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 $333 million to more than 7,792 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...

Utah

Project Highlight: Better Onions, Fewer Inputs
Onions are a high-value crop, but high fertilizer rates and aggressive use of pesticides to suppress weeds, diseases and insects threaten the sustainability of onion production. In Utah, growers and researchers are working to show how changes in management practices can allow farmers to maintain profitable yields while lowering their use of inputs.

In 2013 a SARE-funded team led by Utah State University’s Diane Alston studied the effect of certain changes on onion yields, in particular fertilization rates and crop rotations. They were following the lead of a small group of onion producers in the state who were finding they could reduce their use of pesticides by lowering their use of fertilizers and still achieve good yields.

The team pursued multiple objectives and developed a body of information that is helping Utah’s producers adopt more sustainable practices. They surveyed nearly 60 farms to better understand production system predictors of pests and yield; conducted field experiments that showed reducing fertilizer rates could reduce pest densities; and created an interactive production modeling tool.

In an assessment of producers conducted near the end of the project, 67 percent said the information they learned would help them diversify their operation, and 80 percent felt it would help them reduce their use of off-farm inputs.

For more information on this project, see sare.org/projects, and search for project number SW13-034.

SARE in Utah
western.sare.org/sare-in-your-state/utah

$6,138,536 in total funding
77 grant projects
(since 1988)

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

Total awards: 77 grants
- 34 Research and Education
- 9 Professional Development Program
- 19 Farmer/Rancher
- 8 Graduate Student
- 6 On Farm
- 1 Research/Partnership
- 1 Research to Grass Roots

Total funding: $6,138,536
- $4,919,339 Research and Education
- $574,500 Professional Development Program
- $115,837 Farmer/Rancher
- $188,111 Graduate Student
- $279,590 On Farm
- $61,160 Research/Partnership
- $61,160 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/utah

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/utah to learn more.

Marion Murray
Utah State University
(435) 797-0776
marion.murray@usu.edu

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

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

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.
Utah has been awarded $6,138,536 grants to support 76 projects, including but not limited to, 33 research and/or education projects, 9 professional development projects and 19 producer-led projects. Utah 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>SW21-927</td>
<td>Dry Matter Intake and Feed Efficiency of Four Dairy Breeds in a Pasture-Based Heifer Development Program</td>
<td>$299,935</td>
<td>Dr. Blair Waldron&lt;br&gt;USDA-ARS&lt;br&gt;Dr. Earl Creech&lt;br&gt;Utah State University&lt;br&gt;Dr. Clay Isom&lt;br&gt;Utah State University, Dept. of Animal, Dairy, and Veterinary Sc&lt;br&gt;Dr. Ryan Larsen&lt;br&gt;Utah State University, Dept. of Applied Economics&lt;br&gt;Dr. Rhonda Miller&lt;br&gt;WSARE&lt;br&gt;Dr. Kerry Rood, MPH, DVM&lt;br&gt;Utah State University, Dept. of Animal, Dairy, and Veterinary Sc</td>
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<tr>
<td>SW21-923</td>
<td>Developing sustainable strategies for nutrient and pest management on small-acreage strawberry farms</td>
<td>$349,736</td>
<td>Dr. Jennifer Reeve&lt;br&gt;Utah State University&lt;br&gt;Dr. Brent Black&lt;br&gt;Utah State University&lt;br&gt;Dr. Kynda Curtis&lt;br&gt;Utah State University&lt;br&gt;Dr. Robert Schaeffer&lt;br&gt;Utah State University</td>
</tr>
<tr>
<td>SW19-909</td>
<td>Identifying Stacked Conservation Practices that Optimize Water Use in Agriculture</td>
<td>$349,977</td>
<td>Matt Yost&lt;br&gt;Utah State University&lt;br&gt;Niel Allen&lt;br&gt;Utah State University&lt;br&gt;Dr. Earl Creech&lt;br&gt;Utah State University&lt;br&gt;Neil Hansen&lt;br&gt;Brigham Young University&lt;br&gt;Matthew Heaton&lt;br&gt;Brigham Young University&lt;br&gt;Dr. Bryan Hopkins&lt;br&gt;BYU&lt;br&gt;Ross Spackman&lt;br&gt;Brigham Young University-Idaho</td>
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<tr>
<td>SW19-905</td>
<td>Can we manage public rangelands for producers and the environment?: Using grazing-duration to balance livelihoods, clean water, sage-grouse habitat, and sustainable forage</td>
<td>$349,979</td>
<td>Dr. Kris Hulvey&lt;br&gt;Working Lands Conservation&lt;br&gt;Taylor Payne&lt;br&gt;Utah Department of Agriculture's Grazing Improvement Program</td>
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<tr>
<td>SW18-058</td>
<td>Establishing a protocol for receiving cattle that are at-risk of having a mineral deficiency</td>
<td>$206,209</td>
<td>Dr. Kara Thornton&lt;br&gt;Utah State University</td>
</tr>
<tr>
<td>Project Code</td>
<td>Project Title</td>
<td>Budget</td>
<td>Principal Investigator</td>
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<tr>
<td>SW17-046</td>
<td>Grass-birdsfoot trefoil mixtures to improve the economic and environmental sustainability of pasture-based organic dairies in the western U.S.</td>
<td>$214,123</td>
<td>Dr. Blair Waldron</td>
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<tr>
<td>SW15-003</td>
<td>Training cattle to graze medusahead and avoid velvet lupine: A new tool to sustain the economic viability of livestock operations in the Western US</td>
<td>$249,909</td>
<td>Dr. Juan Villalba</td>
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<tr>
<td>SW15-029</td>
<td>Improving Tart Cherry Sustainability</td>
<td>$230,154</td>
<td>Dr. Brent Black</td>
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<tr>
<td>SW14-015</td>
<td>Integrated Byproduct Streams for Enhanced Viability of Combined Dairy Farm and Milk Processing Operations</td>
<td>$295,688</td>
<td>Dr. Donald McMahon</td>
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<tr>
<td>SW13-034</td>
<td>Onion Systems Management Strategies for Crop Nutrition, Weeds, Thrips, and Iris Yellow Spot Virus</td>
<td>$169,299</td>
<td>Dr. Diane Alston</td>
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<tr>
<td>SW10-088</td>
<td>Grass-Legume pastures to increase economic and environmental sustainability of livestock production</td>
<td>$209,907</td>
<td>Dr. Blair Waldron</td>
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<tr>
<td>SW08-076</td>
<td>Cultural Management of Onion Thrips and Iris yellow Spot Virus</td>
<td>$133,411</td>
<td>Dr. Jennifer Reeve</td>
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<tr>
<td>SW07-014</td>
<td>Sustainable Vegetable Production: Screening Cover Crops for Water Use Efficiency</td>
<td>$118,411</td>
<td>Dr. Daniel Drost</td>
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<tr>
<td>SW07-035</td>
<td>High Value Crop Rotations for Utah High Tunnels</td>
<td>$144,495</td>
<td>Brent Black</td>
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<tr>
<td>SW07-020</td>
<td>Perennial Forage Kochia for Improved Sustainability of Grass-Dominated Ecosystems</td>
<td>$149,503</td>
<td>Dale Zobel</td>
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<tr>
<td>SW02-013</td>
<td>Sustainable Water Management for Irrigated Asparagus</td>
<td>$23,014</td>
<td>Dr. Daniel Drost</td>
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<tr>
<td>SW01-034</td>
<td>Assessment of Value Added Milk from Pasture-based Dairies</td>
<td>$78,000</td>
<td>Tilak Dhiman</td>
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<tr>
<td>SW01-023</td>
<td>Biofumigants in Commercial Onion Production to Enhance Soil Nutrient Availability, Soil Quality, and Control of Weed, Nematode, and Disease Pests</td>
<td>$134,317</td>
<td>Brad Geary</td>
</tr>
<tr>
<td>SW01-020</td>
<td>Production of Drought-adapted Intermountain Native Plants Through Low-cost, In-containers for Emerging Western Markets</td>
<td>$71,686</td>
<td>Roger Kjelgren</td>
</tr>
<tr>
<td>SW01-001</td>
<td>Value Added Opportunities from the Manufacture and Feeding of Silages Produced from Liquid Cheese Whey and Other By-products to Growing and Finishing Cattle and Beef Cows</td>
<td>$59,777</td>
<td>Dale Zobel</td>
</tr>
</tbody>
</table>
Impact Assessment of Western Region SARE Projects

In-house composting in high-rise, caged layer facilities

The Effects of Altering the Protein Efficiency of Lactating Dairy Cows on the Whole-Farm Nitrogen Efficiency of Dairy Farms.

The Effects of Altering the Protein Efficiency of Lactating Dairy Cows on the Whole-Farm Nitrogen Efficiency of Dairy Farms: Subcontract 1

Reducing Chemical Inputs in Arid-Climates Through Sustainable Orchard Management


Public-Land Grazing Permittees Under Pressure: Sustainability of Coping Strategies on Private Land

A Livestock Production System Less Reliant on the Use of Publicly Owned Lands

Four Corners Navajo Nation Sustainable Agriculture Demonstration Project

Navajo Nation Whole Farm/Ranch Sustainable Systems Demonstration Project

Conference on the Science of Sustainable Agricultural Systems

Using the Wyoming Ranch Tools site to evaluate selected Western SARE research projects to assess economic sustainability for individual producers

Assisting Extension professionals in assessing profitable and sustainable agricultural enterprises with producer clientele

Project # | Project Title | SARE Support | Project Leaders
--- | --- | --- | ---
RGR20-007 | Using the Wyoming Ranch Tools site to evaluate selected Western SARE research projects to assess economic sustainability for individual producers | $61,160 | Bridger Feuz, Master Stockman Consulting
WPDP21-012 | Assisting Extension professionals in assessing profitable and sustainable agricultural enterprises with producer clientele | $99,969 | Dr. Kynda Curtis, Utah State University, Dr. Ryan Larsen, Utah State University, Dept. of Applied Economics, Dr. Anastasia Thayer, Utah State University, Ruby Ward, Utah State University

RESEARCH TO GRASS ROOTS GRANTS

PROFESSIONAL DEVELOPMENT PROGRAM GRANTS
WPDP19-14  Enhancing Enterprise Diversification Assessment for Native American Farmers to Enhance Economic Sustainability  $67,650  Ruby Ward  Utah State University  Vicki Hebb  Trent Teegerstrom  University of Arizona

EW15-023  Sustaining the Future of Navajo Rangelands via Mobile Learning Tools to Promote Enhanced Vegetation Management  $62,260  Dr. Gerald Hawkes  New Mexico State University

EW14-017  Building Business Management Capacity for American Indian Agricultural Businesses  $75,000  Ruby Ward  Utah State University

EW13-005  Economic Evaluation of Agricultural Diversification through Agritourism for the Intermountain West  $74,492  Dr. Kynda Curtis  Utah State University

EW09-007  Economic Evaluation of Alternative (low-water use) Crops for the Great Basin  $99,724  Carol Bishop  University of Nevada Cooperative Extension  Dr. Kynda Curtis  Utah State University

EW06-005  Entrepreneurial Sustainable Agriculture: Alternatives for Processing, Packing, Labeling and Marketing in Internet/Retail Environments  $58,755  John C. Allen, PhD  Western Rural Development Center

EW06-018  Disseminating Research-based Information to Improve Great Basin Rangelands  $21,605  Summer Olsen  Utah State University  Mark Brunson  Utah State University

EW04-010  Communication of Range Demonstration Project Results  $15,045  Ken Mills  Utah Association of Conservation Districts

FARMER/RANCHER GRANTS

Project #  Project Title  SARE Support  Project Leaders

FW19-343  Can barley fodder be fed in place of grass hay to dairy goats and dairy sheep and what effect will it have on milk production and composition.  $19,407  Anita Wilson  Milky Hollow Creamery

FW07-315  Bramble Variety Trials in Utah to Reduce Disease, Increase Production and Enhance Profitability  $23,250  Rick Heflebower  Utah State University

FW06-327  Integrating Annual Crop Residues, Perennial Pastures, and Livestock Management to Extend the Grazing Season and Minimize Losses of Soil Nitrogen  $10,000  Thomas Griggs  Utah State University

FW06-027  Commercial Artichokes in the Intermountain West  $5,180  James Haqqarty  Sun River Farms

FW06-012  Interseeding Forage Kochia in Established CRP Land for Enhanced Livestock and Wildlife Utilization  $7,621  Ron Harper

FW05-022  Increasing the Profitability of Raspberries by Extending the Growing Season  $2,310  Clark Willis

FW04-014  Goats as a Weed Control Alternative in Small Acreage Ranchettes  $3,382  Kyle Christensen
## GRADUATE STUDENT GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| GW21-221  | Enhancement of Samurai Wasp [Trissolcus japonicus (Ashmead)] for Biocontrol of Invasive Brown Marmorated Stink Bug [Halyomorpha halys (Stål)] in Utah | $30,000      | Dr. Diane Alston  
Utah State University  
Curtis Rowley  
Cherry Hill Farms  
Dr. Lori Spears  
Utah State University  
Kate Richardson  
Utah State University |
| GW20-215  | Identification of effective cover crop varieties and integrated management practices for weedy and invasive plant suppression in the Western US | $25,000      | Dr. Corey Ransom  
Utah State University  
Danielle Thiemann  
Utah State University |
| GW18-106  | Brown Marmorated Stink Bug in Utah's Intermountain West                       | $24,999      | Dr. Diane Alston  
Utah State University  
Mark Holthouse  
Utah 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>
| GW18-156        | Utilizing Tannin-Containing Forages and Holos Software for Sustainable Beef Production in the Intermountain West | $20,204      | Dr. Jennifer Reeve  
Utah State University  
Kathryn Slebodnik  
Utah State University |
| GW17-060        | Navajo Spinach (Cleome Serrulata): Improving Seed Germination from Wild Populations Gathered across Native Lands of the Four Corners | $24,969      | Dr. Daniel Drost  
Utah State University  
Reagan Wytsalucy  
Utah State University |
| GW15-046        | Improved simple on-site soil quality testing for soils in the Intermountain West | $24,844      | Dr. Jennifer Reeve  
Utah State University  
Esther Thomsen  
USU |
| GW13-006        | Determination of gas emissions from manure sources in animal feeding operations | $25,000      | Scott B. Jones  
Utah State University  
Dr. Rhonda Miller  
WSARE  
Pakorn Sutitarnmontr  
Biological Engineering Department, Utah State University |
| GW12-030        | Contributions to pest suppression through predator phenology and functional diversity | $13,095      | Dr. Ricardo Ramirez  
Utah State University  
Erica Stephens  
Utah State University |
| OW19-343        | Management strategies for Tomato spotted wilt virus and curtoviruses in Utah | $31,149      | Claudia Nischwitz  
Utah State University  
Dr. Diane Alston  
Utah State University  
Richard Heflebower  
Utah State University Extension - Washington County |
| OW19-346        | Promoting crop diversification and soil health for cut flower production | $49,999      | Dr. Melanie Stock  
Utah State University  
Dr. Brent Black  
Utah State University  
Dr. Daniel Drost  
Utah State University  
Dr. Larry Rupp  
Utah State University |
| OW18-007        | Supporting Natural Enemies of the Cabbage Aphid with Hedgerow Plantings | $48,554      | Laura Horn  
Wild Bee Project |
| OW14-036        | Biochar Amendment to Enhance Tomato and Melon Productivity and Protect Against Phytophthora Root Rot Disease | $49,990      | Marion Murray  
Utah State University |
| OW13-005        | Rangeland Restoration on the Channel Scablands of Eastern Washington | $49,931      | Dr. Kip Panter  
USDA-ARS-PPRL |
| OW12-020        | Feedlot performance, feed efficiency, and profitability of cattle fed either a complete mixed ration or allowed to voluntarily select their diet. | $49,967      | Beth Burritt  
Utah State University |

Total funding from the USDA SARE program to Utah

$6,138,536
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).