**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 $359 million to more than 8,107 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.

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**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](http://sare.org/projects), and search for project number SW13-034.

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**SARE in Utah**

[western.sare.org/sare-in-your-state/utah](http://western.sare.org/sare-in-your-state/utah)

- **$7,070,807 in total funding**
- **84 grant projects** (since 1988)

For a complete list of grant projects state by state, go to [www.sare.org/state-summaries](http://www.sare.org/state-summaries)
SARE Grants in Utah

Total awards: **84 grants**

- **36 Research and Education**
- **11 Professional Development Program**
- **21 Farmer/Rancher**
- **9 Graduate Student**
- **6 On Farm Research/Partnership**
- **1 Research to Grass Roots**

Total funding: **$7,070,807**

- **$5,597,668** Research and Education
- **$751,960** Professional Development Program
- **$162,319** Farmer/Rancher
- **$218,111** 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](http://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](http://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](http://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 $7,070,807 grants to support 83 projects, including but not limited to, 35 research and/or education projects, 11 professional development projects and 21 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>
</table>
| SW22-942   | Using grazing-duration to balance: livelihoods, clean water, sage-grouse habitat, and sustainable forage in semi-arid rangelands | $328,329     | Dr. Kris Hulvey  
Dr. Taylor Payne  
Utah Department of Agriculture’s Grazing Improvement Program |
| SW22-941   | Identifying Stacked Conservation Practices that Optimize Water Use in Agriculture: Phase II | $350,000     | Matt Yost  
Dr. Earl Creech  
Neil Hansen  
Brigham Young University  
Dr. Bryan Hopkins  
BYU |
| SW21-927   | Dry Matter Intake and Feed Efficiency of Four Dairy Breeds in a Pasture-Based Heifer Development Program | $299,935     | Dr. Blair Waldron  
Dr. Earl Creech  
Dr. Clay Isom  
Dr. Ryan Larsen  
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 |
| SW21-923   | Developing sustainable strategies for nutrient and pest management on small-acreage strawberry farms | $349,736     | Dr. Jennifer Reeve  
Dr. Brent Black  
Dr. Kynda Curtis  
Dr. Robert Schaeffer  
Utah State University |
| SW19-909   | Identifying Stacked Conservation Practices that Optimize Water Use in Agriculture | $349,977     | Matt Yost  
Niel Allen  
Dr. Earl Creech  
Neil Hansen  
Brigham Young University  
Matthew Heaton  
Brigham Young University  
Dr. Bryan Hopkins  
BYU  
Ross Spackman  
Brigham Young University-Idaho |
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<th>Institution</th>
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<td>SW19-905</td>
<td>Can we manage public rangelands for producers and the environment?: Using</td>
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<td>Dr.Kris Hulvey</td>
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<td>grazing-duration to balance livelihoods, clean water, sage-grouse habitat,</td>
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<td></td>
<td>Taylor Payne</td>
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<td>and sustainable forage</td>
<td></td>
<td></td>
<td>Utah Department of Agriculture's</td>
</tr>
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<td>Grazing Improvement Program</td>
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<td>SW18-058</td>
<td>Establishing a protocol for receiving cattle that are at-risk of having a</td>
<td>$206,209</td>
<td>Dr.Kara Thornton</td>
<td>Utah State University</td>
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<td></td>
<td>mineral deficiency</td>
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<td>SW17-046</td>
<td>Grass-birdsfoot trefoil mixtures to improve the economic and environmental</td>
<td>$214,123</td>
<td>Dr.Blair Waldron</td>
<td>USDA-ARS</td>
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<td>sustainability of pasture-based organic dairies in the western U.S.</td>
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<td></td>
<td>Orchard Bee</td>
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<td>SW15-029</td>
<td>Improving Tart Cherry Sustainability</td>
<td>$230,154</td>
<td>Dr.Brent Black</td>
<td>Utah State University</td>
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<td>SW15-003</td>
<td>Training cattle to graze medusahead and avoid velvet lupine: A new tool to</td>
<td>$249,909</td>
<td>Dr.Juan Villalba</td>
<td>Utah State University</td>
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<td>sustain the economic viability of livestock operations in the Western US</td>
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<td>SW14-015</td>
<td>Integrated Byproduct Streams for Enhanced Viability of Combined Dairy Farm</td>
<td>$295,688</td>
<td>Dr.Donald McMahon</td>
<td>Western Dairy Center, Utah State</td>
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<td></td>
<td>and Milk Processing Operations</td>
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<td>University</td>
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<td>SW13-034</td>
<td>Onion Systems Management Strategies for Crop Nutrition, Weeds, Thrips, and</td>
<td>$169,299</td>
<td>Dr.Diane Alston</td>
<td>Utah State University</td>
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<td></td>
<td>Iris Yellow Spot Virus</td>
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<td>SW10-088</td>
<td>Grass-Legume pastures to increase economic and environmental sustainability</td>
<td>$209,907</td>
<td>Dr.Blair Waldron</td>
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<td>of livestock production</td>
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<td>SW08-076</td>
<td>Cultural Management of Onion Thrips and Iris yellow Spot Virus</td>
<td>$133,441</td>
<td>Dr.Jennifer Reeve</td>
<td>Utah State University</td>
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<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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<td>Dr.Brent Black</td>
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<td>SW07-014</td>
<td>Sustainable Vegetable Production: Screening Cover Crops for Water Use</td>
<td>$118,411</td>
<td>Dr.Daniel Drost</td>
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<td>SW04-060</td>
<td>Perennial Forage Kochia for Improved Sustainability of Grass-Dominated</td>
<td>$149,503</td>
<td>Dale Zobel</td>
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<td>Ecosystems</td>
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<td>SW02-013</td>
<td>Sustainable Water Management for Irrigated Asparagus</td>
<td>$23,014</td>
<td>Dr.Daniel Drost</td>
<td>Utah State University</td>
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<td>SW01-034</td>
<td>Assessment of Value Added Milk from Pasture-based Dairies</td>
<td>$78,000</td>
<td>Tilak Dhiman</td>
<td>Utah State University</td>
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<td>SW01-023</td>
<td>Biofumigants in Commercial Onion Production to Enhance Soil Nutrient</td>
<td>$134,317</td>
<td>Brad Geary</td>
<td>Brigham Young University</td>
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<td></td>
<td>Availability, Soil Quality, and Control of Weed, Nematode, and Disease Pests</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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</tbody>
</table>
| SW01-020    | Production of Drought-adapted Intermountain Native Plants Through Low-cost, In-containers for Emerging Western Markets | $71,686      | Roger Kjelgren  
Utah State University             |
| SW01-001    | 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 | $59,777      | Dale Zobel  
ADVS Dept., Utah State University |
| SW00-063    | Impact Assessment of Western Region SARE Projects                                                  | $38,500      | Dr. Rhonda Miller  
WSARE                           |
| SW00-040    | In-house composting in high-rise, caged layer facilities                                             | $60,975      | Richard Koenig  
Utah State University          |
| SW99-024B   | The Effects of Altering the Protein Efficiency of Lactating Dairy Cows on the Whole-Farm Nitrogen Efficiency of Dairy Farms | $19,184      | Richard Kohn  
Utah State University          |
| SW99-024A   | The Effects of Altering the Protein Efficiency of Lactating Dairy Cows on the Whole-Farm Nitrogen Efficiency of Dairy Farms. | $89,571      | Allen Young  
Utah State University          |
| SW99-024    | The Effects of Altering the Protein Efficiency of Lactating Dairy Cows on the Whole-farm Nitrogen Efficiency of Dairy Farms: Subcontract 1 | $19,184      | Allen Young  
Utah State University          |
| SW98-058    | Reducing Chemical Inputs in Arid-Climates Through Sustainable Orchard Management                   | $261,044     | Schuyler Seeley  
Utah State University          |
| SW96-032    | Identification of Management Practices and Cultivars for Organic Hard-Winter Wheat Production     | $93,911      | David Hole  
Utah State University          |
| SW95-015    | Public-Land Grazing Permittees Under Pressure: Sustainability of Coping Strategies on Private Land | $63,000      | D. Layne Coppock  
Utah State University          |
| SW95-006    | A Livestock Production System Less Reliant on the Use of Publicly Owned Lands                    | $60,000      | Randall D. Wiedmeier  
Utah State University          |
| LWD93-034   | Four Corners Navajo Nation Sustainable Agriculture Demonstration Project                         | $100,000     | Lyle G. McNeal  
Utah State University          |
| LWD93-006   | Navajo Nation Whole Farm/Ranch Sustainable Systems Demonstration Project                         | $14,000      | Lyle G. McNeal  
Utah State University          |
| LWD92-005   | Conference on the Science of Sustainable Agricultural Systems                                    | $15,500      | David Bezdicek  
Washington State University    |

**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>
| 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                    |

**PROFESSIONAL DEVELOPMENT PROGRAM GRANTS**
### WPDP22-014
Educating and training community leaders to implement water recycling approach in Utah’s landscapes and nursery industry

$93,568
Dr. Shital Poudyal
Utah State University
Dr. Kelly Kopp
Utah State University and CWEL
Candace Schaible
Utah State University Extension - Iron County
Katie Wagner, Ms.
Utah State University Extension
Josh Zimmerman, Mr.
Utah Department of Natural Resources

### WPDP22-002
Training Agriculture Educators in Utah using the Wyoming Ranch Tools site and Western SARE research projects.

$83,892
Bridger Feuz
Master Stockman Consulting
Hudson Hill
Master Stockman Consulting LLC.

### 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 Larson
Utah State University, Dept. of Applied Economics
Dr. Anastasia Thayer
Utah State University
Ruby Ward
Utah State University

### 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

<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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<tbody>
<tr>
<td>FW22-394</td>
<td>The Economics of Early Weaning and Early Breeding of Range Ewe Lambs</td>
<td>$22,200</td>
<td>Gene Peckham, Peckham Livestock</td>
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<td>FW22-400</td>
<td>Economic and Yield Potential of Hemp Waste Material in Specialty Mushroom Substrate</td>
<td>$24,282</td>
<td>Natasha Quinones-Rodriguez</td>
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<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</td>
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<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</td>
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<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</td>
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<td>FW06-027</td>
<td>Commercial Artichokes in the Intermountain West</td>
<td>$5,180</td>
<td>James Haggarty</td>
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<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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<td>FW05-022</td>
<td>Increasing the Profitability of Raspberries by Extending the Growing Season</td>
<td>$2,310</td>
<td>Clark Willis</td>
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<td>FW04-314</td>
<td>Organic Dairy Transition in Northern Utah</td>
<td>$7,500</td>
<td>Clark Israelsen</td>
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<td>FW04-037</td>
<td>Tomato Disease Prevention and Production Enhancement</td>
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<td>Aviva Maller-O’Niel</td>
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<td>FW04-014</td>
<td>Goats as a Weed Control Alternative in Small Acreage Ranchettes</td>
<td>$3,382</td>
<td>Kyle Christensen</td>
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<td>FW03-201</td>
<td>Winter Cover Crop Experiment</td>
<td>$1,120</td>
<td>Aviva Maller-O’Niel</td>
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<td>FW03-306</td>
<td>Season Extension Experiment</td>
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<td>Rick Heflebower</td>
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<td>FW00-317</td>
<td>The Original Cache Junction Families Popped Wheat</td>
<td>$2,801</td>
<td>Wes Roundy</td>
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<td>FW00-054</td>
<td>Southern Utah Forest Products Association Cooperative Marketing Act</td>
<td>$4,835</td>
<td>Brian Cottam</td>
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<td>FW00-019</td>
<td>Medusahead Control and Revegetation in Southern Cache County, UT</td>
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<td>FW99-080</td>
<td>Composting Poultry Waste Inside High Rise Layer Houses</td>
<td>$4,992</td>
<td>Mike Shepherd</td>
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<td>FW99-117</td>
<td>Hovenweep Burn Reseeding and Demonstration Area</td>
<td>$4,000</td>
<td>Mary Tso</td>
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</table>
Increased Forage Production during Alfalfa Rotation Years in Johnson Canyon, Utah. Biological Control of Scotch and Bull Thistle on Disturbed Alfalfa Pastures

Alternative Cropping For the Navajo Reservation

Pasture Aeration and Fertilizer Study

GRADUATE STUDENT GRANTS

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<tr>
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<td>GW22-230</td>
<td>Evaluating the Effectiveness of Range Riding at Reducing Conflicts Between Livestock and Native Carnivores Across the American West</td>
<td>$30,000</td>
<td>Dr. Julie Young&lt;br&gt;Utah State University&lt;br&gt;Rae Nickerson&lt;br&gt;Utah State University</td>
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<td>GW21-221</td>
<td>Enhancement of Samurai Wasp [Trissolcus japonicus (Ashmead)] for Biocontrol of Invasive Brown Marmorated Stink Bug [Halyomorpha halys (Stål)] in Utah</td>
<td>$30,000</td>
<td>Dr. Diane Alston&lt;br&gt;Utah State University&lt;br&gt;Curtis Rowley&lt;br&gt;Cherry Hill Farms&lt;br&gt;Dr. Lori Spears&lt;br&gt;Utah State University&lt;br&gt;Kate Richardson&lt;br&gt;Utah State University</td>
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<td>GW20-215</td>
<td>Identification of effective cover crop varieties and integrated management practices for weedy and invasive plant suppression in the Western US</td>
<td>$25,000</td>
<td>Dr. Corey Ransom&lt;br&gt;Utah State University&lt;br&gt;Danielle Thiemann&lt;br&gt;Utah State University</td>
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<td>GW18-106</td>
<td>Brown Marmorated Stink Bug in Utah’s Intermountain West</td>
<td>$24,999</td>
<td>Dr. Diane Alston&lt;br&gt;Utah State University&lt;br&gt;Mark Holthouse&lt;br&gt;Utah State University</td>
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<td>GW18-156</td>
<td>Utilizing Tannin-Containing Forages and Holos Software for Sustainable Beef Production in the Intermountain West</td>
<td>$20,204</td>
<td>Dr. Jennifer Reeve&lt;br&gt;Utah State University&lt;br&gt;Kathryn Slebodnik&lt;br&gt;Utah State University</td>
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<td>GW17-060</td>
<td>Navajo Spinach (Cleome Serrulata): Improving Seed Germination from Wild Populations Gathered across Native Lands of the Four Corners</td>
<td>$24,969</td>
<td>Dr. Daniel Drost&lt;br&gt;Utah State University&lt;br&gt;Reagan Wytsalucy&lt;br&gt;Utah State University</td>
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<td>GW15-046</td>
<td>Improved simple on-site soil quality testing for soils in the Intermountain West</td>
<td>$24,844</td>
<td>Dr. Jennifer Reeve&lt;br&gt;Utah State University&lt;br&gt;Esther Thomsen&lt;br&gt;USU</td>
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<td>GW13-006</td>
<td>Determination of gas emissions from manure sources in animal feeding operations</td>
<td>$25,000</td>
<td>Scott B. Jones&lt;br&gt;Utah State University&lt;br&gt;Dr. Rhonda Miller&lt;br&gt;WSARE&lt;br&gt;Pakorn Sutitarnnontr&lt;br&gt;Biological Engineering Department, Utah State University</td>
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<td>GW12-030</td>
<td>Contributions to pest suppression through predator phenology and functional diversity</td>
<td>$13,095</td>
<td>Dr. Ricardo Ramirez&lt;br&gt;Utah State University&lt;br&gt;Erica Stephens&lt;br&gt;Utah State University</td>
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ON FARM RESEARCH/PARTNERSHIP GRANTS
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<th>Funding</th>
<th>Principal Investigator(s)</th>
</tr>
</thead>
</table>
| 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 |
| 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 |
| 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**

$7,070,807