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 7,802 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, granteeproduced 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
- 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
- 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](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](western.sare.org/state-pages/utah) to learn more.

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

**For detailed information on SARE projects, go to**

[www.SARE.org](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.
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, USDA-ARS, Dr. Earl Creech, Utah State University, Dr. Clay Isom, Utah State University, Dept. of Animal, Dairy, and Veterinary Science, Dr. Ryan Larsen, Utah State University, Dept. of Applied Economics, Dr. Rhonda Miller, WSARE, Dr. Kerry Rood, MPH, DVM, Utah State University, Dept. of Animal, Dairy, and Veterinary Science</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, Utah State University, Dr. Brent Black, Utah State University, Dr. Kynda Curtis, Utah State University, Dr. Robert Schaeffer, 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, Utah State University, Niel Allen, Utah State University, Dr. Earl Creech, Utah State University, Neil Hansen, Brigham Young University, Matthew Heaton, Brigham Young University, Dr. Bryan Hopkins, BYU, Ross Spackman, 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, Working Lands Conservation, Taylor Payne, 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, Utah State University</td>
</tr>
<tr>
<td>Project Number</td>
<td>Project Title</td>
<td>Funding</td>
<td>PI/Institution</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 USDA-ARS</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 Utah State University</td>
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<tr>
<td>SW15-029</td>
<td>Improving Tart Cherry Sustainability</td>
<td>$230,154</td>
<td>Dr. Brent Black Utah State University</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 Western Dairy Center, Utah State University</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 Utah State University</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 USDA-ARS</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 Utah State University</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 Utah State University</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 PSC Department, Utah State University</td>
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<tr>
<td>SW04-060</td>
<td>Perennial Forage Kochia for Improved Sustainability of Grass-Dominated Ecosystems</td>
<td>$149,503</td>
<td>Dale Zobel ADVS Dept., Utah State University</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 Utah State University</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 Utah State University</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 Brigham Young University</td>
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<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 Utah State University</td>
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<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 ADVS Dept., Utah State University</td>
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<tr>
<td>Project #</td>
<td>Project Title</td>
<td>SARE Support</td>
<td>Project Leaders</td>
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<tr>
<td>SW00-063</td>
<td>Impact Assessment of Western Region SARE Projects</td>
<td>$38,500</td>
<td>Dr. Rhonda Miller</td>
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<tr>
<td>SW00-040</td>
<td>In-house composting in high-rise, caged layer facilities</td>
<td>$60,975</td>
<td>Richard Koenig</td>
</tr>
<tr>
<td>SW99-024A</td>
<td>The Effects of Altering the Protein Efficiency of Lactating Dairy Cows on the Whole-Farm Nitrogen Efficiency of Dairy Farms.</td>
<td>$89,571</td>
<td>Allen Young</td>
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<tr>
<td>SW99-024</td>
<td>The Effects of Altering the Protein Efficiency of Lactating Dairy Cows on the Whole-farm Nitrogen Efficiency of Dairy Farms: Subcontract 1</td>
<td>$19,184</td>
<td>Allen Young</td>
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<tr>
<td>SW99-024B</td>
<td>The Effects of Altering the Protein Efficiency of Lactating Dairy Cows on the Whole-Farm Nitrogen Efficiency of Dairy Farms</td>
<td>$19,184</td>
<td>Richard Kohn</td>
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<tr>
<td>SW98-058</td>
<td>Reducing Chemical Inputs in Arid-Climates Through Sustainable Orchard Management</td>
<td>$261,044</td>
<td>Schuyler Seeley</td>
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<tr>
<td>SW96-032</td>
<td>Identification of Management Practices and Cultivars for Organic Hard-Winter Wheat Production</td>
<td>$93,911</td>
<td>David Hole</td>
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<tr>
<td>SW95-015</td>
<td>Public-Land Grazing Permittees Under Pressure: Sustainability of Coping Strategies on Private Land</td>
<td>$63,000</td>
<td>D. Layne Coppock</td>
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<td>SW95-006</td>
<td>A Livestock Production System Less Reliant on the Use of Publicly Owned Lands</td>
<td>$60,000</td>
<td>Randall D. Wiedmeier</td>
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<tr>
<td>LWD93-034</td>
<td>Four Corners Navajo Nation Sustainable Agriculture Demonstration Project</td>
<td>$100,000</td>
<td>Lyle G. McNeal</td>
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<tr>
<td>LWD93-006</td>
<td>Navajo Nation Whole Farm/Ranch Sustainable Systems Demonstration Project</td>
<td>$14,000</td>
<td>Lyle G. McNeal</td>
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<tr>
<td>LWD92-005</td>
<td>Conference on the Science of Sustainable Agricultural Systems</td>
<td>$15,500</td>
<td>David Bezdicek</td>
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</table>

**RESEARCH TO GRASS ROOTS 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>RGR20-007</td>
<td>Using the Wyoming Ranch Tools site to evaluate selected Western SARE research projects to assess economic sustainability for individual producers</td>
<td>$61,160</td>
<td>Bridger Feuz</td>
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<td>Master Stockman Consulting</td>
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**PROFESSIONAL DEVELOPMENT PROGRAM GRANTS**

<table>
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<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
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</thead>
<tbody>
<tr>
<td>WPDP21-012</td>
<td>Assisting Extension professionals in assessing profitable and sustainable agricultural enterprises with producer clientele</td>
<td>$99,969</td>
<td>Dr. Kynda Curtis</td>
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<td></td>
<td></td>
<td></td>
<td>Utah State University</td>
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<td></td>
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<td></td>
<td>Dr. Ryan Larsen</td>
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<td></td>
<td>Utah State University, Dept. of Applied Economics</td>
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<td></td>
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<td>Dr. Anastasia Thayer</td>
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<td>Utah State University</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Ruby Ward</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Utah State University</td>
</tr>
</tbody>
</table>
WPDP19-14  Enhancing Enterprise Diversification Assessment for Native American Farmers to Enhance Economic Sustainability  $67,650  Ruby Ward  Utah State University  Vicki Hebb  University of Arizona  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**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
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<th>Project Leaders</th>
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</thead>
<tbody>
<tr>
<td>FW19-343</td>
<td>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.</td>
<td>$19,407</td>
<td>Anita Wilson  Milky Hollow Creamery</td>
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<tr>
<td>FW07-315</td>
<td>Bramble Variety Trials in Utah to Reduce Disease, Increase Production and Enhance Profitability</td>
<td>$23,250</td>
<td>Rick Heflebower  Utah State University</td>
</tr>
<tr>
<td>FW06-327</td>
<td>Integrating Annual Crop Residues, Perennial Pastures, and Livestock Management to Extend the Grazing Season and Minimize Losses of Soil Nitrogen</td>
<td>$10,000</td>
<td>Thomas Griggs  Utah State University</td>
</tr>
<tr>
<td>FW06-027</td>
<td>Commercial Artichokes in the Intermountain West</td>
<td>$5,180</td>
<td>James Haggarty  Sun River Farms</td>
</tr>
<tr>
<td>FW06-012</td>
<td>Interseeding Forage Kochia in Established CRP Land for Enhanced Livestock and Wildlife Utilization</td>
<td>$7,621</td>
<td>Ron Harper</td>
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<tr>
<td>FW05-022</td>
<td>Increasing the Profitability of Raspberries by Extending the Growing Season</td>
<td>$2,310</td>
<td>Clark Willis</td>
</tr>
<tr>
<td>FW04-014</td>
<td>Goats as a Weed Control Alternative in Small Acreage Ranchettes</td>
<td>$3,382</td>
<td>Kyle Christensen</td>
</tr>
</tbody>
</table>
**Tomato Disease Prevention and Production Enhancement**  
$2,095  
Aviva Maller-O’Niel  
Rick Heflebower  
Utah State University  

**Organic Dairy Transition in Northern Utah**  
$7,500  
Clark Israelsen  
Utah State University Cooperative Extension  

**Winter Cover Crop Experiment**  
$1,120  
Aviva Maller-O’Niel  

**Season Extension Experiment**  
$1,250  
Rick Heflebower  
Utah State University  

**Medusahead Control and Revegetation in Southern Cache County, UT**  
$6,414  
Guy Pulsipher  

**Southern Utah Forest Products Association Cooperative Marketing Act**  
$4,835  
Brian Cottam  

**The Original Cache Junction Families Popped Wheat**  
$2,801  
Wes Roundy  

**Composting Poultry Waste Inside High Rise Layer Houses**  
$4,992  
Mike Shepherd  

**Hovenweep Burn Reseeding and Demonstration Area**  
$4,000  
Mary Tso  

**Increased Forage Production during Alfalfa Rotation Years in Johnson Canyon, Utah. Biological Control of Scotch and Bull Thistle on Disturbed Alfalfa Pastures**  
$2,900  
Michael E. Noel  

**Alternative Cropping For the Navajo Reservation**  
$4,300  
Mark Maryboy  

**Pasture Aeration and Fertilizer Study**  
$2,480  
Ken Carter  

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**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 | Steve Young  
Utah State University  
Danielle Thiemann  
Utah State University  
Danielle Thiemann  
Utah State University  
Mark Holthouse  
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  |
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 Sutitarnnontr  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

ON FARM RESEARCH/PARTNERSHIP GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
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</thead>
<tbody>
<tr>
<td>OW19-343</td>
<td>Management strategies for Tomato spotted wilt virus and curtoviruses in Utah</td>
<td>$31,149</td>
<td>Claudia Nischwitz  Utah State University  Dr. Diane Alston  Utah State University  Richard Heflebower  Utah State University Extension - Washington County</td>
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<tr>
<td>OW19-346</td>
<td>Promoting crop diversification and soil health for cut flower production</td>
<td>$49,999</td>
<td>Dr. Melanie Stock  Utah State University  Dr. Brent Black  Utah State University  Dr. Daniel Drost  Utah State University  Dr. Larry Rupp  Utah State University</td>
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<tr>
<td>OW18-007</td>
<td>Supporting Natural Enemies of the Cabbage Aphid with Hedgerow Plantings</td>
<td>$48,554</td>
<td>Laura Horn  Wild Bee Project</td>
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<tr>
<td>OW14-036</td>
<td>Biochar Amendment to Enhance Tomato and Melon Productivity and Protect Against Phytophthora Root Rot Disease</td>
<td>$49,990</td>
<td>Marion Murray  Utah State University</td>
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<tr>
<td>OW13-005</td>
<td>Rangeland Restoration on the Channel Scablands of Eastern Washington</td>
<td>$49,931</td>
<td>Dr. Kip Panter  USDA-ARS-PPRL</td>
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<tr>
<td>OW12-020</td>
<td>Feedlot performance, feed efficiency, and profitability of cattle fed either a complete mixed ration or allowed to voluntarily select their diet.</td>
<td>$49,967</td>
<td>Beth Burritt  Utah State University</td>
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</tbody>
</table>

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).