors, the rising obesity rates can be influenced in a positive direction.

Stretching the food dollar is a challenge for limited resource families and impacts the health and well-being of youth and adults alike. Almost 20% of all Montana children live in poverty with an even higher percentage on reservations. Working low-income families often lack the time, knowledge and skill to prepare and serve family meals, which are tasty, low-cost and healthful. Studies also show that people who run out of food or miss meals because they cannot afford them are among the most obese.

Nutrition plays a critical role in the aging process. However, there is a high rate of malnutrition among older adults because they experience a large number of related individual and environmental risk factors. Seventy-three percent of older adults report eating fewer than the recommended daily intake of fruits and vegetables. Sixteen percent report having been told by a doctor that they had diabetes. While all youth and adults need to be concerned about nutrition, those who qualify as seniors are among those most in need.

Food safety is a growing concern for the food service industry, public and private agencies. One out of 65 Montanans experience an illness related to unsafe food handling practices. To combat this trend, many food service groups require food safety training including the Montana school systems that must comply with the mandatory USDA policy to implement a School Food Safety Plan, as well as Pow Wow workers on reservations. There are three major efforts underway: Basic Food safety training for food service employees, ServSafe Food Protection Manager Certification Courses and Hazard Analysis and Critical Control (HACCP) training for the Food Industry.

Montana has an abundance of nutritious seasonal, wild and homegrown foods appropriate for home preservation. The sustainable food trends and current economic downfall have also contributed to a renewed interest in home food preservation. It is critical that those who practice preserving and processing foods at home have access to the most reliable information available related to food safety and quality. A study done by CSREES-USDA in 2000, revealed a high percentage of home food processors are using practices that put them at risk for food borne illness and economic losses due to food spoilage. As a result of this study and more recent updates, there is a renewed need to provide programming for home food preservers.

2. Scope of the Program

- In-State Extension
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- By employing a health-centered (rather than a weight-centered) approach to well-being, people can improve their health by developing lifestyle habits, rather than by trying to achieve a specific body size, shape or weight. Past programming has resulted in impact data that indicates this as an acceptable and successful approach.
 - Based on research, it is known that nutrition is an important component to successfully addressing chronic disease issues as well as achieving a healthy lifestyle.
 - Future funding for nutrition education for limited resource families is uncertain.
 - Food preservation will continue to be of interest while the economy is slow and as the culture changes to support more locally grown food priorities.
 - Rural people are often isolated having little access to healthcare or health care information, intervention or experience healthy food deserts.

2. Ultimate goal(s) of this Program

- Healthy Lifestyles: Classes and programs directed toward healthy living reach adult and youth audiences in across Montana communities.
 - Nutrition: Classes, programs, publications and other resources are offered in person and on-line throughout Montana and online to specifically address the nutrition needs of youth, adults and the elderly.
 - EFNEP/SNAP-ED: The NEP curriculum is broadly utilized to educate youth and adults about food safety, food resource management, and nutrition.
 - Food Safety: Classes, seminars, formal trainings and additional resources are readily available

and used by Montanans resulting in a decrease of unsafe food handling practices.

- Food Preservation: County agents provide specialized training and up-to-date resources and knowledge to consumers through classes with regular follow-up with direct responses to questions from individual consumers.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	4.0	0.0	6.3	0.0
2016	4.0	0.0	6.3	0.0
2017	4.0	0.0	6.3	0.0
2018	4.0	0.0	6.3	0.0
2019	4.0	0.0	6.3	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct train the trainer workshops
- Conduct workshops, seminars, meetings
- Facilitate meetings, discussion groups, focus groups
- Develop local and state partnerships
- Develop MontGuides (fact sheets), publications, website materials, video based materials
- Conduct web based, interactive training/education opportunities

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension	
Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations • Other 1 (MontGuides (Fact Sheets)) 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • eXtension web sites • Web sites other than eXtension

3. Description of targeted audience

- Low income adults
- Low income youth

- Adults that are FSP eligible
- Youth from FSP eligible households
- Teachers in the Montana School System
- Middle to older aged women, especially those living in rural areas
- Parents and youth living in rural areas
- Working people
- Elderly and shut-in people
- Food service managers and staff

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Healthy Lifestyles: Classes and resources, printed and online, are readily available to Montanans to increase knowledge related to physical activities and the need for proactive medical testing.
 - Nutrition: Classes, publications and online resources are utilized to provide current information regarding nutrition, food resource management tools and other dietary needs directly to Montanans.
 - EFNEP/SNAP-Ed: The NEP curriculum is utilized to teach qualifying adults and youth, a series of lessons related to nutrition and food resource management.
 - Food Safety: County Agents are trained to offer food safety education classes and ServSafe training to local sanitarians, school and public food service personnel, volunteers and others.
 - Food preservation: Training and updates for County Extension Agents equip them to conduct educational programs, test equipment and answer questions.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Healthy Lifestyles: Increased participation in healthy lifestyle programming and health monitoring that leads to healthy lifestyle choices.
2	Nutrition: Increased participation in nutrition classes, training and use of online and printed resources leading to measureable changes in nutrition habits.
3	EFNEP/SNAP-Ed: Increased participation by eligible citizens, leading to increased knowledge related to improved nutrition and food resource management.
4	Food Safety: Increased participation in food safety classes, trainings and increased knowledge, utilization and certifications earned by participants.
5	Food preservation: Increased participation in food preservation classes and increased knowledge and utilization of concepts learned by participants.

Outcome # 1

1. Outcome Target

Healthy Lifestyles: Increased participation in healthy lifestyle programming and health monitoring that leads to healthy lifestyle choices.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Nutrition: Increased participation in nutrition classes, training and use of online and printed resources leading to measurable changes in nutrition habits.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

EFNEP/SNAP-Ed: Increased participation by eligible citizens, leading to increased knowledge related to improved nutrition and food resource management.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Food Safety: Increased participation in food safety classes, trainings and increased knowledge, utilization and certifications earned by participants.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

Food preservation: Increased participation in food preservation classes and increased knowledge and utilization of concepts learned by participants.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 702 - Requirements and Function of Nutrients and Other Food Components
- 703 - Nutrition Education and Behavior
- 704 - Nutrition and Hunger in the Population
- 724 - Healthy Lifestyle
- 801 - Individual and Family Resource Management
- 802 - Human Development and Family Well-Being
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Description

The national budget crisis and ongoing disagreement in the Congress could lead to funding and benefit changes that directly affect Montana's children, elderly, ill, veterans and rural people, many of whom live at or near the poverty level. Changes in harvests or hunting opportunities as a result of weather or policy changes could affect food security.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Most programs use pre- and post- surveys to evaluate effectiveness.

V(A). Planned Program (Summary)

Program # 8

1. Name of the Planned Program

Housing and Built Environments

2. Brief summary about Planned Program

As the economy struggled, the cost of energy increased (especially as a percentage of fixed costs). With higher utility bills, consumers are requesting assistance for energy conservation and weatherization, seeking information on energy-efficient construction, remodeling and purchasing Energy Star appliances. The MSU Extension Housing and Environmental Health Program has become a nationally recognized leader in providing the latest science-based resources and comprehensive training related to weatherization and housing safety.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
111	Conservation and Efficient Use of Water	10%		25%	
124	Urban Forestry	0%		3%	
133	Pollution Prevention and Mitigation	15%		10%	
402	Engineering Systems and Equipment	10%		0%	
403	Waste Disposal, Recycling, and Reuse	10%		25%	
605	Natural Resource and Environmental Economics	10%		20%	
608	Community Resource Planning and Development	10%		12%	
723	Hazards to Human Health and Safety	15%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	0%		5%	
804	Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures	20%		0%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Energy is a significant expense for nearly all Montanans and a sizeable input cost for agricultural producers. Energy prices have been volatile in recent years. Environmental concerns are growing due to concern about greenhouse gas levels. Both of these factors have encouraged Montanans to utilize energy more effectively.

Increasing energy costs and a national economic slowdown are negatively impacting the ability of Montana businesses to finance projects. Montana's small businesses can no longer pass higher costs, driven by escalating energy prices, to consumers. A recent study by the Small Business Administration found that small businesses pay 30 percent more for electricity than large businesses. In order for Montana businesses to compete in the national market, flexible and innovative tools to reduce energy costs are necessary.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Montanans will continue to seek ways to be more energy efficient.
- Montanans will continue to want to use new forms of energy in homes and businesses that are economical, clean and renewable
- Montanans will be willing to learn and use energy saving practices related to their home energy costs.

2. Ultimate goal(s) of this Program

- Training Residential Consumers: Consumers will access to the latest science-based knowledge related to reducing energy consumption and cost within their residences.
- Training Professional Contractors: Training opportunities for construction professionals in the areas of weatherization and energy efficiency will be readily available in multiple mediums including one-on-one classes, online classes, professional certification programs, webinars and more.
- Housing and Environmental Quality: Housing specialists will offer classes, site evaluations, and resources that assist consumers and contractors with issues related to mold, lead-based paint, water safety and more.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	2.0	0.0	2.9	0.0
2016	2.0	0.0	2.9	0.0
2017	2.0	0.0	2.9	0.0
2018	2.0	0.0	2.9	0.0
2019	2.0	0.0	2.9	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Produce MontGuides on current energy topics.
- Conduct community meetings on energy topics
- Partner with agencies, local and tribal governments, organizations and industry to achieve more widespread impacts.
 - Conduct meetings and seminars on methods for evaluating alternative energy opportunities for residential consumers and contractors.
 - Conduct workshops on home energy for the building/remodeling industry.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • Demonstrations 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • TV Media Programs • eXtension web sites • Web sites other than eXtension • Other 1 (Publications)

3. Description of targeted audience

- Residential energy consumers
- People interested in becoming involved with creating alternative energy opportunities
- Small businesses by SBA definition
- Building Industry
- Montana Department of Environmental Quality
- Montana AARP
- Human Resource Development Councils

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
- Number of patents submitted
- Number of peer reviewed publications

Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Training residential consumers: Classes will be offered online and in person for consumers interested in reducing energy costs and consumption.
 - Training Professional Contractors: Training and professional certification will be offered for those in the construction and weatherization industries; giving professionals the latest science-based information and technologies available.
 - Housing and Environmental Quality: Training opportunities and up-to-date resources related to housing safety will be available for consumers and contractors.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Training Residential Consumers: Consumers will utilize resources, increase knowledge and demonstrate positive change related to weatherization making homes more energy efficient.
2	Training Professional Contractors: Building and weatherization professionals will gain the knowledge and use the tools or materials needed to remodel or construct safe, energy efficient housing.
3	Housing and Environmental Quality: Increased number of homes cleared of mold and lead-based paint issues resulting in more residents living in safe conditions.

Outcome # 1

1. Outcome Target

Training Residential Consumers: Consumers will utilize resources, increase knowledge and demonstrate positive change related to weatherization making homes more energy efficient.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 133 - Pollution Prevention and Mitigation
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Training Professional Contractors: Building and weatherization professionals will gain the knowledge and use the tools or materials needed to remodel or construct safe, energy efficient housing.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 133 - Pollution Prevention and Mitigation
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Housing and Environmental Quality: Increased number of homes cleared of mold and lead-based paint issues resulting in more residents living in safe conditions.

2. Outcome Type : Change in Condition Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 133 - Pollution Prevention and Mitigation
- 402 - Engineering Systems and Equipment
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics
- 608 - Community Resource Planning and Development
- 723 - Hazards to Human Health and Safety
- 804 - Human Environmental Issues Concerning Apparel, Textiles, and Residential and Commercial Structures

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

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

Description

The need to determine alternative energy sources will continue to be a priority for the national government as well as local entities. Costs of energy will continue to fluctuate making it difficult for community and individual planning as many of the renewable energy sources are dependent on weather conditions. Housing issues in the eastern part of Montana will continue to evolve based on a transient population. The response of the community will be influenced by the resources made available for public housing etc.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

These programs can be evaluated based on participation in training and pre and post education surveys. Actual energy and cost savings are predicted by weatherization professionals based on services performed and reduced energy consumption.

V(A). Planned Program (Summary)

Program # 9

1. Name of the Planned Program

Community Development

2. Brief summary about Planned Program

Montana's large size and small population spread out over a wide range of landscapes creates unique challenges and opportunities for communities. MSU Extension agents live and work in the communities they serve and provide a historical, trusted link connecting leaders and interest groups with a focus on efforts toward community vitality. Over the next ten years, the Montana Community Foundation estimates there will be a large transfer of wealth taking place which could greatly impact the survival and success of many small towns. MSU Extension supports community development by helping establish community foundations and other organizations that focus on long-term strategic planning, fundraising, grant making, endowment building and community collaboration. In addition, Extension provides leadership and government training, and often coordinates and/or participates in community partnerships and projects at the local, county and state level.

MSU Extension plays a vital role in proactively planning for and managing disasters. Agents and specialists are able to quickly organize informational meetings, resources and follow-up. Several participate as statewide communications liaisons who are charged, in an emergency, with quickly identifying immediate needs and how to meet them. Extension agents often serve as integral members of preparation teams who plan extensively in preparation for response to community disasters/emergencies that could hit a community.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
608	Community Resource Planning and Development	60%		0%	
723	Hazards to Human Health and Safety	10%		0%	
803	Sociological and Technological Change Affecting Individuals, Families, and Communities	20%		0%	
805	Community Institutions, Health, and Social Services	10%		0%	
	Total	100%		0%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Communities face growing challenges related to the economy, changing climate, growth/declining/aging population, transfer of wealth and more. Because of their location, embedded within communities, local agents are often strong community leaders with historical and trusted links they can use to build collaborations and work toward a common good. One major focus of MSU Extension Community Development is to help build community resources through the development of foundations and endowments as well as long-term strategic planning.

Montana has more than 11,000 public employees who are responsible for more than \$1 billion in county and city funds. The MSU Extension Local Government Center (LGC) is the only entity offering training, technical assistance and research organization of its kind. The LGC and Community Development programming provide training for volunteers and elected officials who may have no technical background or directly-related education for their role as a public servant.

Citizens throughout the state need to be aware of local/community emergency plans and services available if a disaster should occur. MSU Extension is frequently involved with communication before and during a disaster as well as contributing to extensive planning to insure that individuals and communities are ready for disastrous situations.

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

- Evidence shows that communities which develop leadership skills in their citizens, set specific goals and strategically plan to accomplish a united vision are more successful.
- Training for people serving on boards, councils and committees leads to better local governance.
- Disasters including wildfire and drought will happen and being prepared limits negative impacts.

2. Ultimate goal(s) of this Program

- Community Resource Development: Partnerships with community groups lead to the development and success of community foundations and endowments which support strong strategic planning and maintain wealth within communities.
- Governance and Citizen Leadership: Training and support for locally elected and public officials and volunteers significantly reduces liability and inefficiencies of local and county government.
- Emergency/Disaster Planning and Management: An increased number of communities with clearly defined plans for managing disasters and citizen awareness of those plans and access to available resources.
- Community Development with Tribal Populations: Targeted efforts to collaborate with tribal communities have resulted in achieving carefully developed strategic goals.

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2015	3.5	0.0	0.0	0.0
2016	3.5	0.0	0.0	0.0
2017	3.5	0.0	0.0	0.0
2018	3.5	0.0	0.0	0.0
2019	3.5	0.0	0.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Community meetings will be held to determine community values, attitudes and vision on which to develop strategies and action plans.
- Partnering with local economic development entities, agencies, businesses/industry and organizations to implement goals and plans of action.
- Planning for potential disasters that may occur in a community, e.g., EDEN.
- Training opportunities available for people serving on boards, councils and committees in both the public and private sectors.

- Culturally sensitive meetings with tribal leaders focused on community development.

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • Demonstrations • Other 1 (MontGuides (Fact Sheets)) 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • eXtension web sites • Web sites other than eXtension • Other 1 (Publications)

3. Description of targeted audience

- Business and Community Leaders
- Local Development Entities
- Chamber of Commerce Members
- Tourism Leadership - local/state
- County and City Government
- County DES, Law Enforcement Emergency Response Coordinators
- Current community leadership/potential community leaders
- Landowners
- Adults/Youth serving on Boards
- Elected officials
- Tribal members

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- Community Resource Development: Community Foundations, endowments or similar collaborations receive training and assistance focused on keeping wealth within the community to be used toward common strategic initiatives.
 - Governance and Citizen Leadership: Training offered through Extension Community Development and the MSU Extension Local Government Center to elected and public officials and volunteers.
 - Emergency/Disaster Planning and Management: Workshops, presentations, and other assistance offered in support of Emergency/Disaster Planning and Management to create disaster response plans.
 - Community Development with Tribal Populations: Number of collaborations with tribes focused on community development issues. Workshops, presentations and assistance offered to tribal populations in forming collaborations focused on community development issues.
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	Community Resource Development: Increased participation of community members toward supporting established community priorities with a resulting increase in the number of Community Foundations and endowments.
2	Citizen Leadership and Good Governance: Increased number of people serving on boards, councils and/or committees who are prepared for the responsibilities/authorities of the entity.
3	Emergency/Disaster Planning and Management: Increased number of communities creating and updating clear disaster mitigation plans with effective and efficient leadership by Extension personnel during emergencies.
4	Community Development with Tribal Populations: Increased number of collaborations with tribes to address specific community development priorities.

Outcome # 1

1. Outcome Target

Community Resource Development: Increased participation of community members toward supporting established community priorities with a resulting increase in the number of Community Foundations and endowments.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

Citizen Leadership and Good Governance: Increased number of people serving on boards, councils and/or committees who are prepared for the responsibilities/authorities of the entity.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

Emergency/Disaster Planning and Management: Increased number of communities creating and updating clear disaster mitigation plans with effective and efficient leadership by Extension personnel during emergencies.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 608 - Community Resource Planning and Development
- 723 - Hazards to Human Health and Safety
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

Community Development with Tribal Populations: Increased number of collaborations with tribes to address specific community development priorities.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 803 - Sociological and Technological Change Affecting Individuals, Families, and Communities
- 805 - Community Institutions, Health, and Social Services

4. Associated Institute Type(s)

- 1862 Extension

V(J). Planned Program (External Factors)

1. External Factors which may affect 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.)

Description

Outcomes may be affected by significant natural or other emergency/disasters. In areas around the Bakken Oil Fields, community development is facing challenges that will be affected by legislation (state and federal), market trends and more. As federal funding becomes less secure, local communities will be required to set priorities and Extension will have a role in identifying and developing resources (financial and human) to be most effective.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

MSU Extension recently completed a new strategic plan which focuses on the integration of learning, discovery and engagement throughout all programming areas. Measurement of the impact of these efforts is a primary focus and work is currently under way to identify methods and means for accomplishing this. Currently pre- and post- surveys, one-on-one conversations and observations are the most common evaluation tool. In some cases the evaluation will be based on the actual number of new community foundations and the dollars raised or specific impacts within individual communities.