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.

Project Highlight: Growing and Marketing Ancient Grains in Wyoming

Markets for ancient grains such as spelt, emmer, and einkorn are growing due to their nutritional qualities and well-liked flavor. In addition, they are reported to require lower water and nutrient inputs than modern varieties. Caitlin Youngquist, Extension Educator at the University of Wyoming, considered that conducting research and working with farmers on these grains could help meet some of Wyoming’s agricultural challenges. According to Youngquist, challenges include low soil fertility and quality, saline and alkaline soils, arid conditions, high crop evapotranspiration demands, and isolation from markets.

Youngquist and her partners studied the nitrogen and water demands of the three grains; evaluated crop performance in various growing regions of the state; quantified costs and benefits associated with growing ancient grains in the state; assessed impacts of growing conditions on grain quality; and worked to develop local markets for cooking and baking. The research was conducted at three University of Wyoming research stations in addition to five on-farm trials. The team hosted numerous presentations, baking workshops, Facebook Live events, and field days. They sent product samples to six food bloggers. Several bulletins and fact sheets were developed for the public from this project.

For more information on this project, see sare.org/projects, and search for project number OW19-340.

SARE in Wyoming

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

$3,228,459 in total funding

59 grant projects

(since 1988)

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

Total awards: 59 grants
- 16 Research and Education
- 6 Professional Development Program
- 21 Farmer/Rancher
- 10 Graduate Student
- 5 On Farm Research/Partnership
- 1 Research to Grass Roots

Total funding: $3,228,459
- $1,927,576 Research and Education
- $425,624 Professional Development Program
- $248,856 Farmer/Rancher
- $297,082 Graduate Student
- $230,089 On Farm Research/Partnership
- $99,233 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/wyoming

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-pages/wyoming to learn more.

Bridger Feuz
University of Wyoming
(307) 783-0570
bmfeuz@uwyo.edu

For detailed information on SARE projects, go to www.SARE.org

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.
Wyoming has been awarded $3,228,459 grants to support 58 projects, including but not limited to, 15 research and/or education projects, 6 professional development projects and 21 producer-led projects. Wyoming 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>
</tr>
</thead>
<tbody>
<tr>
<td>SW18-021</td>
<td>Integrating livestock and cover crops into irrigated crop rotations</td>
<td>$249,954</td>
<td>Dr. Jay Norton, University of Wyoming; John Ritten, University of Wyoming</td>
</tr>
<tr>
<td>SW10-073</td>
<td>Prescribed Grazing to Sustain Livestock Production, Soil Quality, and Diversity in Rangeland Ecosystems</td>
<td>$197,268</td>
<td>Dr. Kenneth Tate, University of California Davis</td>
</tr>
<tr>
<td>SW07-049</td>
<td>Evaluation of Camelina sativa as an alternative seed crop and feedstock for biofuel and developing replacement heifers.</td>
<td>$155,000</td>
<td>Dr. Bret Hess, University of Wyoming</td>
</tr>
<tr>
<td>SW05-117</td>
<td>Integrated Crop and Livestock Systems: Dryland Crop Rotations to Improve Economic and Ecological Sustainability in the Central High Plains</td>
<td>$212,928</td>
<td>Dr. Steve Paisley, University of Wyoming</td>
</tr>
<tr>
<td>SW04-051</td>
<td>Record Management Computer Database for Wyoming Cow-Calf Producers</td>
<td>$18,563</td>
<td>Dallas Mount, University of Wyoming</td>
</tr>
<tr>
<td>SW03-008</td>
<td>Annual Legume-Based Systems for Sustainable Integrated Crop/Livestock Enterprise Diversification on the Central High Plains</td>
<td>$200,000</td>
<td>James Krall, University of Wyoming</td>
</tr>
<tr>
<td>SW02-011</td>
<td>Economic Impacts of Undernutrition on Fetal Programming during Early Gestation in the Cow: Effects on Growth, Development and Carcass Characteristics of Steers and Reproductive Efficiency of Heifers</td>
<td>$23,014</td>
<td>Stephen Ford, University of Wyoming</td>
</tr>
<tr>
<td>SW98-071</td>
<td>Annual Legumes in Fallow as an Integrated Crop/Livestock Alternative in the Central Great Plains.</td>
<td>$173,979</td>
<td>James Krall, University of Wyoming</td>
</tr>
<tr>
<td>SW97-018</td>
<td>Integrating nemato-resistant crops into sugar beet rotations</td>
<td>$113,184</td>
<td>David Koch, University of Wyoming</td>
</tr>
<tr>
<td>SW96-010</td>
<td>Western Integrated Ranch/Farm Education</td>
<td>$36,326</td>
<td>John Hewlett, University of Wyoming, Department of Agricultural Economics</td>
</tr>
<tr>
<td>SW96-029</td>
<td>Potential of a Corn/Annual Medic Intercropping System for Weed Control, Reduced Soil Erosion and Improved Forage Production</td>
<td>$95,100</td>
<td>James Krall, University of Wyoming</td>
</tr>
<tr>
<td>Project #</td>
<td>Project Title</td>
<td>SARE Support</td>
<td>Project Leaders</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------</td>
<td>--------------</td>
<td>-----------------</td>
</tr>
</tbody>
</table>
| SW95-007  | Sustainable Rangeland Based Beef Cattle Production Systems | $155,260 | Michael A. Smith  
University of Wyoming |
| SW94-034  | Western Integrated Ranch/Farm Education | $90,000 | John Hewlett  
University of Wyoming, Department of Agricultural Economics |
| SW94-006  | Legume Cover Crops in Fallow as an Integrated Crop/Livestock Alternative in the Northern and Central Great Plains | $160,000 | James Krall  
University of Wyoming |
| LW91-022  | Brassica Utilization in Sugar Beet Rotations for Biological Control of Cyst Nematode | $47,000 | David Koch  
University of Wyoming |

**RESEARCH TO GRASS ROOTS GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| WRGR23-007         | Cardboard Layering and Deep Compost Mulch for Rocky Mountain West Specialty Crops | $99,233      | Ethan Page  
Central Wyoming College  
Jonah Sloven  
Sweet Hollow Farm |

**PROFESSIONAL DEVELOPMENT PROGRAM GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| WPDP21-024         | Rancher to Consumer Meat Connection                                           | $75,648      | Cody Gifford  
University of Wyoming |
| EW10-020           | Ranch Sustainability Assessment: Economic, Ecological, & Social Indicator Monitoring | $85,000      | Dr. John Tanaka  
University of Wyoming |
| EW10-012           | Equipping Extension Educators to Address Producer Needs in Energy Education   | $99,596      | Sarah Hamlen  
MSU Extension |
| EW07-016           | Educator Training for the Wyoming Cow-Calf Record Management System           | $9,500       | Dallas Mount  
University of Wyoming |
| EW00-024           | Sustaining western rural landscapes, lifestyles, and livelihoods through agricultural enterprise diversification: a collaborative partnership. | $80,880      | Boyd Byelich  
USDA-NRCS |
| EW94-018           | Extension Sustainable Agriculture Training in Colorado and Wyoming            | $75,000      | Joe Hiller  
University of Wyoming, Cooperative Extension Service |

**FARMER/RANCHER GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| FW23-426           | TAG grazing Cattle as a Tool for Range Management: Targeting Cheatgrass and False Annual Wheatgrass to see the impacts of restoring native species | $25,000      | RC Carter  
Carter Livestock |
| FW23-434           | Goats - Invasive Weed Reduction & Native Plant Reintroduction on River Bottom & Sage Habitat | $20,300      | Kate Brewster  
Big Sage Livestock |
| FW21-383           | Trout Creek Pumpkin Patch: adding new revenue streams on a traditional cow/calf ranch | $14,750      | Clint Wagon  
Wagon Ranch |
<table>
<thead>
<tr>
<th>Project Number</th>
<th>Title</th>
<th>Funding Amount</th>
<th>Principal Investigator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW09-319</td>
<td>Enhancing Rural Agricultural Family and Community Development in Wyoming Through Sustainable Bioful Crop Production</td>
<td>$49,873</td>
<td>Donn Randall Wyoming Business Council</td>
</tr>
<tr>
<td>FW08-307</td>
<td>Nitrogen Use Efficiency of Cool-Season Perennial Forage Grasses Planted With and Without Alfalfa Under Irrigation for Hay Production</td>
<td>$14,999</td>
<td>Dr. Blaine Horn University of Wyoming</td>
</tr>
<tr>
<td>FW08-303</td>
<td>Utilizing Soil Moisture and Microclimate Monitoring Technology to Reduce Water and Energy Needs and Improve Sugar Beet Crop Production for Producers in the Big Horn Basin Region of Wyoming</td>
<td>$29,923</td>
<td>Caryn Agee Washakie County Conservation District</td>
</tr>
<tr>
<td>FW06-021</td>
<td>Management of Iron Deficiency in Bean with Annual Ryegrass Interplantings</td>
<td>$9,505</td>
<td>Mike Ridenour</td>
</tr>
<tr>
<td>FW05-035</td>
<td>Brush Mower/Mixed Mountain Shrub Enhancement</td>
<td>$19,370</td>
<td>Myrtle and Clyde McColloch JY Ranch</td>
</tr>
<tr>
<td>FW04-030</td>
<td>Progeny Evaluation to Determine an Economically Based Index for Sire Selection</td>
<td>$7,500</td>
<td>Sandra Snider</td>
</tr>
<tr>
<td>FW04-035</td>
<td>Tree Windbreak</td>
<td>$7,500</td>
<td>Betty Rodriguez</td>
</tr>
<tr>
<td>FW03-004</td>
<td>Wind and Water</td>
<td>$6,000</td>
<td>Betty Rodriguez</td>
</tr>
<tr>
<td>FW02-210</td>
<td>Platte County Farmer's Market</td>
<td>$2,434</td>
<td>Susan Schamel</td>
</tr>
<tr>
<td>FW02-207</td>
<td>BOS Grass Grown Premium Beef Marketing</td>
<td>$7,495</td>
<td>James Millett</td>
</tr>
<tr>
<td>FW01-047</td>
<td>Prevention of High Altitude Disease Losses in Beef Cattle Utilizing PAP Test Scores, EPDs, and Gene-Mapping Techniques</td>
<td>$7,500</td>
<td>Jon Robinett Diamond G. Cattle Co. LLC</td>
</tr>
<tr>
<td>FW00-278</td>
<td>Internet Marketing of Organically Grown Wyoming Gourmet Garlic</td>
<td>$3,930</td>
<td>Steve Shesler</td>
</tr>
<tr>
<td>FW00-093</td>
<td>Pastured Poultry Production with Research on Sustainability of Grazing Lands</td>
<td>$1,477</td>
<td>Joleen and Greg Marquardt</td>
</tr>
<tr>
<td>FW99-060</td>
<td>Improving Ranch Unit Stability and Sustainability through Grazing Irrigated Alfalfa</td>
<td>$3,500</td>
<td>Rick March</td>
</tr>
<tr>
<td>FW96-023</td>
<td>Tall Stature Grasses for Winter Grazing and Spring Calving</td>
<td>$2,800</td>
<td>Matt Weber</td>
</tr>
<tr>
<td>FW95-045</td>
<td>Integrated Management to Improve Rangeland Health and Reduce Noxious Weeds</td>
<td>$5,000</td>
<td>Ogden Driskell Bearlodge Cattle Company</td>
</tr>
<tr>
<td>FW95-067</td>
<td>Initiation of Integrated Management</td>
<td>$5,000</td>
<td>Tom Bruce</td>
</tr>
</tbody>
</table>
## GRADUATE STUDENT GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| GW22-231     | Nitrogen Mineralization in High-Elevation Hay Meadow Soils for Improved Fertility Management | $29,921      | Urszula Norton
University of Wyoming
Daniel Adamson
University of Wyoming |
| GW18-170     | Evaluation of Pulse Crops for Dryland Production                             | $25,000      | Dr.Carrie Eberle
University of Wyoming
Amberle Filley
University of Wyoming |
| GW18-025     | The Critical Role of Soil Microbiota to Sustainable Agriculture; Quantifying short-term microbial and vegetation feedback to intensive grazing. | $24,184      | Linda Van Diepen
University of Wyoming
Emily Bean
University of Wyoming, The Pennsylvania State University |
| GW17-059     | Cattle Diets and Performance: Enhancing What We Know with Advanced Plant DNA Technology | $24,970      | John Derek Scasta
University of Wyoming
Tamarah Plechaty
University of Wyoming, Laramie & Unites States Department of Agriculture - Agricultural Research Service, Cheyenne, WY |
| GW16-038     | Increasing sustainable agriculture through enhanced diagnostics with Brucella infection | $24,818      | Dr.Brant Schumaker, DVM, MPVM, PhD
University of Wyoming
Noah Hull, MPH
University of Wyoming |
| GW16-068     | Conservation biological control of alfalfa weevil in Wyoming                  | $7,280       | Makenzie Benander
University of Wyoming |
| GW15-020     | Economic and Environmental Sustainability of Irrigated Grass-Legume Mixtures | $24,998      | Dr.Anowar Islam
University of Wyoming
Albert Adjesiwor
University of Wyoming |
| GW14-023     | Improving Feed Efficiency in Sheep Through Rumen Manipulation and Producer Adoption | $25,000      | Dr.Kristi Cammack
University of Wyoming
Dr.Melinda Ellison
University of Idaho |
| GW11-007     | Impacts of age on residual feed intake and its effect on reproductive parameters and profitability in ewes | $24,990      | Dr.Kristi Cammack
University of Wyoming
Dr.Rebecca Cockrum
Colorado State University |
| GW08-016     | Potential of Managing Iron and Zinc Deficiency in Dry Beans with Interplantings of Annual Ryegrass and Increased Bean Density | $18,928      | Andrew Kniss
University of Wyoming
Emmanuel Omondi
University of Wyoming - Dept 3354 |

## ON FARM RESEARCH/PARTNERSHIP GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| OW23-380     | Enhancing producer decision making: Lamb feeding strategies and meat quality assessment in the Katahdin sheep breed | $75,000      | Cody Gifford
University of Wyoming
Dr.Hannah Cunningham-Hollinger
University of Wyoming
Stewart Whit
University of Wyoming |
| OW21-363     | Kernza® in Wyoming: Evaluating Perennial Grains to Revitalize Wyoming Dryland Agriculture | $74,804      | Linda Van Diepen
University of Wyoming |
<table>
<thead>
<tr>
<th>Project Number</th>
<th>Project Title</th>
<th>Funding</th>
<th>Contact(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OW20-355</td>
<td>Does cattle selection matter? Testing larkspur-native vs larkspur-naive cattle to reduce death losses on larkspur infested rangelands.</td>
<td>$49,991</td>
<td>Daniel Cook, USDA-ARS-Poisonous Plant Research Laboratory, Clint Stonecipher, US Department of Agriculture - Agricultural Research Service - Poisonous Plant Research Laboratory, Ben Green, USDA-ARS-Poisonous Plant Research Laboratory, Eric Thacker, Utah State University</td>
</tr>
<tr>
<td>OW19-340</td>
<td>Growing and Marketing Ancient Grains in Wyoming</td>
<td>$49,995</td>
<td>Dr. Caitlin Youngquist, SnapLands</td>
</tr>
<tr>
<td>OW10-313</td>
<td>Residual Feed Intake - Producer Adoption and Genetic Selection Potential</td>
<td>$47,292</td>
<td>Dr. Kristi Cammack, University of Wyoming</td>
</tr>
</tbody>
</table>

**Total funding from the USDA SARE program to Wyoming**

$3,228,459

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).