Montana State University Extension Range Management Institute

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ABSTRACT

Rangeland comprises approximately 70% of the land area in Montana. Ranches with rangeland livestock production enterprises contribute significantly to Montana's economy and, when managed correctly, these landscapes can naturally maintain plant community health, soil integrity, water quality, and wildlife habitat. Therefore, it is important for Extension faculty to possess adequate knowledge to assist these individuals. This program, funded by Western SARE, was initiated to provide in-depth training for Montana Extension faculty on fundamental rangeland ecology and management principles. The focus of the program is to aid educators in more effectively assisting landowners who desire to manage the rangelands they rely upon for their livelihood efficiently and sustainably. Faculty attended three workshops that included classroom and field instruction. Topics included: 1) *Rangeland Ecology Principles*, 2) *Rangeland Management Principles*, 3) *Management Tools to Improve Efficiency*, 4) *Rangeland Metrics and Monitoring*, and 5) *Current and Emerging Issues on Rangelands*. Pre- and post-tests indicated that participants increased knowledge significantly across all workshops. Personal contact with participants also demonstrated increased confidence by participants when working with ranchers and local working groups focusing on rangeland resources. In the future, project coordinators plan to lead the development of a strong mentoring program across Montana among field faculty who address rangeland resource clientele inquiries. Additionally, by participant request, project coordinators are developing a 'Level 2 Montana State University Extension Range Management Institute' workshop. Previous participants will be invited to attend this hands-on, field-oriented workshop designed to further elevate faculty knowledge of rangeland management tools and strategies.

PROGRAM NEED

- Rangeland comprises approximately 70% of the land area in Montana and is found in every county in Montana.
- Ranches with rangeland livestock production enterprises rely heavily on rangelands to support their livelihood.
- Cattle and calves, the agricultural industry that relies predominantly on rangelands, brings in over $1.1 billion in cash receipts in Montana annually.
- Correctly managed rangeland livestock production systems can naturally maintain plant community health, soil integrity, water quality, and wildlife habitat.
- Only 10% of current MSU Extension field faculty in Montana have academic training in rangeland ecology and management, yet many are relied upon in their positions to provide range-related assistance to livestock producers and land managers.

In 2010, MSU Extension field faculty and specialists engaged in in-depth discussions that resulted in a unanimous conclusion that field faculty wanted and needed more in-depth training in rangeland ecology and management principles to more effectively assist agricultural producers with rangeland management decisions.

PROGRAM GOALS

- To increase knowledge of rangeland principles in MSU Extension field faculty.
- To create, compile, and distribute a set of comprehensive references and field equipment for participants.
- To develop a statewide mentoring program for MSU Extension field faculty to successfully address rangeland management inquiries from clientele.
- To improve the abilities of MSU Extension field faculty to assist clientele with rangeland management inquiries.
- The combination of increased knowledge and confidence in the subject matter, coupled with a comprehensive set of resources and equipment, will serve as a catalyst for rangeland program implementation at the county level.

EDUCATIONAL STRUCTURE

Three workshops were held in 2013 and 2014. The 3-day workshops included two days of classroom learning and one day of field demonstration, focused on five main subject areas, with multiple topics under each main subject area:

1) ***Rangeland Ecology Principles***, such as defining rangelands; rangeland uses; plant community characteristics and dynamics; basic plant physiology; plant-animal interactions; and seasonal changes in forage nutritional value;
2) ***Rangeland Management Principles***, such as setting realistic ecologic and economic management unit goals and considering limitations; plant identification; the importance of timing, intensity, frequency, duration of grazing; understanding factors that affect animal distribution; and setting stocking rates;
3) ***Management Tools to Improve Efficiency***, such as grazing systems; water development; fences; and other improvements;
4) ***Rangeland Metrics and Monitoring***, such as quantifying plant community characteristics; determining forage production of a pasture; measuring herbaceous and woody disappearance; and long-term and short-term monitoring techniques; and
5) ***Current and Emerging Issues on Rangelands***, such as the debate over continuous versus rotational grazing, impact of wolves and grizzly bears on rangeland distribution and animal health; and the implications of the Endangered Species Act on rangeland management.

CLASSROOM LEARNING:

PowerPoint presentations, group discussion, hands-on exercises, and group activity using Web Soil Survey were used to facilitate learning.

FIELD LEARNING:

Local ranchers provided field sites for demonstration and the opportunity for hands-on learning. Participants observed various field sites where diverse approaches were being successfully implemented on rangeland livestock production enterprises. Participants also engaged in activities to familiarize them with rangeland metrics, such as range plant identification, clipping and weighing forage for estimating productivity, measuring stubble height and utilization, evaluating rangeland health indicators, and conducting rangeland monitoring to evaluate range trend.

A priority for workshops was creating a learning environment that employed a variety of educational approaches and fostered maximal learning. At the beginning of each workshop, we engaged in transactional education strategies by involving participants in identifying common questions and important topics for them locally. We were then able to refine topics and delivery based upon their input. The workshops successfully combined engagement of participants and instructors, as well as both transmissive and transactional educational principles to address diverse skill and knowledge levels of participants.

IMPACTS

Short-Term:

- Thirty-five MSU Extension field faculty attended three workshops, including a training in both the Western and Eastern MSU Extension Regions of Montana and one training on the MSU Bozeman campus in conjunction with the 2014 MSU Extension Annual Conference.
- Classroom and field components were included in workshops and participants learned how to use field equipment used for rangeland applications. Each participant returned to their duty station with a complete set of educational resources and field equipment.
- Scores on pre- and post-workshop tests indicated that knowledge gained by participants increased by an average of 15 percentage points by the end of the workshops.
- We exceeded our target of a 50% increase in confidence among participants to teach and apply the concepts taught.
- Networking among field faculty was evident across workshops and camaraderie development was reported by several participants.

Medium-Term:

- Qualitative information indicates that MSU Extension field faculty:
  - Are applying concepts they learned through the workshops,
  - Have greater confidence in addressing client questions pertaining to rangeland resources, and
  - Have effectively applied concepts they learned to local natural resource-related events and issues.
- Increased faculty confidence has enhanced institutional engagement for land-grant university resources and practitioners of resource stewardship.

FUTURE PROGRAMMING

A one-year, no-cost extension was approved in 2015 for this project, which will allow us to accomplish three main objectives:

1) Deliver a 'Level 2' course to participants that attended an initial workshop,
2) Strengthen and support a formal mentoring process for MSU Extension field faculty, and
3) Strengthen medium- and long-term impacts of the project.