

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 \$406 million to more than 8,803 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.



www.sare.org

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](#).

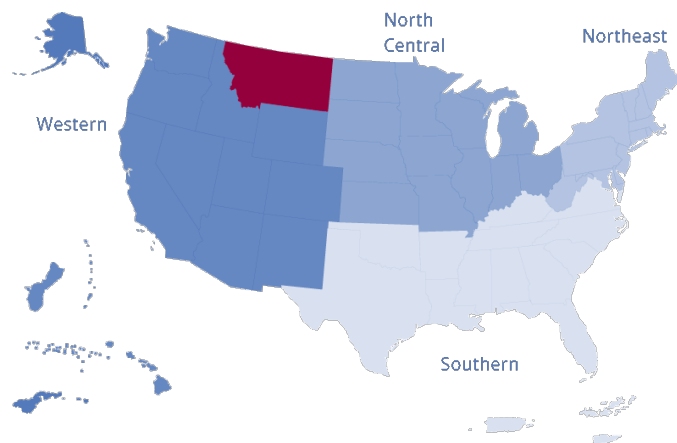
SARE in Montana

western.sare.org/state-profiles/montana/

\$3,659,597
in total funding

37 grant project
(since 1988)

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



SARE in Montana

Grants awarded 2019-2024

Total awards: **37 grants**

- 5 Farmer/Rancher
- 8 Research and Education
- 5 Professional Development Program
- 2 On Farm Research/Partnership
- 13 Graduate Student
- 4 Research to Grass Roots

Total funding: **\$3,659,597**

\$107,846	Farmer/Rancher
\$2,316,926	Research and Education
\$430,931	Professional Development Program
\$129,087	On Farm Research/Partnership
\$356,841	Graduate Student
\$317,966	Research to Grass Roots

Find a complete list of projects on page 3.

Farmer and rancher impacts 2019-2024

SARE grantees have reported the following impacts from their projects:

12,412 farmers participated in a SARE-funded project

936 farmers reported a change in knowledge, awareness, skills or attitude

160 farmers changed a practice



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

Contact Your SARE State Coordinator

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-profiles/montana/ to learn more.

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



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 \$10,682,204 grants to support 146 projects, including but not limited to, 48 research and/or education projects, 24 professional development projects and 37 producer-led projects. Montana has also received additional SARE support through multi-state projects.

RESEARCH AND EDUCATION GRANTS

Project #	Project Title	SARE Support	Project Leaders
SW24-001	Enhancing the Sustainability of Small Farms in Montana through Postharvest Management of Berry Crops, with Emphasis on Haskaps	\$75,000	Dr.Roland Ebel Montana State University Omar Franco Mora Autonomous University of the State of Mexico Claire Luby Montana State University Fabian Menalled Dept. of Land Resources and Environmental Sciences Dr.Zachariah Miller Montana State University-Western Ag. Research Center
SW24-005	Livestock Antibiotic Sustainability	\$145,584	Katie Rein, DVM Crazy Mountain Veterinary Service, PLLC
SW24-011	Prioritizing effective and sustainable management approaches for cheatgrass and ventenata in Montana rangelands	\$349,911	Lisa Rew Montana State University Dan Atwater Montana State University Dr.Katherine Lee University of Idaho Dr.Jane Mangold Montana State University Dr.Catherine Zabinski Montana State University
SW22-934	Landowner Collaborative Strategies for Nonlethal Predator Control	\$349,951	Dr.Jared Beaver Montana State University Dr.Stewart Breck Colorado State University Kyran Kunkel Western Landowners Alliance Dr.Julie Young Utah State University Hallie Mahowald Western Landowners Alliance

SW21-929	Indigenous Food-Science-Ways: Integrating Indigenous knowledge with food science research and education to support value-added Native foods	\$349,898	Wan-Yuan Kuo Montana State University Eric Belasco Montana State University Dr.Jane Boles Montana State University Dr.Paul Gannon Montana State University Dr.Paul Lachapelle Montana State University Dr.Brent Peyton Montana State University Brenda Richey Montana State University Mattie Griswold Montana State University Rebecca Richter Montana State University
SW21-930	Intercropping chickpea with flax: An alternative sustainable way to manage Ascochyta blight of Chickpea	\$347,557	Dr.Chengci Chen Montana State University Dr.Frankie crutcher Montana State University-EARC Dr.William Franck Montana State University-EARC Dr.Qasim Khan Montana State University-SARC Dr.Kevin McPhee Montana State University-EARC Dr.Kent McVay Montana State University-SARC

SW20-915	Developing an integrated management decision framework for cheatgrass control in the northeastern region of the sagebrush steppe	\$349,315	<p>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</p>
SW19-907	Snowbanks to Grassbanks	\$349,710	<p>Dr.Bok Sowell MSU- Animal & Range Sciences Dr.Andrea Litt Department of Ecology, Montana State University Megan Van Emon Montana State University</p>
SW17-016	Soil acidity management of long-term no-till fields in Montana to prevent crop failure	\$264,016	<p>Dr.Richard Engel Montana State University</p>
SW17-080	The Impacts of Integrating Livestock into Cropping Systems on Soil Health and Crop Production	\$249,502	<p>Devon Ragen Montana State University</p>
SW16-051	Research and Demonstration of Minimum Tillage and Optimum Water Management in Sugarbeet Production in Eastern Montana	\$247,410	<p>Dr.Chengci Chen Montana State University</p>
SW15-028	Examining, Optimizing, and Building Capacity for Montana's Local Beef to School Supply Chain	\$220,021	<p>Dr.Carmen Byker Shanks Montana State University</p>

SW14-014	Sustainable Cropping Systems for Dual-Purpose Biennial Canola	\$256,397	Dr.Darrin Boss Montana State University Dr.Steve Fransen, PhD Washington State University
SW13-043	Evaluating Native Perennial Flower Strips for Enhancing Native Bees and Pollination Services on Farmlands	\$170,951	Laura Burkle Montana State University
SW13-056	Landscape Collaborative Grazing and Greater Sage Grouse Survival	\$339,552	Dr.Bok Sowell MSU- Animal & Range Sciences
SW12-108	Low Glycemic Potatoes, a value-added crop for Montana	\$154,000	Dr.David Sands Montana State Univ
SW11-086	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
SW11-099	Using cover crop mixtures to improve soil health in low rainfall areas of the northern plains	\$354,405	Dr.Perry Miller Montana State University
SW10-050	Enhancing Cropping System Sustainability by Minimizing Ammonia-N Losses from Biological and Chemical Inputs	\$190,009	Dr.Richard Engel Montana State University
SW09-068	Integrating Biological Control with Targeted Sheep Grazing to Suppress Spotted Knapweed	\$49,865	Rachel Frost Montana State University Dr.Jeff Mosley Montana State University
SW09-601	Infrastructure Support for Small Livestock Processing Facilities	\$46,796	Dr.Jane Boles Montana State University
SW07-013	Evaluation of Alfalfa Weevil (Coleoptera Curculionidae) Densities, Weed Abundance, and Regrowth Characteristics of Alfalfa Grazed by Sheep.	\$96,817	Dr.Hayes Goosey Montana State University
SW07-025	Grower-based selection of varieties and systems for wheat stem sawfly control	\$125,000	Dr.Luther Talbert Montana State University
SW07-028	Is Sulfur Cinquefoil a Candidate for Control with Sheep and Goats?	\$54,250	Dr.Jeff Mosley Montana State University Rachel Frost Montana State University

SW07-603	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	\$10,000	Dr.Hayes Goosey Montana State University
SW06-006	Survey and Economic Analysis of Montana Farms Utilizing Integrated Livestock-Cereal Grain (Ley Farming) Systems	\$91,500	Dr.Chengci Chen Montana State University
SW06-075	Does Timing of Defoliation Affect Spotted Knapweed Seed Viability and Germination?	\$62,600	Tracy Brewer Park County Extension - Montana State University Dr.Tracy Mosley Montana State University Extension
SW05-038	Developing Distance Learning Based on Perceptions and Knowledge of Producers and Agricultural Professionals	\$98,819	Fabian Menalled Dept. of Land Resources and Environmental Sciences
SW04-007	Methane Recovery from Small Dairy Operations	\$123,834	Ron Carlstrom MSU Extension- Gallatin County
SW03-056	Ecologically Based Integrated Weed Management to Restore Plant Diversity	\$121,750	James Jacobs Montana State University
SW03-063	Factors Affecting Alfalfa Stand Longevity in Montana	\$139,397	Dennis Cash Montana State University
SW02-005	Increasing Crop Water Use Efficiency in Advanced No-Till Systems	\$22,980	Dr.Perry Miller Montana State University
SW01-048	Using Crop Diversity in No-till and Organic Systems to Reduce Inputs and Increase Profits and Sustainability in the Northern Plains	\$157,888	Bruce Maxwell MSU
SW00-015	An Alternative to Traditional Wheat Stubble Management Using Sheep to Control Pests and Improve Soil Nutrient Cycling	\$166,147	Dr.Patrick Hatfield Department of Animal and Range Sciences Sue Blodgett Montana State University, Dept. Entomology Dr.Hayes Goosey Montana State University Duane Griffith Montana State University, Ag Econ and Ext Dept

SW98-064	Selecting Cattle to Prevent Grazing Distribution Problems	\$115,598	Derek Bailey Montana State University
SW97-056	Comparison of Pest Management Interactions in Spring Wheat-Cover Crop and Spring Wheat-Fallow Cropping Systems	\$150,964	Andrew Lenssen Montana State University
SW96-019	Sustaining Agriculture and Community: Moving the Farm Improvement Club Program Beyond the Farm Gate	\$124,425	Jonda Crosby Alternative Energy Resources Organization
LW92-004	Sustainable Farming Quarterly	\$17,500	Nancy Matheson Alternative Energy Resources Organization (AERO)
LWD92-004	The Sustainable Farming Quarterly (SFQ) A Regional Newsletter	\$17,500	Al Kurki Alternative Energy Resources Organization (AERO)
LW91-023	Farm Improvement Club Network for Sustainable Agriculture	\$69,000	Nancy Matheson Alternative Energy Resources Organization (AERO)
LW91-024	Specifying and Analyzing Whole-Ranch Systems for Sustainable Range Livestock Production in Environmentally Sensitive Areas	\$290,000	Jack Riesselman Montana State University
LW91-025	Practical Education in Sustainable Production Systems	\$14,250	Wade Crouch Montana State University
LWD91-003	Regional Farm and Research Center Matching System-FARMS	\$3,000	J. Jacobsen Montana State University
LW89-012	Cereal-Legume Cropping Systems: Nine Case Studies in the Dryland, Small Grains-Fallow Area of the Inland Northwest and High Plains	\$17,764	Nancy Matheson Alternative Energy Resources Organization (AERO)
LW89-014	Low-Input Legume/Cereal Rotations for the Northern Great Plains/Intermountain Region	\$162,000	James Sims Montana State University
LW89-016	Bio-Priming for the Control of Pythium Reemergence Damping-Off in Vegetable Crops	\$14,984	Nancy Callan Montana State University

LW89-019	Livestock Health and Nutrition Alternatives: A Western States Conference	\$5,000	Al Kurki Alternative Energy Resources Organization (AERO)
LW88-006	Soil-building Cropping Systems Conference-Legumes and Other Green Manures in Cropping Systems of The Northern Plains, Rockies and Intermountain Region	\$7,700	Robert Gillespie Alternative Energy Resources Organization (AERO)

RESEARCH TO GRASS ROOTS GRANTS

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

PROFESSIONAL DEVELOPMENT PROGRAM GRANTS

Project #	Project Title	SARE Support	Project Leaders
-----------	---------------	--------------	-----------------

WPDP24-019	406 Grazing Academy	\$100,000	Stacey Barta Montana Department of Natural Resources Conservation Rachel Frost Montana State University Dr.Jeff Mosley Montana State University
WPDP23-015	Skills and Tools for Complex Adaptive Thinking to Equip Leaders in Change Initiatives	\$99,861	Nicole Masters Integrity Soils Nicole Masters Integrity Soils
WPDP22-021	Montana Agritourism Fellows Program: Developing Leaders to Advance Sustainable AgriTourism	\$99,965	Dr.Shannon Arnold Montana State University Dr.Dustin Perry Montana State University Dr.Beth Shirley Montana State University
PDP20-020	Building Internal and Community Capacity for the Blackfeet Nation Through Agriculture	\$73,795	Will Seeley Blackfeet Tribe: Agriculture Resource Management Plan Gerald Lunak Joe Gervais K Webb Galbreath
WPDP19-15	Sustainable Beef Cattle Production: Ranch to Ribeye	\$57,310	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
EW18-027	Building Internal Capacity for the Blackfeet Tribe Agricultural Resource Management Plan (ARMP)	\$52,155	Loren Bird Rattler Blackfeet Tribe
EW18-011	Pheromones as Tools for Monitoring the Insect Pests in the Northern Plains - Instructive Tools for Agricultural Professionals	\$73,510	Dr.Michael Ivie Montana State University-Bozeman
EW17-011	Integrated Parasite Management: Train the Trainer	\$74,189	David Scott National Center for Appropriate Technology

EW16-029	Best Management Practices (BMPs) for Mitigating Herbicide Resistance in the Northern Great Plains-Educational Tools for Agricultural Professionals	\$68,871	Dr.Prashant Jha Montana State University, Southern Agricultural Research Center, Huntley, MT
EW16-036	Catalyzing Increased Agricultural Sales through a Common Understanding of Montana's New Food Modernization Law	\$22,332	Jennifer Hill-Hart AERO
EW15-009	Conservation and Augmentative Biological Control in the Northern Plains - Providing Tools for Agriculture Professionals	\$68,182	Dr.Michael Ivie Montana State University-Bozeman
EW13-014	Enhancing the Exploring Energy Efficiency & Alternatives (E3A) Curriculum	\$42,277	Milton Geiger University of Wyoming Extension Dr.Glen Whipple University of Wyoming Extension
EW12-004	Tour of sustainable Small Grain Production in Eastern Washington	\$7,350	Dan Picard MSU Extension-Pondera County Jesse Fulbright Montana State University
EW12-006	Montana State University Extension Range Management Institute	\$60,000	Dr.Tracy Mosley Montana State University Extension
EW11-012	Wildlife Damage Control for Traditional and Organic Farmers	\$96,053	Dr.Jim Knight Extension Wildlife Specialist
EW01-007	Training Tour 2002-03-04	\$30,024	Jonda Crosby Alternative Energy Resources Organization
EW01-016	Growing Our Own: Communities That Sustain Entrepreneurs	\$52,483	Richard Williams Montana State University Extension Service
EW99-008	Developing a Sustainable and Organic Master Gardener Horticulture Production Manual	\$22,483	Helen Atthowe Missoula County Extension Service
EW99-015	Harvesting the Wealth: of AERO's Farm and Ranch Improvement Clubs	\$60,000	Jonda Crosby Alternative Energy Resources Organization
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

Project #	Project Title	SARE Support	Project Leaders
FW24-015	Gold Creek Return Flow Pilot Study: Evaluating Potential Benefits of Early Season Center Pivot Irrigation on Local Hydrology and Production	\$25,000	Bruce Thomas Thomas Herefords
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
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
FW08-317	Sustainable Food and Bioenergy Systems: Student Internships Development Plan	\$29,983	Dr.William Dyer Montana State University
FW06-025	Agroecosystem Approach to Managing Imported Cabbage Worm (<i>Peris rapae</i>)	\$6,356	Helen Atthowe Biodesign Farm
FW05-012	Forage Winter Wheat Production for Grazing or Hay Production in Eight Montana Counties	\$19,795	George Reich
FW05-301	Protecting High Quality Rangelands in Garfield County from Invasive Weed Spread	\$20,000	Eric Miller Montana State University
FW05-305	Demonstration of Leafy Spurge Management Using Sheep Grazing in a Leafy Spurge Barrier Zone	\$9,960	Sharla Sackman Montana State University Extension Service
FW04-018	Forage Winter Wheat Production for Jay or Grain in Gallatin County, Montana	\$5,370	George Reich
FW02-036	Sheep and Cattle Grazing Complementarity Project	\$5,055	Randall Tunby
FW01-032	Biological Weed Control: Education and Implementation	\$7,500	Noah Poritz
FW01-085	Biological and Mechanical Control of Perennial Weeds in North-Central Montana	\$6,387	Robert Quinn Montana State University

FW00-017	Establishing a Sustainable Program for Recycling and Propagation of Quality Flower Bulbs in a Wholesale Flower Production Operation	\$2,197	Laura Smith
FW00-260	Test Marketing Campaign to Conduct In-Store Lamb Cooking and Recipe Demonstration for Montana Natural Lamb Cooperative in the Billings, Montana Market Area	\$9,300	Gayle Ott
FW00-282	Better Board of Trade.Com	\$8,054	David Oien
FW00-288	TEAM-Team Effort in Agricultural Marketing for the McAlpine Ranch	\$9,705	Clay McAlpine
FW00-314	Montana Arnica Web Page	\$870	Rod Daniel
FW99-069	No-Till Wheat into Medic vs. Conventional Wheat	\$4,578	Jess Alger Organic control of Perennial Weeds
FW99-102	Range Monitoring in the Badlands Grazing District	\$10,000	Jack McCuin
FW98-035	Annual Forages for Dryland Rotations	\$1,540	Vern Pluhar
FW98-093	Cull Potato Composting	\$7,500	Steve McCullough
FW96-007	Green Manure/Covercrop Combination Experiment	\$1,923	Rod Daniel
FW96-008	Legume Grazing in Rotation with Small Grains	\$4,000	Jess Alger Organic control of Perennial Weeds
FW96-073	Evaluation of Grass Species for Improved Pasture Management	\$4,800	Robert Lee
FW96-083	Vegetative Changes through Alternative Water Sources	\$2,500	Dale Veseth

FW95-026	Carter-Fallon Forage Committee Range/Livestock Project	\$4,943	Randy Tunby Carter-Fallon Forage Committee
FW95-078	Managing a Living Mulch System in an Intensive Organic Vegetable Cropping Operation to Enhance Weed, Nutrient, and Pest Management	\$5,000	Helen Atthowe Biodesign Farm
FW95-093	Influencing Elk and Livestock Riparian Use	\$4,750	Allen Carter

GRADUATE STUDENT GRANTS

Project #	Project Title	SARE Support	Project Leaders
GW24-011	Evaluating the potential for micronutrient soil amendments to improve rangeland sustainability.	\$29,972	Lisa Rew Montana State University Dr.Jane Mangold Montana State University Erin Teichroew Montana State University
GW24-014	Comparing soil organic carbon, infiltration, and bulk density in various grass communities and management practices on Confederated Salish and Kootena	\$30,000	Virgil Dupuis Salish Kootenai College Maureen McCarthy Desert Research Institute Sarah Holloway Salish Kootenai College
GW23-255	Understanding Soil Water Capture and Use in Very Tall Stubble	\$30,000	Dr.Perry Miller Montana State University Ryan Barnes Montana State University
GW22-235	Carrots as a Model for Defining Critical Period of Weed Management, Biofertilization, and Market Opportunities for Great Plains Vegetables Producers	\$29,997	Fabian Menalled Dept. of Land Resources and Environmental Sciences Mac Burgess Montana State University Dr.Roland Ebel Montana State University Emma Kubinski Montana State University
GW22-237	Integrated Weed Management of non-native annual grass, Ventenata dubia, in Montana rangelands	\$29,722	Lisa Rew Montana State University Dr.Jane Mangold Montana State University Dr.Lisa Rew Montana State University Lilly Sencenbaugh Montana State University

GW22-240	Managing Crop Residues for Soil Health	\$29,698	Dr.Catherine Zabinski Montana State University Zane Ashford Montana State University
GW21-218	Integrating thistle rust into weed management of Canada thistle	\$30,000	Timothy Seipel Department of Land Resources and Environmental Sciences, Montana State University Dr.Jed Eberly Montana State University Fabian Menalled Dept. of Land Resources and Environmental Sciences Daniel Chichinsky Montana State University
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" Ortner Ortner 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

GW16-053	Cover Crop Grazing: Optimal Seasonality for Soil and Livestock Benefit	\$25,000	Dr.Perry Miller Montana State University Robert Walker MSU LRES
GW12-004	Multiple Forms of Uncertainty as a Barrier to the Adoption of Sustainable Farming Practices	\$24,830	Patrick Lawrence Montana State University
GW10-032	Investigating the Legume Green Fallow Alternative on North-Central Montana No-Till Operations	\$24,250	Dr.Perry Miller Montana State University Justin O'Dea Washington State University
GW09-012	Joint Management of Wheat Stem Sawfly, Fusarium Crown Rot, and Weeds: Assessing the Ecological Basis of a Total Systems Approach to Pest Management Strategies	\$21,964	Fabian Menalled Dept. of Land Resources and Environmental Sciences Ilai Keren Montana State University
GW06-026	Effects of Weed Communities in Conventional and Organic Agricultural Systems.	\$7,536	Bruce Maxwell MSU Fabian Menalled Dept. of Land Resources and Environmental Sciences Fred Pollnac Montana State University

ON FARM RESEARCH/PARTNERSHIP GRANTS

Project #	Project Title	SARE Support	Project Leaders
OW24-002	Co-developing criteria for white bark pine friendly ranching	\$73,097	Dr.Jonathan Spiess USDA ARS
OW22-372	The Buzz on the Range: Promoting healthy soils and pollinators on Montana rangeland	\$55,990	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
OW17-009	Soil Moisture Network and Tools - MT and WY collaborative	\$49,995	Lee Schmelzer Montana State University
OW17-026	Montana Food Economy Initiative	\$50,000	Lindsay Ganong AERO
OW17-021	Evaluating Nitrates and Forage Quality in Fall Regrowth of Annual Cereal Forages	\$19,972	Dr.Tracy Mosley Montana State University Extension

OW15-026	Are Feedlot-based Performance Cattle Limiting Ecological Services for Rangeland Ecosystems in Northern Mixed-grass prairies?	\$49,961	Dr.Emily Meccage Montana State University
OW13-017	Reference strips and precision sensors for increased nitrogen use efficiency in wheat production	\$49,907	Dr.Olga Walsh Montana State University
OW13-144	Effects of Late-Season Water Lease on Forage Crops	\$24,950	Jodi Pauley Montana State University
OW12-044	Best Management Practices for Livestock Protection Dogs	\$49,998	Dr.Jeff Mosley Montana State University
OW11-326	Developing Community Based Oilseed Industry in Montana	\$49,830	Taylor Lyon Bio-Energy Center Dr.Nestor Soriano, Jr. Lead Research Scientist
FW04-313	Preserving Farms and Ranches	\$5,000	Robert "Rob" Johnson Montana State University

**Total funding from the USDA SARE program to
Montana
\$10,682,204**



For further information on projects, contact Western SARE at (406) 994-4785 or wsare@montana.edu.

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