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 $334 million to more than 7,810 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...

Colorado

Project Highlight: Dryland Cropping Intensification Shows Benefits

In the Great Plains region of Colorado, a scarce supply of water is the chief limiting factor in dryland cropping yields. This concern over limited water availability prompts many farmers in the area to adopt a winter wheat-fallow rotation, yet this approach worsens soil productivity over the long term.

Intensifying production and using no-till could actually improve yields and profitability by building up soil health and improving moisture retention. Using a SARE grant, Colorado State University graduate student Steven Rosenzweig set out to both quantify the benefits of reducing fallow frequency and understand the barriers to adoption. He compared different dryland rotation intensities and found that reducing fallow improved soil health, which ultimately allowed farmers to improve grain production with a similar amount of fertilizer.

He also conducted in-depth interviews with 30 farmers, and identified risk, profitability and crop insurance policy as top perceived barriers to reducing fallow frequency. He also identified strategies for helping farmers overcome the barriers, such as changing the way agronomic researchers approach their work to be more inclusive of long-term viewpoints and profitability. The identified benefits, barriers and strategies for change were widely disseminated, including a website, blog and an upcoming film.

For more information on this project, see sare.org/projects, and search for project number GW16-020.

SARE in Colorado

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

$5,585,066 in total funding

108 grant projects

(since 1988)

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

Total awards: **108 grants**
- 19 Research and Education
- 24 Professional Development Program
- 53 Farmer/Rancher
- 5 Graduate Student
- 7 On Farm Research/Partnership

Total funding: **$5,585,066**
- $3,117,090 Research and Education
- $1,471,913 Professional Development Program
- $520,995 Farmer/Rancher
- $123,992 Graduate Student
- $351,076 On Farm Research/Partnership

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/colorado

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/colorado to learn more.

Adrian Card
Colorado State University Extension
(303) 678-6383
adrian.card@colostate.edu

Ioannis Minas
Colorado State University
(970) 491-7216
ioannis.minas@colostate.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.
AGRICULTURE PROJECTS FUNDED IN COLORADO
by USDA's Sustainable Agriculture Research and Education (SARE) Program

Colorado has been awarded $5,585,066 grants to support 108 projects, including but not limited to, 19 research and/or education projects, 24 professional development projects and 53 producer-led projects. Colorado 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>
</table>
| SW21-921  | Strengthening Opportunities Along the Meat Supply Chain to Promote Sustainable Agriculture in Intermountain States | $349,994     | Becca Jablonski  
Colorado State University  
Thomas Bass  
Montana State University  
Cody Gifford  
University of Wyoming  
Jennifer Martin  
Colorado State University  
Martha Sullins  
Colorado State University Extension  
Dr.Caitlin Youngquist  
University of Wyoming |
| SW20-910  | Developing sustainable peach orchard soil microbiome management practices to control replant disease syndrome | $350,000     | Dr.Ioannis Minas  
Colorado State University  
Dr.Jorge Vivanco  
Colorado State University |
| SW18-500  | Examining Cover Crops for Soil Health Restoration in Dryland Cropping Systems in SW Colorado and SE Utah | $249,974     | Dr.Steven Fonte  
Colorado State University |
| SW15-008  | The Feasibility of Cover Crops in Dryland Cropping Systems in SW Colorado and SE Utah | $249,269     | Dr.Abdelfettah Berrada  
Colorado State University-Southwestern Colorado Research Center |
| LNC14-356 | The Bison Advantage Outreach and Education Program | $103,675     | Jim Matheson  
National Bison Association |
| SW14-023  | On-farm Cyanobacterial Bio-fertilizer Production to Reduce the Carbon Footprint of Organic Fruit and Vegetable Production | $293,599     | Dr.Jessica Davis  
Colorado State University |
| SW09-053  | Harnessing the Sun for On-farm Fertilizer Production | $159,023     | Dr.Jessica Davis  
Colorado State University |
| SW09-401  | Farm to Fork: Connecting Our Youth with Sustainable Agriculture | $48,988      | Dennis Lamm  
Colorado State University  
Tisha Casida  
That's Natural! |
| SW08-033  | Integrating Perennial Living Mulches into Irrigated Cropping Systems | $146,684     | Joe Brummer  
Colorado State University |
| SW06-028  | Site-specific Manure Management for Improving Soil Quality | $131,332     | Dr.Raj Khosla  
Colorado State University |
Supply and Market Analysis for Organic Producers in the Four Corners States

$144,511
Dennis Lamm
Colorado State University

Native Seed Production for Crop Diversification

$171,121
Dr. Ron Godin
Colorado State University - Rogers Mesa Res. Ctr.

Extending Irrigated Alfalfa Stand Life and Long-Term Profitability by Alteration of Late-Season Harvest Schedules

$61,270
Robert Hammon
Tri River Cooperative Extension

A Range Management Curriculum and Participatory Planning Project for the Tohono O’odham Nation

$99,263
Maria Fernandez-Gimenez
Colorado State University

Utilization of Compost Made from Agricultural and Forestry Wastes for Improving the Economic and Ecological Sustainability of Agronomic Crop Production on Low Organic Matter Soils in the San Luis Valley of Colorado

$137,916
Richard Zink
Colorado State University

Developing Sustainable Dryland Cropping Systems in SW Colorado and SE Utah Using Conservation Tillage and Crop Diversification

$142,380
Dr. Abdelfettah Berrada
Colorado State University-Southwestern Colorado Research Center

Reducing Environmental Contamination from Feedlot Manure in the South Platte River Basin through Agronomic, Economic, and Social Analysis and Education

$206,000
Dr. Jessica Davis
Colorado State University

Effectiveness of Beauveria Bassiana as a Microbial Control Agent for Coleopteran and Homopteran Pests of Irrigated Alfalfa

$36,091
Frank Peairs
Colorado State University

Compiling a Database of Sustainable Producers for the Southern Rockies Region

$36,000
Rita Robinson
Sustainable Mountain Agricultural Alliance (SMALL)

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>
| WPDP21-029 | Training Colorado educators about Sustainable Co-existence between ranchers and wolves | $99,949      | dana Hoag
Colorado State University
Dr. Stewart Breck
Colorado State University
Dr. Kevin Crooks
Fish, Wildlife, and Conservation Biology, Colorado State University
Dr. Alex Few
Western Landowners Alliance
CJ Mucklow
Colorado State University
Dr. John Sanderson
Colorado State University
Robin Young
Colorado State University |
| WPDP21-017 | Reviving the Range School: Range Science Training for Colorado Extension Agents | $60,007      | Dr. Kevin Jablonski
Colorado State University
Retta Bruegger
Colorado State University Extension
Anne Overlin
Colorado State University |
WPDP21-016  Growing Heritage Grains for Market Production  $75,671  Lee-Ann Hill  Rocky Mountain Seed Alliance  Lynda Garvin  Valencia County Cooperative Extension Service  Emily Lockard  Colorado State University Southwestern Colorado Research Center

EW18-005  Seed Saving Farmer Training  $45,350  Lee-Ann Hill  Rocky Mountain Seed Alliance

EW14-024  Colorado Resource Monitoring Initiative-Professionals Training  $23,000  Erin Karney  Colorado Cattlemen’s Association

EW12-009  Integrating Birds in Range Management across the Sagebrush Steppe  $60,000  Laura Quattrini  Rocky Mountain Bird Observatory (dba Bird Conservancy of the Rockies)

EW09-013  In-service Training and Decision-Making Tools for Optimizing Livestock Mortality Management  $97,848  Dr. Jessica Davis  Colorado State University

EW09-014  Curricula and Instructional Modules for Sustainable Small-Scale Greenhouse Production  $60,000  Dr. Steven Newman  Colorado State University

EW08-016  Professional Training for Developing a Hands-On Organic Weed Management Learning Center for Commercial Market Gardens in Local Communities  $89,492  Beth LaShell  Fort Lewis College

EW07-008  Enterprise, Environmental and Community Development to Promote Agricultural and Heritage Tourism  $59,973  Martha Sullins  Colorado State University  Dawn Thilmany  Colorado State University  Andrew Seidl  Colorado State University

EW06-019  Using Videos as a Teaching Tool: Improving Profits and Rangelands Through Application of Behavioral Principles  $80,000  Beth Burritt  Utah State University

EW05-015  Manure Management: An essential component of 4-H livestock projects  $59,927  Dr. Jessica Davis  Colorado State University

EW04-016  BEHAVE Facilitator’s Network  $99,702  Kathy Voth  Utah State University

EW03-011  Education, Training and Outreach on Risk Education  $99,600  Doug Hoag  CSU

EW02-004  Niche Beef Production and Marketing in Colorado  $59,470  Martha Sullins  American Farmland Trust  Julia Freedgood  American Farmland Trust  Dawn Thilmany  Colorado State University  Tom Field  Colorado State University

EW02-009  Integrating Bird Conservation into Range Management  $81,937  Tammy VerCauteren  Rocky Mountain Bird Observatory
Establishing Dialogue Between Alternative Agricultural Producers and the Land-Grant University in Colorado

Dr. Jessica Davis
Colorado State University

Exploration of the Ethical Basis for Agricultural Sustainability

Robert Zimdahl
Weed Research Lab, Colorado State University

Coached Land Planning and Care

Scott Cotton
Colorado State University Cooperative Education

Workshops on Land Use and Land Protection Policy

Jeff Jones
American Farmland Trust

In-Depth Training and Work Experience on a Community Supported Agriculture (C.S.A.) Farm

Steve Carcaterra
Colorado State University Cooperative Extension

Improving Manure Management to Protect Water Quality in the Southwestern U.S.

Dr. Jessica Davis
Colorado State University

Video Introduction to Sustainable Agriculture for Eight Western States

Joe Hiller
University of Wyoming, Cooperative Extension Service

Permaculture Systems Pamphlet

Jerome Osentowski
Central Rocky Mountain Permaculture Institute

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**FARMER/RANCHER 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>FW20-371</td>
<td>The Application of using High-Fungal Compost to Renovate Mountain Meadow Pastures</td>
<td>$20,000</td>
<td>Steve Oswald</td>
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<td>Oswald Cattle Co</td>
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<tr>
<td>FW19-341</td>
<td>The Citizen Science Soil Health Project</td>
<td>$24,800</td>
<td>Elizabeth Black</td>
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<td>Your Neighborhood Christmas Tree Farm</td>
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<td>FW19-354</td>
<td>Evaluating Forage Production and Ranching in Response to Regenerative Rotational Grazing on Dryland Pastures in Southwest Colorado.</td>
<td>$25,000</td>
<td>Chuck McAfee</td>
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<td>Charles M. McAfee &amp; CO. LLLP</td>
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<tr>
<td>FW18-053</td>
<td>Managing Canada Thistle for Soil Health and Greater Farm Profitability through Crimped Cover Crop and Strip Tillage on Annual Brassicas and Cucurbits</td>
<td>$8,978</td>
<td>Michael Nolan</td>
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<td>Mountain Roots Produce LLC</td>
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<td>FW15-046</td>
<td>Feasibility of Summer (floricane) Brambles in Colorado</td>
<td>$14,571</td>
<td>Amy Kafka</td>
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<td>Garden Sweet</td>
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<td>FW15-057</td>
<td>Supplemental Heating of High Tunnels by Energy-Producing Compost Piles</td>
<td>$15,000</td>
<td>Dr. Amy Yackel Adams</td>
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<td>Sunspot Urban Farm</td>
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<td>FW14-027</td>
<td>Colorado Queen Honey Bee Testing Project for Increased Sustainability</td>
<td>$24,922</td>
<td>Kristine Holthaus</td>
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<td>Colorado Queen Honey Bee Testing Project for Increased Sustainability</td>
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<td>FW13-128</td>
<td>Improved Honeybee Health through Foundation Modification</td>
<td>$25,000</td>
<td>Audrey Sue McWilliams</td>
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<td>Sue McWilliams</td>
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<td>FW12-076</td>
<td>Development of a Digitally Integrated, Low-cost Farm-to-Consumer Product Tracking System for Small Scale Farmers and Grower Networks</td>
<td>$24,965</td>
<td>Brett KenCairn Circle Fresh Farms</td>
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<td>FW11-010</td>
<td>Alternative crops to diversify the traditional winter wheat/fallow cropping system in Northwest Colorado</td>
<td>$29,821</td>
<td>Mike Williams none</td>
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<td>FW10-059</td>
<td>Expanding Small Ruminant Dairy Production</td>
<td>$14,500</td>
<td>Suzanne Quintana Quintana Farms Neville McNaughton Cheezsorce</td>
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<td>FW10-070</td>
<td>Effects of Sustainable Soil Amendments on Nutrient Availability in High Alkaline pH Soil in Field Production of Trees in Northeastern Colorado</td>
<td>$14,379</td>
<td>Dr.Brooke Edmunds CSU Extension David Rickman Boxelder Creek Nurseries</td>
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<tr>
<td>FW09-030</td>
<td>Alternative Fertilizer for Meadow Grass Hay</td>
<td>$10,775</td>
<td>Nancy Roberts Arrowpoint Cattle Co., LLC</td>
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<tr>
<td>FW07-024</td>
<td>Different Goat Breed Crosses to Find the Best Tasting Meat</td>
<td>$12,623</td>
<td>Holly Napier Napier Family Farms</td>
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<td>FW07-031</td>
<td>Raising Livestock and Crops Simultaneously in Unheated Greenhouses</td>
<td>$12,089</td>
<td>John Socolofsky Antelope Creek Ranch</td>
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<td>FW07-319</td>
<td>Season Extension and Crop Area Multiplication with a Moveable Hoophouse in an Organic System</td>
<td>$11,230</td>
<td>Dr.Edward Page CSU Extension</td>
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<td>FW06-028</td>
<td>Integrated Control of Weeds and Verticillium in Strawberry Nurseries</td>
<td>$10,000</td>
<td>Brian Coleman Ruby Mountain Nursery</td>
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<tr>
<td>FW06-314</td>
<td>Business Plan for Producers to Create Value-added Crop-based Products</td>
<td>$20,000</td>
<td>Ravi Malhotra ICAST Intl Ctr for Appropriate &amp; Sustainable Tech</td>
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<td>FW05-009</td>
<td>Non-chemical Control of Nematodes in Potatoes</td>
<td>$9,922</td>
<td>Monty Smith Three S Ranch</td>
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<td>FW05-309</td>
<td>Management Practices for Drip Irrigation in Baca County, Colorado</td>
<td>$9,353</td>
<td>James Valliant Colorado State University</td>
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<tr>
<td>FW04-112</td>
<td>Common Standards and Labeling</td>
<td>$13,500</td>
<td>Dan Hobbs Tres Rios Agricultural Cooperative Inc.</td>
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<td>FW04-318</td>
<td>Using Irrigated Forage Pastures to Enhance Livestock Production Sustainability</td>
<td>$13,555</td>
<td>Bruce Bosley Colorado State University Gene Schmitz Colorado State University</td>
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<td>FW03-016</td>
<td>Production of Medicinal Herbs as an Integral Part of On-farm Cheese Production and the Use of Medicinals for Immuno-stimulation and Enhanced Milk Production</td>
<td>$5,455</td>
<td>Denise Bohemier El Rancho del Cielo</td>
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<td>FW03-109</td>
<td>Edamame Bean Production and Marketing</td>
<td>$5,000</td>
<td>Phil Knob</td>
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<td>Project ID</td>
<td>Project Title</td>
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<td>FW03-111</td>
<td>Market Development for an Edible Bean Food Business</td>
<td>$5,000</td>
<td>Shane Atchley</td>
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<tr>
<td>FW02-003</td>
<td>Agricultural Systems Economics for Hay production</td>
<td>$1,030</td>
<td>Wilbur Miller</td>
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<tr>
<td>FW02-006</td>
<td>SE Colorado Range Plant Quality Database and Supplement Formulation Program</td>
<td>$13,488</td>
<td>John Doherty</td>
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<tr>
<td>FW02-007</td>
<td>Propagation of Colorado Native Plants</td>
<td>$7,500</td>
<td>Ann Grant</td>
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<td>FW02-014</td>
<td>Study to Determine if Nepeta Cataria (Catnip) Can Be Commercially Grown in Montrose, CO</td>
<td>$5,000</td>
<td>Susan Bony</td>
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<tr>
<td>FW02-021</td>
<td>Design and Building of a Facility for the production of Goat and Sheep milk Cheeses on the farmstead in rural SW Colorado</td>
<td>$7,460</td>
<td>Denise Bohemier, El Rancho del Cielo</td>
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<td>FW02-025</td>
<td>Colorado Organic Honey Production</td>
<td>$6,000</td>
<td>Cesar Flores</td>
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<tr>
<td>FW01-009</td>
<td>Tillage and Irrigation Assessment Effecting Soil Salinity along South Platte River</td>
<td>$6,400</td>
<td>Randy Honstein, Natural Resources Conservation District</td>
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<tr>
<td>FW01-010</td>
<td>Pastured Poultry as an Alternative and Enhancement to a Traditional Livestock Agricultural System</td>
<td>$6,500</td>
<td>Tony Daranyi, Colorado State University</td>
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<tr>
<td>FW00-012</td>
<td>Residue Management in Furrow Irrigated Reduced Tillage Systems</td>
<td>$4,650</td>
<td>Randy Hines</td>
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<tr>
<td>FW00-028</td>
<td>Building a Community-based Direct Marketing Model for Diverse Ranch Enterprises</td>
<td>$5,000</td>
<td>Jeremy Gingerich</td>
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<td>FW00-032</td>
<td>Organic Soil Amendment Release Rates for Fertility in Apples</td>
<td>$6,750</td>
<td>Steve Ela</td>
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<td>FW00-038</td>
<td>Native Plants Nursery</td>
<td>$5,000</td>
<td>John Squire</td>
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<td>FW00-074</td>
<td>Colorado Quality Lamb: Enhancing the Economic Viability of Local Producers Through Direct Marketing to Food Service Establishments</td>
<td>$5,000</td>
<td>David Myers</td>
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<tr>
<td>FW00-240</td>
<td>Carbondale Community Garden Cooperative</td>
<td>$8,311</td>
<td>Wendy Anderson</td>
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<td>FW00-277</td>
<td>Custer County Ag-Products Internet Marketing Project</td>
<td>$2,160</td>
<td>Sara Hebbert</td>
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<tr>
<td>FW00-302</td>
<td>Alternative Crop Marketing Based on a Pre-existing Urban-Rural Spiritual and Social Relationship</td>
<td>$3,400</td>
<td>Paul Mailander</td>
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<tr>
<td>FW00-329</td>
<td>Paradox Valley Heirloom Foods and Native Seed Grow-Out</td>
<td>$9,997</td>
<td>Martha Ames Burgess</td>
</tr>
</tbody>
</table>
Hydraulic Windmill Pump $2,733 Lonnie Jackson

Sustainable Sheep Dairy Project $3,550 Steve and Carolyn Keller

Testing Alternative Crop Rotations for Traditional Small Grain/Fallow System $3,000 James Faughnan

Integrated Weed Management of Musk Thistle with Emphasis on Biological Control $2,938 Larry Matschke

Annual Forage Production for an Intensive Winter Grazing System $2,665 John Haws

Cultures and La Manga Cattlemen's Association Range Analysis and Improvement Project $8,700 Dennis Moeller

Converting Pasture Land to Specialty Crop Production as an Alternative Farm Enterprise $2,500 Trent J. Taylor

Perennial Grass Establishment in Existing Alfalfa $1,825 Douglas B. Wiley

Pasture Fryer Chickens $2,500 Pete Mattics

Habitat Management as a Transitional Tool to an Insecticide: Free Pest Management Program in Apples $1,500 Bob White

Evaluation of Alternative Crops in Dryland Multi-Crop Rotations on Farms in the Northeastern Colorado Region $5,000 Joe Kinnie

Cattle as Partners in Conservation: Ecological, Economic, and Social Outcomes of Public-Private Partnerships on Colorado Landscapes $24,727 Dr. Stacy Lynn Colorado State University Anna Clare Monlezun Colorado State University

Climate mitigation through soil carbon sequestration: increasing soil resilience and plant productivity on rangelands through compost application $24,766 Dr. Jennie DeMarco Western Colorado University Amy Honan Western Colorado University Alexia Cooper Western State Colorado University (doing business as Western Colorado University)

Dryland cropping system intensification in the West-Central Great Plains: Impacts and barriers to adoption $25,009 Meagan Schipanski Colorado State University Steven Rosenzweig Colorado State University

Information flows along the beef supply chain: Information exchange as a strategy for mitigating increased costs and maximizing producer profits. $25,000 Dr. Jennifer Bair Sociology, CU Boulder Sarah Lake University of Colorado-Boulder
Impacts of Reduced Nitrogen Application During Late Growing Season on Potato Tuber Quality and Profitability

Dr. Sastry Jayanty
Department of Horticulture and LA Henry Castleberry
Colorado State University

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>
| ONC22-102 | National Bison North Central Regenerative Ranching Workshop Series             | $39,087      | Jim Matheson
National Bison Association |
| OW21-368  | Enabling improved environmental outcomes/farm economics for sugarbeet farmers using improved nutrient stewardship | $75,000      | Dr. Rebecca Larson
The Western Sugar Cooperative |
| OW20-357  | Microbial Ecology of Vermicompost and Vermi-teas                              | $49,100      | Dr. Zackary Jones
Rocky Mountain Soil Stewardship
Kathy Doesken
Rocky Mountain Soil Stewardship |
| OW20-358  | Compost for Carbon Sequestration on Irrigated Pasture                          | $49,746      | Retta Bruegger
Colorado State University Extension
Dr. Megan Machmuller
Colorado State University
Seth Urbanowitz
Colorado State University Extension |
| OW10-309  | Reducing Nitrogen Fertilizer Inputs to Irrigated Pastures and Hayfields by Interseeding Legumes | $49,849      | Joe Brummer
Colorado State University |
| OW10-321  | Using Cattle to Rehabilitate Rangeland Vegetation and Improve Ecosystem Function (3 yr project) | $49,936      | Kathy Voth
Livestock for Landscapes |
| OW10-325  | Organic Winter Production Scheduling in Unheated High Tunnels.                 | $38,358      | Frank Stonaker
Colorado State University |

Total funding from the USDA SARE program to Colorado

$5,585,066

For further information on projects, contact Western SARE at (435) 797-2257 or wsare@usu.edu.
Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).