What is SARE?

Since 1988, the Sustainable Agriculture Research & Education (SARE) program has been the go-to USDA grants and outreach program for farmers, ranchers, researchers and educators who want to develop innovations that improve farm profitability, protect water and land, and revitalize communities. To date, SARE has awarded over $389 million to more than 8,542 initiatives.

SARE is grassroots with far-reaching impact

Four regional councils of expert practitioners set priorities and make grants in every state and island protectorate.

SARE communicates results

SARE shares project results by requiring grantees to conduct outreach and grower engagement, and by maintaining an online library of practical publications, grantee-produced information products and other educational materials.

SARE: Advancing the Frontier of Sustainable Agriculture in...

Montana

Project Highlight: Improving the Benefits of Applied Nitrogen

Broadcast applications of urea are a common management practice for large-acreage, no-till, dryland winter wheat producers in Montana. But when urea is applied to the soil surface, a significant amount of nitrogen can be lost when it converts to ammonia gas and enters the atmosphere in a process known as volatilization. Farmers face economic losses due to reduced yield or crop quality from inadequate nitrogen fertility, and ammonia emissions contribute to environmental pollution and nitrogen enrichment of natural ecosystems.

With SARE funding to address the problem, Montana State soil scientist Richard Engel conducted on-farm trials over four seasons to identify soil and environmental conditions under which urea applications were most susceptible to ammonia loss, and to identify management practices to reduce those losses. Based on the findings, Engel’s team recommends against surface-applying fertilizer to frozen or wet ground, particularly during the over-winter period. Applying it during the spring following thaw resulted in lower ammonia volatilization loss. By following the team’s recommendations to fertilize in the spring and incorporate the fertilizer into the soil when possible, a majority of Montana’s wheat growers are reducing air pollution and saving about $5 million a year through reduced fertilizer loss and increased yields.

For more information on this project, see sare.org/projects, and search for project number SW10-050.

SARE in Montana

western.sare.org/sare-in-your-state/montana

$9,853,640 in total funding

139 grant projects

(since 1988)

For a complete list of grant projects state by state, go to www.sare.org/state-summaries
SARE Grants in Montana

Total awards: 139 grants
- 46 Research and Education
- 23 Professional Development Program
- 36 Farmer/Rancher
- 10 On Farm Research/Partnership
- 20 Graduate Student
- 4 Research to Grass Roots

Total funding: $9,853,640
- $6,776,722 Research and Education
- $1,425,090 Professional Development Program
- $435,075 Farmer/Rancher
- $405,603 On Farm Research/Partnership
- $493,184 Graduate Student
- $317,966 Research to Grass Roots

Find a complete list of projects on page 3.

SARE's Impact

53 percent of producers report using a new production technique after reading a SARE publication.

79 percent of producers said they improved soil quality through their SARE project.

64 percent of producers said their SARE project helped them achieve higher sales.

Learn about local impacts at: western.sare.org/sare-in-your-state/montana

Contact Your SARE State Coordinator

Patrick Mangan
MSU Extension FRTEP- Flathead Reservation
(406) 258-4205
patrick.mangan@montana.edu

SARE sustainable ag coordinators run state-level educational programs for Extension and other ag professionals, and many help grant applicants and recipients with planning and outreach. Visit western.sare.org/state-pages/montana to learn more.

SARE is funded by the USDA's National Institute of Food and Agriculture (NIFA).

This report includes summaries of competitive grant programs only. Some competitive grant programs that are no longer offered may be included or excluded from the totals in this report depending on the grant program and SARE region.

For detailed information on SARE projects, go to www.SARE.org
AGRICULTURE PROJECTS FUNDED IN MONTANA
by USDA’s Sustainable Agriculture Research and Education (SARE) Program

Montana has been awarded $9,853,640 grants to support 138 projects, including but not limited to, 45 research and/or education projects, 23 professional development projects and 36 producer-led projects. Montana has also received additional SARE support through multi-state projects.

RESEARCH AND EDUCATION GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
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<tbody>
<tr>
<td>SW22-934</td>
<td>Landowner Collaborative Strategies for Nonlethal Predator Control</td>
<td>$349,951</td>
<td>Dr. Jared Beaver</td>
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<td>Dr. Stewart Breck</td>
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<td>SW21-929</td>
<td>Indigenous Food-Science-Ways: Integrating Indigenous knowledge with food</td>
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<td>Wan-Yuan Kuo</td>
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<td>science research and education to support value-added Native foods</td>
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<td>SW21-930</td>
<td>Intercropping chickpea with flax: An alternative sustainable way to</td>
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<td>manage Ascochyta blight of Chickpea</td>
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<td>Dr. Kevin McPhee</td>
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<td>Dr. Kent McVay</td>
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</table>
Developing an integrated management decision framework for cheatgrass control in the northeastern region of the sagebrush steppe

Lisa Rew  
Montana State University  
Andrew and Hilary Andersen  
J Bar L Ranch  
Jim Berkey  
The Nature Conservancy  
Amber Burch  
Beaverhead County Weed District  
Daphne and Kevin Chester and Crowe  
Double C Ranch Holdings  
Kyle Cutting  
US Fish, Wildlife Service  
Eric and Stephanie Hansen  
Hansen Livestock Company  
Jeff Johnson  
Johnson Ranch  
Dr. Jane Mangold  
Montana State University  
Kara Maplethorpe  
Beaverhead County Weed District  
Allen and Yvonne Martinell  
Lee Martinell Ranch  
Dr. Bok Sowell  
MSU - Animal & Range Sciences  
Dr. Catherine Zabinski  
Montana State University

Snowbanks to Grassbanks

$349,710  
Dr. Bok Sowell  
MSU - Animal & Range Sciences  
Dr. Andrea Litt  
Department of Ecology, Montana State University  
Megan Van Emon  
Montana State University

Soil acidity management of long-term no-till fields in Montana to prevent crop failure

$264,016  
Dr. Richard Engel  
Montana State University

The Impacts of Integrating Livestock into Cropping Systems on Soil Health and Crop Production

$249,502  
Devon Ragen  
Montana State University

Research and Demonstration of Minimum Tillage and Optimum Water Management in Sugarbeet Production in Eastern Montana

$247,410  
Dr. Chengci Chen  
Montana State University

Examining, Optimizing, and Building Capacity for Montana’s Local Beef to School Supply Chain

$220,021  
Dr. Carmen Byker Shanks  
Montana State University

Sustainable Cropping Systems for Dual-Purpose Biennial Canola

$256,397  
Dr. Darrin Boss  
Montana State University  
Dr. Steve Fransen, PhD  
Washington State University

Evaluating Native Perennial Flower Strips for Enhancing Native Bees and Pollination Services on Farmlands

$170,951  
Laura Burkle  
Montana State University

Landscape Collaborative Grazing and Greater Sage Grouse Survival

$339,552  
Dr. Bok Sowell  
MSU - Animal & Range Sciences

Low Glycemic Potatoes, a value-added crop for Montana

$154,000  
Dr. David Sands  
Montana State University

Degree Day Modeling and Economic Considerations of Insects and Weeds in Sheep Grazed Alfalfa, Grain, and Range Production Systems

$206,700  
Dr. Hayes Goosey  
Montana State University
<table>
<thead>
<tr>
<th>Project Code</th>
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<tr>
<td>SW11-099</td>
<td>Using cover crop mixtures to improve soil health in low rainfall areas of the northern plains</td>
<td>$354,405</td>
<td>Dr. Perry Miller, Montana State University</td>
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<td>SW10-050</td>
<td>Enhancing Cropping System Sustainability by Minimizing Ammonia-N Losses from Biological and Chemical Inputs</td>
<td>$190,009</td>
<td>Dr. Richard Engel, Montana State University</td>
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<td>SW09-068</td>
<td>Integrating Biological Control with Targeted Sheep Grazing to Suppress Spotted Knapweed</td>
<td>$49,865</td>
<td>Rachel Frost, Dr. Jeff Mosley, Montana State University</td>
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<td>SW09-601</td>
<td>Infrastructure Support for Small Livestock Processing Facilities</td>
<td>$46,796</td>
<td>Dr. Jane Boles, Montana State University</td>
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<tr>
<td>SW07-013</td>
<td>Evaluation of Alfalfa Weevil (Coleoptera Curculionidae) Densities, Weed Abundance, and Regrowth Characteristics of Alfalfa Grazed by Sheep.</td>
<td>$96,817</td>
<td>Dr. Hayes Goosey, Montana State University</td>
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<td>SW07-025</td>
<td>Grower-based selection of varieties and systems for wheat stem sawfly control</td>
<td>$125,000</td>
<td>Dr. Luther Talbert, Montana State University</td>
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<td>SW07-028</td>
<td>Is Sulfur Cinquefoil a Candidate for Control with Sheep and Goats?</td>
<td>$54,250</td>
<td>Dr. Jeff Mosley, Rachel Frost, Montana State University</td>
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<tr>
<td>SW07-028</td>
<td>Is Sulfur Cinquefoil a Candidate for Control with Sheep and Goats?</td>
<td>$10,000</td>
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<td>SW07-028</td>
<td>Developing a free on-line excel based enterprise budget decision support program to evaluate the incorporation of sheep into farm systems as an alternative to pesticide and mechanical methods of weed and insect control</td>
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<td>SW06-006</td>
<td>Survey and Economic Analysis of Montana Farms Utilizing Integrated Livestock-Cereal Grain (Ley Farming) Systems</td>
<td>$91,500</td>
<td>Dr. Chengci Chen, Montana State University</td>
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<td>SW06-075</td>
<td>Does Timing of Defoliation Affect Spotted Knapweed Seed Viability and Germination?</td>
<td>$62,600</td>
<td>Tracy Brewer, Park County Extension - Montana State University</td>
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<td>SW05-038</td>
<td>Developing Distance Learning Based on Perceptions and Knowledge of Producers and Agricultural Professionals</td>
<td>$98,819</td>
<td>Fabian Menalled, Dept. of Land Resources and Environmental Sciences</td>
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<td>SW04-007</td>
<td>Methane Recovery from Small Dairy Operations</td>
<td>$123,834</td>
<td>Ron Carlstrom, MSU Extension- Gallatin County</td>
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<td>SW03-056</td>
<td>Ecologically Based Integrated Weed Management to Restore Plant Diversity</td>
<td>$121,750</td>
<td>James Jacobs, Montana State University</td>
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<td>SW03-063</td>
<td>Factors Affecting Alfalfa Stand Longevity in Montana</td>
<td>$139,397</td>
<td>Dennis Cash, Montana State University</td>
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<td>SW02-005</td>
<td>Increasing Crop Water Use Efficiency in Advanced No-Till Systems</td>
<td>$22,980</td>
<td>Dr. Perry Miller, Montana State University</td>
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</table>
Using Crop Diversity in No-till and Organic Systems to Reduce Inputs and Increase Profits and Sustainability in the Northern Plains

An Alternative to Traditional Wheat Stubble Management Using Sheep to Control Pests and Improve Soil Nutrient Cycling

Selecting Cattle to Prevent Grazing Distribution Problems

Comparison of Pest Management Interactions in Spring Wheat-Cover Crop and Spring Wheat-Fallow Cropping Systems

Sustaining Agriculture and Community: Moving the Farm Improvement Club Program Beyond the Farm Gate

Sustainable Farming Quarterly

The Sustainable Farming Quarterly (SFQ) A Regional Newsletter

Farm Improvement Club Network for Sustainable Agriculture

Specifying and Analyzing Whole-Ranch Systems for Sustainable Range Livestock Production in Environmentally Sensitive Areas

Practical Education in Sustainable Production Systems

Regional Farm and Research Center Matching System-FARMS


Low-Input Legume/Cereal Rotations for the Northern Great Plains/Intermountain Region

Bio-Priming for the Control of Pythium Reemergence Damping-Off in Vegetable Crops

Livestock Health and Nutrition Alternatives: A Western States Conference
## Research to Grass Roots Grants

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<tr>
<td>WRGR22-001</td>
<td>Montana Food Economy Initiative</td>
<td>$96,984</td>
<td>Erin Austin&lt;br&gt;Alternative Energy Resources Organization (AERO)&lt;br&gt;Erin Austin&lt;br&gt;AERO&lt;br&gt;Michal DeChellis&lt;br&gt;AERO and Cultivating Minds, LLC&lt;br&gt;Kim Lloyd&lt;br&gt;St. Peter's Health&lt;br&gt;Michele Schahczenski&lt;br&gt;Yellowstone Valley Food Hub&lt;br&gt;Randi Wing&lt;br&gt;AERO and FBCEDC</td>
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<td>WRGR21-001</td>
<td>Montana's Soil Health Network: Deepening the Roots in Four Regions</td>
<td>$51,223</td>
<td>Maggie Gordon&lt;br&gt;Northern Plains Resource Council&lt;br&gt;Caroline Canarios&lt;br&gt;Northern Plains Resource Council&lt;br&gt;Charlie French&lt;br&gt;NRCS&lt;br&gt;Stephen Charter&lt;br&gt;Charter Beef</td>
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<td>WRGR21-006</td>
<td>Participatory Training in Small-scale Anaerobic Digestion of Agricultural Residues</td>
<td>$95,000</td>
<td>Dr.Roland Ebel&lt;br&gt;Montana State University&lt;br&gt;Selena Ahmed&lt;br&gt;Montana State University&lt;br&gt;Mac Burgess&lt;br&gt;Montana State University&lt;br&gt;Dr.Jed Eberly&lt;br&gt;Montana State University&lt;br&gt;Timothy Seipel&lt;br&gt;Department of Land Resources and Environmental Sciences, Montana State University</td>
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<td>RGR20-009</td>
<td>Montana Food Economy Initiative</td>
<td>$74,759</td>
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## Professional Development Program Grants

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<td>WPDP23-015</td>
<td>Skills and Tools for Complex Adaptive Thinking to Equip Leaders in Change Initiatives</td>
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<td>Nicole Masters&lt;br&gt;Integrity Soils&lt;br&gt;Nicole Masters&lt;br&gt;Integrity Soils</td>
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<td>WPDP22-021</td>
<td>Montana Agritourism Fellows Program: Developing Leaders to Advance Sustainable AgriTourism</td>
<td>$99,965</td>
<td>Dr.Shannon Arnold&lt;br&gt;Montana State University&lt;br&gt;Dr.Dustin Perry&lt;br&gt;Montana State University&lt;br&gt;Dr.Beth Shirley&lt;br&gt;Montana State University</td>
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Sustainable Beef Cattle Production: Ranch to Ribeye

Megan Van Emon
Montana State University
Colleen Buck
Montana State University
Callie Cooley
Montana State University
Molly Hammond
Montana State University
Elin Kittelmann
Montana State University
Kari Lewis
Montana State University

Building Internal Capacity for the Blackfeet Tribe Agricultural Resource Management Plan (ARMP)

Loren Bird Rattler
Blackfeet Tribe

Pheromones as Tools for Monitoring the Insect Pests in the Northern Plains - Instructive Tools for Agricultural Professionals

Dr. Michael Ivie
Montana State University-Bozeman

Integrated Parasite Management: Train the Trainer

David Scott
National Center for Appropriate Technology

Best Management Practices (BMPs) for Mitigating Herbicide Resistance in the Northern Great Plains - Educational Tools for Agricultural Professionals

Dr. Prashant Jha
Montana State University, Southern Agricultural Research Center, Huntley, MT

Catalyzing Increased Agricultural Sales through a Common Understanding of Montana’s New Food Modernization Law

Jennifer Hill-Hart
AERO

Conservation and Augmentative Biological Control in the Northern Plains - Providing Tools for Agriculture Professionals

Dr. Michael Ivie
Montana State University-Bozeman

Enhancing the Exploring Energy Efficiency & Alternatives (E3A) Curriculum

Milton Geiger
University of Wyoming Extension
Dr. Glen Whipple
University of Wyoming Extension

Tour of sustainable Small Grain Production in Eastern Washington

Dan Picard
MSU Extension-Pondera County
Jesse Fulbright
Montana State University

Montana State University Extension Range Management Institute

Dr. Tracy Mosley
Montana State University Extension

Wildlife Damage Control for Traditional and Organic Farmers

Dr. Jim Knight
Extension Wildlife Specialist

Training Tour 2002-03-04

Jonda Crosby
Alternative Energy Resources Organization

Growing Our Own: Communities That Sustain Entrepreneurs

Richard Williams
Montana State University Extension Service

Developing a Sustainable and Organic Master Gardener Horticulture Production Manual

Helen Atthowe
Missoula County Extension Service

Harvesting the Wealth: of AERO’s Farm and Ranch Improvement Clubs

Jonda Crosby
Alternative Energy Resources Organization
<table>
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<tr>
<th>Project #</th>
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<th>Project Leaders</th>
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| EW97-007       | Sustainable Agriculture Youth Education: Professional Dev. for Youth Program Leaders and Educators | $100,000     | Jonda Crosby  
Alternative Energy Resources Organization         |
| EW95-002       | Sustainable Noxious Weed Management on Northwestern Rangelands                 | $43,800      | Roger Sheley  
Montana State University                             |
| EW95-003       | Agency Personnel Training in Riparian Monitoring and Management of Wildlife and Livestock in the Intermountain West | $98,000      | Dr Jim Knight  
Extension Wildlife Specialist                     |
| EW95-012       | Sustainable Agriculture Training Project A Model of Collaborative Learning    | $31,450      | Nancy Matheson  
Alternative Energy Resources Organization (AERO)   |
| EW94-006       | Sustainable Agriculture Training Project: A Model of Collaborative Learning    | $91,000      | Nancy Matheson  
Alternative Energy Resources Organization (AERO)   |

**FARMER/RANCHER GRANTS**

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| FW22-390       | Could sainfoin be the first dual-purpose perennial pulse crop for the western US? | $24,864      | Shawn Wentzel  
Alaska Ranch                                     |
| FW22-398       | Establishing a Cool Season Legume Grass Finishing Pasture                     | $8,992       | Ronald Wade  
Browns Meadow Farm                                 |
| FW21-372       | Collaborative monitoring for ranch resilience and social-ecological sustainability in central Montana | $29,000      | Bill Milton  
Milton Ranch                                        |
| FW19-340       | Improving Winter Greens Production and Storage for Cold Climate Farmers       | $19,990      | Katelyn Madden  
MGVC                                               |
| FW15-039       | Making the Most of Fine Fleece: Environmental, Economic, and Social Costs and Benefits of Alternative Strategies for Marketing Sheep Wool  | $10,646      | Linda Poole  
Prairie Shepherd                                    |
| FW11-024       | Organic Control of Perennial Weeds with Vinegar and Biologicals              | $20,790      | Jess Alger  
Organic control of Perennial Weeds                 |
| FW10-042       | Marketing J Bar L Ranch Grassfed Beef to Members of Conservation Organizations | $13,000      | Bryan Ulring  
J Bar L Ranches, LLC                                |
| FW09-305       | Composting Recommendations and Marketing Evaluation for Livestock Operations in Cold Semi-Arid Environments | $49,315      | Thomas Bass  
Montana State University                            |
| FW08-016       | Can Producers in Five Montana Counties Successfully Use No-Till Methods for Renovation of Irrigated and Dryland Pastures?  | $29,999      | Ron Carlstrom  
MSU Extension- Gallatin County George Reich         |
<p>| FW08-023       | Pasture-Raised Heritage Turkeys in a Dryland Farming System                 | $6,413       | Jacob Cowgill                                       |
| FW08-034       | High-Nutrition Drought-Tolerant Corn                                          | $30,000      | Dave Christensen                                   |</p>
<table>
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<td>FW08-317</td>
<td>Sustainable Food and Bioenergy Systems: Student Internships Development Plan</td>
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<td>Dr. William Dyer</td>
<td>Montana State University</td>
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<td>FW06-025</td>
<td>Agroecosystem Approach to Managing Imported Cabbage Worm (Peris rapae)</td>
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<td>Helen Atthowe</td>
<td>Biodesign Farm</td>
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<td>FW05-012</td>
<td>Forage Winter Wheat Production for Grazing or Hay Production in Eight Montana Counties</td>
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<td>George Reich</td>
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<td>FW05-301</td>
<td>Protecting High Quality Rangelands in Garfield County from Invasive Weed Spread</td>
<td>$20,000</td>
<td>Eric Miller</td>
<td>Montana State University</td>
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<td>FW05-305</td>
<td>Demonstration of Leafy Spurge Management Using Sheep Grazing in a Leafy Spurge Barrier Zone</td>
<td>$9,960</td>
<td>Sharla Sackman</td>
<td>Montana State University Extension Service</td>
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<td>FW04-018</td>
<td>Forage Winter Wheat Production for Hay or Grain in Gallatin County, Montana</td>
<td>$5,370</td>
<td>George Reich</td>
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<td>FW02-036</td>
<td>Sheep and Cattle Grazing Complementarity Project</td>
<td>$5,055</td>
<td>Randall Tunby</td>
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<td>FW01-032</td>
<td>Biological Weed Control: Education and Implementation</td>
<td>$7,500</td>
<td>Noah Poritz</td>
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<td>FW01-085</td>
<td>Biological and Mechanical Control of Perennial Weeds in North-Central Montana</td>
<td>$6,387</td>
<td>Robert Quinn</td>
<td>Montana State University</td>
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<td>FW00-017</td>
<td>Establishing a Sustainable Program for Recycling and Propagation of Quality Flower Bulbs in a Wholesale Flower Production Operation</td>
<td>$2,197</td>
<td>Laura Smith</td>
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<td>FW00-260</td>
<td>Test Marketing Campaign to Conduct In-Store Lamb Cooking and Recipe Demonstration for Montana Natural Lamb Cooperative in the Billings, Montana Market Area</td>
<td>$9,300</td>
<td>Gayle Ott</td>
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<td>FW00-282</td>
<td>Better Board of Trade.Com</td>
<td>$8,054</td>
<td>David Oien</td>
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<td>FW00-288</td>
<td>TEAM-Team Effort in Agricultural Marketing for the McAlpine Ranch</td>
<td>$9,705</td>
<td>Clay McAlpine</td>
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<td>FW00-314</td>
<td>Montana Arnica Web Page</td>
<td>$870</td>
<td>Rod Daniel</td>
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<td>FW99-102</td>
<td>Range Monitoring in the Badlands Grazing District</td>
<td>$10,000</td>
<td>Jack McCuin</td>
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<td>FW98-035</td>
<td>Annual Forages for Dryland Rotations</td>
<td>$1,540</td>
<td>Vern Pluhar</td>
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<td>FW98-093</td>
<td>Cull Potato Composting</td>
<td>$7,500</td>
<td>Steve McCullough</td>
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<td>FW96-007</td>
<td>Green Manure/Covercrop Combination Experiment</td>
<td>$1,923</td>
<td>Rod Daniel</td>
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<td>FW96-008</td>
<td>Legume Grazing in Rotation with Small Grains</td>
<td>$4,000</td>
<td>Jess Alger&lt;br&gt;Organic control of Perennial Weeds</td>
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<td>FW96-073</td>
<td>Evaluation of Grass Species for Improved Pasture Management</td>
<td>$4,800</td>
<td>Robert Lee</td>
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<td>FW96-083</td>
<td>Vegetative Changes through Alternative Water Sources</td>
<td>$2,500</td>
<td>Dale Veseth</td>
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<td>FW95-026</td>
<td>Carter-Fallon Forage Committee Range/Livestock Project</td>
<td>$4,943</td>
<td>Randy Tunby&lt;br&gt;Carter-Fallon Forage Committee</td>
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<td>FW95-078</td>
<td>Managing a Living Mulch System in an Intensive Organic Vegetable Cropping Operation to Enhance Weed, Nutrient, and Pest Management</td>
<td>$5,000</td>
<td>Helen Atthowe&lt;br&gt;Biodesign Farm</td>
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<td>FW95-093</td>
<td>Influencing Elk and Livestock Riparian Use</td>
<td>$4,750</td>
<td>Allen Carter</td>
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**GRADUATE STUDENT GRANTS**

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<tr>
<td>GW23-255</td>
<td>Understanding Soil Water Capture and Use in Very Tall Stubble</td>
<td>$30,000</td>
<td>Dr.Perry Miller&lt;br&gt;Montana State University&lt;br&gt;Ryan Barnes&lt;br&gt;Montana State University</td>
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<td>GW22-235</td>
<td>Carrots as a Model for Defining Critical Period of Weed Management, Biofertilization, and Market Opportunities for Great Plains Vegetables Producers</td>
<td>$29,997</td>
<td>Fabian Menalled&lt;br&gt;Dept. of Land Resources and Environmental Sciences&lt;br&gt;Mac Burgess&lt;br&gt;Montana State University&lt;br&gt;Dr.Roland Ebel&lt;br&gt;Montana State University&lt;br&gt;Emma Kubinski&lt;br&gt;Montana State University</td>
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<td>GW22-237</td>
<td>Integrated Weed Management of non-native annual grass, Ventenata dubia, in Montana rangelands</td>
<td>$29,722</td>
<td>Lisa Rew&lt;br&gt;Montana State University&lt;br&gt;Dr.Jane Mangold&lt;br&gt;Montana State University&lt;br&gt;Dr.Lisa Rew&lt;br&gt;Montana State University&lt;br&gt;Lilly Sencenbaugh&lt;br&gt;Montana State University</td>
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<td>GW22-240</td>
<td>Managing Crop Residues for Soil Health</td>
<td>$29,698</td>
<td>Dr.Catherine Zabinski&lt;br&gt;Montana State University&lt;br&gt;Zane Ashford&lt;br&gt;Montana State University</td>
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<td>GW21-218</td>
<td>Integrating thistle rust into weed management of Canada thistle</td>
<td>$30,000</td>
<td>Timothy Seipel&lt;br&gt;Department of Land Resources and Environmental Sciences&lt;br&gt;Montana State University&lt;br&gt;Dr.Jed Eberly&lt;br&gt;Montana State University&lt;br&gt;Fabian Menalled&lt;br&gt;Dept. of Land Resources and Environmental Sciences&lt;br&gt;Daniel Chichinsky&lt;br&gt;Montana State University</td>
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**GW20-204** Restoring Disturbed Rangelands With Site-Specific Seeding  
$25,000  
Lisa Rew  
Montana State University  
Colter Mumford  
Montana State University

**GW20-205** Measuring intra-field variability in pea protein to understand influencing factors in Montana cropping systems  
$25,000  
Dr.Clain Jones  
Montana State University  
Dr.Perry Miller  
Montana State University  
Samuel Koeshall  
Montana State University

**GW19-190** Nitrogen Fertilizer Management Based on Site-Specific Maximized Profit and Minimized Pollution  
$24,992  
Dr.Stephanie Ewing  
Montana State University  
Bruce Maxwell  
MSU  
Paul Hegedus  
Montana State University

**GW19-197** Fostering resilient plant-soil interactions on working ranches in semi-arid steppe ecosystems of north-central and eastern Montana.  
$24,988  
Dr.Craig Carr  
Montana State University  
Dr.Stephanie Ewing  
Montana State University  
Dr.Christine Gobrogge  
Montana State University Environmental Analytical Laboratory  
Seth Newton  
Bear Gulch Ranch  
Jay "Butch" Orner  
Orner Ranch  
Danny Pratt  
Natural Resources Conservation Services  
Tiffany Salveson  
Natural Resources Conservation Service  
Timothy Seipel  
Department of Land Resources and Environmental Sciences, Montana State University  
Joseph Capella  
Montana State University

**GW19-198** Precision Agriculture Applied to Organic Systems  
$22,500  
Bruce Maxwell  
MSU  
Royden Loewen  
Montana State University

**GW19-199** Effects of Habitat Heterogeneity on Crop Yield and Biodiversity  
$24,972  
Bruce Maxwell  
MSU  
Hannah Duff  
1992

**GW18-050** Montana Hardy Fruit Nutraceutical Quality  
$17,765  
Mac Burgess  
Montana State University  
Durc Setzer  
Montana State University

**GW18-179** Predicting overwinter nitrate-N changes at the subfield scale in leaching-susceptible, agricultural soils  
$25,000  
Dr.Clain Jones  
Montana State University  
Dr.Patrick Carr  
Montana State University  
Simon Fordyce  
Montana State University Central Agricultural Research Center

**GW18-151** Advancing Cover Crop Knowledge: Assessing the Role of Plant Diversity on Soil Change  
$25,000  
Dr.Perry Miller  
Montana State University  
Kristen Dagati  
Montana State University

**GW17-040** Sustainability of dormant season grazing: Does protein supplementation impact beef cattle performance, soil organic matter, vegetation, and residual cover for wildlife?  
$24,970  
Dr.Janice Bowman  
Montana State University  
Dr.Lance McNew  
Montana State University  
Dr.Samuel Wyffels  
Montana State University
<table>
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<th>Project #</th>
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<tr>
<td>GW16-053</td>
<td>Cover Crop Grazing: Optimal Seasonality for Soil and Livestock Benefit</td>
<td>$25,000</td>
<td>Dr. Perry Miller Montana State University Robert Walker MSU LRES</td>
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<td>GW12-004</td>
<td>Multiple Forms of Uncertainty as a Barrier to the Adoption of Sustainable Farming Practices</td>
<td>$24,830</td>
<td>Patrick Lawrence Montana State University</td>
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<td>GW10-032</td>
<td>Investigating the Legume Green Fallow Alternative on North-Central Montana No-Till Operations</td>
<td>$24,250</td>
<td>Dr. Perry Miller Montana State University Justin O’Dea Washington State University</td>
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<td>GW06-026</td>
<td>Effects of Weed Communities in Conventional and Organic Agricultural Systems.</td>
<td>$7,536</td>
<td>Bruce Maxwell MSU Fabian Menalled Dept. of Land Resources and Environmental Sciences Fred Pollnac Montana State University</td>
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**ON FARM RESEARCH/PARTNERSHIP GRANTS**

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<tr>
<td>OW22-372</td>
<td>The Buzz on the Range: Promoting healthy soils and pollinators on Montana rangeland</td>
<td>$55,990</td>
<td>Michael DeChellis We Are For The Land Foundation, Inc. Michael DeChellis OpenTeam And We Are For the Land Board Member Michal DeChellis Cultivating Minds LLC and We Are For the Land Foundation</td>
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<tr>
<td>OW17-009</td>
<td>Soil Moisture Network and Tools - MT and WY collaborative</td>
<td>$49,995</td>
<td>Lee Schmelzer Montana State University</td>
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<td>OW17-026</td>
<td>Montana Food Economy Initiative</td>
<td>$50,000</td>
<td>Lindsay Ganong AERO</td>
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<tr>
<td>OW17-021</td>
<td>Evaluating Nitrates and Forage Quality in Fall Regrowth of Annual Cereal Forages</td>
<td>$19,972</td>
<td>Dr. Tracy Mosley Montana State University Extension</td>
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<td>OW15-026</td>
<td>Are Feedlot-based Performance Cattle Limiting Ecological Services for Rangeland Ecosystems in Northern Mixed-grass prairies?</td>
<td>$49,961</td>
<td>Dr. Emily Meccage Montana State University</td>
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<td>OW13-017</td>
<td>Reference strips and precision sensors for increased nitrogen use efficiency in wheat production</td>
<td>$49,907</td>
<td>Dr. Olga Walsh Montana State University</td>
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<td>OW13-144</td>
<td>Effects of Late-Season Water Lease on Forage Crops</td>
<td>$24,950</td>
<td>Jodi Pauley Montana State University</td>
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<tr>
<td>OW12-044</td>
<td>Best Management Practices for Livestock Protection Dogs</td>
<td>$49,998</td>
<td>Dr. Jeff Mosley Montana State University</td>
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<tr>
<td>OW11-326</td>
<td>Developing Community Based Oilseed Industry in Montana</td>
<td>$49,830</td>
<td>Taylor Lyon Bio-Energy Center Dr. Nestor Soriano, Jr. Lead Research Scientist</td>
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</table>
Total funding from the USDA SARE program to Montana
$9,853,640

For further information on projects, contact Western SARE at (406) 994-4789 or wsare@montana.edu.
Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).