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 $389 million to more than 8,519 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...

Washington

Project Highlight: Sustainable Crop-Livestock Integration for the System Health in the Dryland Inland Pacific Northwest

In north-central Washington, along the Canadian border, dryland wheat production has been the dominate production system for a century using a wheat-fallow rotation. Some wheat producers use direct-seed tillage to improve soil health, but that can lead to increased pesticide and herbicide use. Producers are interested in economically sustainable strategies for reducing pesticide use and further improving soil health. Leslie Michel, Washington Department of Agriculture wanted to experiment with a more biologically intensive and sustainable management system, integrating cover crops, and livestock to improve soil health, suppress weeds and reduce pesticide use.

She worked with five producers to integrate cover crops and cattle onto their fields before their wheat or other grain cash crops were grown. The results were encouraging but mixed. Most soil health parameters didn’t change significantly, and soil moisture was significantly lower in the grazed cover-cropped areas than the control plots. Despite that, plant-stand establishment and plant height in the following cash crop was the same and yields were similar. The cows and calves grazed on the cover-cropped plots did well. Since the trials, farmers continue to experiment with cover crops and grazing.

For more information on these projects, see sare.org/projects, and search for project number OW17-051.

SARE in Washington

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

$12,492,230 in total funding

200 grant projects

(since 1988)

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

Total awards: 200 grants

- 51 Research and Education
- 27 Professional Development Program
- 74 Farmer/Rancher
- 12 On Farm Research/Partnership
- 26 Graduate Student
- 9 Research to Grass Roots
- 1 Education Only

Total funding: $12,492,230

- $8,301,718 Research and Education
- $1,643,435 Professional Development Program
- $735,565 Farmer/Rancher
- $589,038 On Farm Research/Partnership
- $533,724 Graduate Student
- $638,793 Research to Grass Roots
- $49,957 Education Only

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/washington

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/washington to learn more.

Chad Kruger
Center for Sustaining Agriculture & Natural Resources
(509) 335-4605
cekruger@wsu.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.
Washington has been awarded $12,492,230 grants to support 197 projects, including but not limited to, 48 research and/or education projects, 27 professional development projects and 74 producer-led projects. Washington 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>
| SW23-951  | Sweetpotatoes: Testing traits for increased market value and sustainable production for direct market farms in the maritime northwest | $313,125     | Laurel Moulton  
WSU Extension Regional Small Farms Program  
Dr.Carol Miles  
WSU Mount Vernon NWREC  
Clea Rome  
Washington State University  
Dr.Carol Miles  
WSU Mount Vernon NWREC  
Clea Rome  
Washington State University |
| SW22-937  | Water Quality Effects of Multifunctional Working Buffers for Seasonally Wet Farmland | $336,119     | Carrie Brausieck  
Snohomish Conservation District  
Gwendolyn Hannam  
Whidbey Island Conservation District |
| SW22-939  | Pre and Postharvest Disease Management of Pome Fruit to Support an Expanding Organic Production in the Pacific Northwest | $349,612     | Dr.Achour Amiri  
Washington State University  
Karina Gallardo  
Washington State University |
| SW22-943  | Forest-Cultivated Mushroom Production for Pacific Northwest Diversified Farms and Startups | $174,951     | Justin O’Dea  
Washington State University  
Eric Jones  
Oregon State University  
Patrick Shults  
Washington State University, ANR Extension Unit  
Kevin Zobrist  
Washington State University  
Dr.Carol Miles  
WSU Mount Vernon NWREC  
Clea Rome  
Washington State University |
| SW21-925  | Genomic Selection as a Risk Management Tool for U.S. Dairies                   | $349,876     | Dr.Holly Neibergs  
Washington State University  
Dr.Amber Adams-Progar  
Washington State University  
Dr.Joseph Dalton  
University of Idaho  
J. Shannon Neibergs  
Washington State University |
| SW21-926  | Diversifying Northwestern fields and palates                                 | $349,999     | Dr.Kevin Murphy  
Washington State University  
Stephen Bramwell  
WSU Dept. Crop and Soil Sciences  
Dr.Girish Ganjyal  
Washington State University - School of Food Science  
Justin O’Dea  
Washington State University |
Wigging out, then wigging in: removing earwigs from stone fruit and augmenting them in pome fruit

Dr. Rebecca Schmidt-Jeffris
USDA-ARS
Rick Hilton
Oregon State University
Nathan Moses-Gonzales
M3 Consulting Group
Dr. Louis Nottingham
Washington State University
Dr. Ashley Thompson
Oregon State University
Dr. Northfield Tobin
Washington State University

Ecological and Economic Benefit-Cost Comparison of Grazed and Ungrazed Prairie Land for Critical Species Protection in Western Washington

Stephen Bramwell
WSU Dept. Crop and Soil Sciences

Exploring relationships between pollinators and canola on the Palouse

Dr. David Crowder
Washington State University

Bovine-avian interactions on dairies: improving cow welfare and farm economic stability by implementing effective and sustainable pest bird deterrence methods

Dr. Amber Adams-Progar
Washington State University

Developing Agronomic Strategies to Optimize Production of Quinoa and Hulless Barley on No-till Farms in the Palouse Region of Idaho and Washington

Dr. Kevin Murphy
Washington State University

Increasing adoption of reduced tillage strategies on organic vegetable farms in the maritime

Doug Collins
WSU

Soil Quality Assessment of Long-Term Direct Seed to Optimize Production

James Harsh
Ann Kennedy
Washington State University/ARS

Evaluating the Western SARE Farmer/Rancher and AP Grant Programs: 2011 Survey Results from Grant recipients reflecting on their grant experience.

Dr. Danna L. Moore
Social and Economic Sciences Research Center

Selecting management practices and cover crops for reducing tillage, enhancing soil quality, and managing weeds in western WA

Doug Collins
WSU

Native Habitat Restoration, Sustainable IPM and Beneficial Insect Conservation

Dr. David James
Washington State University

Development of Organic Hop Production in the Pacific Northwest

Dr. Kevin Murphy
Washington State University

Integration of Microbial Pesticides in Pome-Fruit Production in the Pacific Northwest

Lawrence Lacey
USDA-ARS
Peter Landolt
USDA ARS

Assessing habitat and dietary switching by predators in a cover crop system

David Horton
USDA-ARS

Combining trap cropping and natural-chemical lures to attract and kill crucifer flea beetles

William Snyder
Washington State University
<table>
<thead>
<tr>
<th>Grant Code</th>
<th>Project Title</th>
<th>Amount</th>
<th>Principal Investigator(s)</th>
</tr>
</thead>
</table>
| SW07-055   | A sustainable distribution and evaluation program for selected honey bee stocks in the Pacific Northwest | $172,938 | Dr. Walter Sheppard  
Department of Entomology, Washington State University |
| SW07-503   | Supplemental R&E Funding from Innovative SARE Coordinator Programs | $24,842 | Dr. Carol Miles  
WSU Mount Vernon NWREC |
| SW06-013   | Enhancing Sustainability of Small Fruit Production in the Pacific Northwest Through Educating Producers on Consensus-derived Scouting and Decision-making Parameters | $170,929 | Craig MacConnell  
Washington State University  
Colleen Burrows  
WSU Whatcom County Extension |
| SW06-032   | Developing Role Models for Antibiotic Stewardship and Biosecurity on Dairy Farms | $125,145 | Ron Wohrle  
Tacoma Pierce County Health Dept  
Monica Raymond |
| SW06-066   | No-till Livestock-Grain Rotation for Diversified Farms | $125,122 | Dave Huggins  
USDA-ARS  
Stephen Bramwell  
WSU Dept. Crop and Soil Sciences  
Lynne Carpenter-Boggs  
Washington State University |
| SW05-129   | Oilseed Farm-to-Market Demonstration | $77,688 | Kimberly Morse  
Whitman Conservation District |
| SW04-113   | Interactions Among Organic Fertility, Mustard Green Manures, and Insect Biocontrol by Entomopathogenic Nematodes | $138,922 | Ekaterini Riga  
Washington State University  
William Snyder  
Washington State University |
| SW04-115   | Producing Organic Vegetable Seed | $154,293 | Matthew Dillon  
Organic Seed Alliance |
| SW04-136   | Rose habitats to enhance leafroller biological control in pome fruits | $105,149 | Thomas Unruh  
USDA-ARS |
| SW03-006   | Implementing Noxious Weed Control Through Multi-Species Grazing | $187,935 | Dr. Donald D. Nelson  
Washington State University |
| SW03-016   | Farming for the Future: Cultivating the Next Generation of Farmers | $145,800 | Brad Gaolach  
Washington State University Extension  
Dr. Marcia Ostrom  
School of Environment, Washington State University |
| SW03-018   | Mustard Green Manures for Potato Production | $45,653 | Andrew McGuire  
Washington State University Extension |
| SW03-040   | Assessing Soil Quality in Intensive Organic Management Systems | $107,696 | David Granatstein  
WSU Tree Fruit Research and Extension Center  
Craig Cogger  
WSU Research and Extension Center |
| SW03-046   | Development and Implementation of Integrated Pest Management of Burrowing Shrimp on Washington State Commercial Oyster Beds | $179,064 | Steven Booth  
Willapa Bay Grays Harbor Oyster Growers / PSI |
| SW03-101   | Integrating Biological Control into Cole Crop Production in the Pacific Northwest | $63,841 | William Snyder  
Washington State University |
<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| SW03-115  | Riparian Buffers: Function, Management, and Economic Implications for Agriculture | $242,035 | Jon Johnson  
Washington State University - Puyallup Res. & Ext. |
| SW01-039  | Management of Perennial Wheat as a Sustainable Alternative Cropping System in the Pacific Northwest | $63,641 | Stephen Jones  
Crop and Soil Science Dept. WSU |
| SW00-020  | Demonstrating, Evaluating, and Extending Diversified Direct-Seeded Cropping Systems for Grower Risk Management in the Inland Northwest | $53,687 | Diana Roberts, PhD  
WSU Extension  
Dennis Roe  
USDA-NRCS |
| SW99-011  | Enhancing biological control in mating disruption pear orchards by understory management | $110,497 | David Horton  
USDA-ARS |
| SW98-006  | Hybrid Poplars in Natural Buffer Systems for Agricultural Pollution Reduction and Income Enhancement | $157,721 | Barry C. Moore  
Washington State University |
| SW97-0011 | Sustainable Crop Production Practices with Mixed Leguminous and Non-leguminous Cover Crops | $118,000 | Shiou Kuo  
Washington State University (WSU)  
Research and Extension Center |
| SW97-034  | Enhancing No-Till and Conservation Farming Success Through the Use of Case Studies, Conferences, and Workshops to Facilitate Farmer to Farmer Learning in The Pacific Northwest | $125,842 | Tim Veseth  
Washington State University, Dept. of Crop and Soil Sciences |
| SW97-043  | Building Community Support for Agriculture on the Urban Edge | $113,000 | Dyvon Havens  
WSU/Skagit County Cooperative Extension |
| SW94-008  | Fall-Planted Cover Crops in Western Washington: A Model for Sustainability Assessment | $80,000 | Wilbur Anderson  
Washington State University (WSU), Puyallup Research and Extension Center |
| SW94-023  | Apple Production Without the Input of Neuroactive Insecticides | $268,000 | Jay F. Brunner  
Washington State University |
| LW89-017  | Silvopastoral Alternatives for Fruit Growers | $65,641 | Linda Hardesty, Ph.D  
Washington State University |
| LW88-002  | Options to Enhance the Sustainability of Dryland Cereal Cropping in the Northwest | $470,000 | David Granatstein  
WSU Tree Fruit Research and Extension Center |

**RESEARCH TO GRASS ROOTS GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| WRGR23-002| Building Access to Growing Mushrooms with the Squaxin Island Tribe | $71,126 | Jade Frolic  
Metamimicry  
Mack Kleiva  
Metamimicry |
| WRGR23-004| Supporting transition to integrated pest management in pear and apple with education and training in European earwig releases | $100,000 | Dr. Robert Orpet  
Washington State University |
<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| WRGR22-009     | Restoration and Resilience: Sustaining forest productivity in the face of current and emerging threats | $89,178      | Kirk Hanson  
Northwest Natural Resource Group  
Stacey Dixon  
Snohomish Conservation District  
Dr. Gregory Ettl  
University of Washington, School of Environmental and Forest Sci  
Tami Miketa  
Washington Department of Natural Resources Small Forest Landowne |
| WRGR21-009     | Building a grassland grazing association to support conservation grazing on working lands in southwest WA | $80,000      | Dr. Sarah Hamman  
Ecostudies Institute  
Stephen Bramwell  
WSU Dept. Crop and Soil Sciences  
Marty Chaney  
Natural Resources Conservation Service  
Christina Chaput  
Thurston County - Community Planning and Economic Development De  
Sarah Moorehead  
Thurston Conservation District  
Mary Root |
| WRGR21-003     | Increasing Farm Resiliency Through Implementing and Modeling Pollinator Habitat | $84,480      | Alison Nichols  
Pierce Conservation District  
Rusty Milholland  
Washington Farmland Trust |
| RGR20-001      | Beneficial Insects in the Vineyard                                             | $43,515      | Lynda Oosterhuis  
Walla Walla County Conservation District |
| RGR20-005      | The Soil Health Stewards: Establishing a Producer-Driven Soil Health Research Network in Northeastern Washington | $70,583      | Dean Hellie  
Stevens County Conservation District  
Alex Case-Cohen  
Pend Oreille Conservation District  
Dave Hedrick  
Ferry Conservation District  
Charlie Kessler  
Stevens County Conservation District  
Leslie Michel  
Washington State Department of Agriculture |
| WRGR19-02      | On-Farm Cover Crop Use, Evaluation, and Data Sharing with the Western Cover Crop Council | $49,983      | Doug Collins  
WSU  
Nick Andrews  
Oregon State University  
Lauren Golden  
University of Idaho  
Clare Sullivan  
Oregon State University |
| WRGR19-04      | The Peri-urban Agriculture Network: Strategies for Agricultural Viability in Urbanizing and High Land-Use-Pressure Regions | $49,928      | Justin O’Dea  
Washington State University  
Hannah Clark  
American Farmland Trust  
Dr. Lauren Gwin  
Oregon State University  
Dr. Laura Lewis  
Washington State University  
Nellie McAdams  
Rogue Farm Corps  
Lane Selman  
Oregon State University |

**PROFESSIONAL DEVELOPMENT PROGRAM GRANTS**
<table>
<thead>
<tr>
<th>Program Code</th>
<th>Program Title</th>
<th>Funding</th>
<th>Principal Investigator(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPDP21-030</td>
<td>Visualizing Microbial Agroecology</td>
<td>$100,000</td>
<td>Maren Friesen (Washington State University), Dr. Douglas Finkelnburg (University of Idaho), Dr. Christina Hagerty (Oregon State University), Dr. Clain Jones (Montana State University), Carol McFarland (Washington State University Farmers Network), Dr. Renee Petipas (Washington State University), Marissa Porter (John I Haas Inc), haiying tao (Washington State University)</td>
</tr>
<tr>
<td>WPDP21-008</td>
<td>Digital Agriculture Training Workshop: Managing Input Using On-farm Data</td>
<td>$76,365</td>
<td>haiying tao (Washington State University), Drew Lyon (MSU), Bruce Maxwell (MSU), Dr. Sanaz Shafian (University of Idaho)</td>
</tr>
<tr>
<td>PDP20-002</td>
<td>Farmland for the Next Generation Training in the Pacific Northwest</td>
<td>$74,903</td>
<td>Addie Candib (American Farmland Trust)</td>
</tr>
<tr>
<td>PDP20-003</td>
<td>The Soil Life Short Course: Empowering Ag Professionals to Recognize, Quantify, and Conserve Beneficial Soil Animals</td>
<td>$64,985</td>
<td>Eric Mader (The Xerces Society), Stephanie Frischie (The Xerces Society), Eric Lee-Mader (The Xerces Society), Corin Pease (The Xerces Society)</td>
</tr>
<tr>
<td>WPDP19-10</td>
<td>Enhancing the Understanding of Opportunities for Nutrient Recycling and Food Safety in the Pacific and Mountain Northwest</td>
<td>$75,000</td>
<td>Dr. Joe Harrison (Washington State University), Thomas Bass (Montana State University), Dr. Lide Chen (University of Idaho), Doug Collins (WSU), Dr. April Leytem (USDA ARS Northwest Irrigation and Soils Research), Dr. Rhonda Miller (WSARE), Dr. Ruijun Qin (Oregon State University), Elizabeth Whitefield (Washington State University Extension)</td>
</tr>
<tr>
<td>WPDP19-22</td>
<td>Advancing expertise in Honey Bee Stock Improvement Techniques: Stock Selection, Germplasm Cryopreservation and Instrumental Insemination</td>
<td>$71,500</td>
<td>Dr. Walter Sheppard (Department of Entomology, Washington State University), Susan Cobey (Washington State University), Dr. Brandon Hopkins (Washington State University), Dr. Timothy Lawrence (Washington State University)</td>
</tr>
<tr>
<td>WPDP19-23</td>
<td>Guiding Farmers to Legal Resiliency through Farm Law Education for Washington Ag Professionals</td>
<td>$16,362</td>
<td>Rachel Armstrong (Farm Commons), Libby Reed (SnoValley Tilth)</td>
</tr>
<tr>
<td>Project ID</td>
<td>Project Title</td>
<td>Amount</td>
<td>PI and Institution</td>
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<tr>
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</tr>
</tbody>
</table>
| WPDP19-09 | Inland Northwest Pasture Calendar for Agricultural Professionals             | $74,623 | Dr. Steve Fransen, PhD  
Washington State University  
Sergio Arispe, PhD  
Oregon State University  
Mylen Bohle  
Oregon State University  
Brendan Brazee  
USDA-NRCS  
Tim Deboodt  
Oregon State University  
Scott Duggan  
Oregon State University  
Richard Fleenor  
USDA-NRCS  
Leticia Henderson  
Oregon State University  
Tipton Hudson  
Washington State University  
Scott Jensen  
University of Idaho  
Rich Keenig, PhD  
Washington State University  
Dr. Don Llewellyn  
Washington State University Extension  
Ian McGregor, M.S.  
Oregon State University, Klamath Basin Research and Extension Ce  
J. Shannon Neibergs  
Washington State University  
Steve Norberg, PhD  
Washington State University  
Cory Owens, M.S.  
Natural Resources Conservation Service  
Glenn Shewmaker  
University of Idaho  
Guojie Wang  
Oregon State University - Eastern Oregon Agricultural Research C  
Carmen Willmore  
University of Idaho Extension |
| WPDP19-05 | In-Service Training for Biodegradable Mulch                                   | $74,580 | Dr. Carol Miles  
WSU Mount Vernon NWREC |
| EW18-016  | Healthy Soil, Healthy Region                                                  | $67,692 | Leslie Michel  
Okanogan Conservation District |
| EW17-021  | Westside Pasture Calendar for Agricultural Professionals in the Pacific Northwest (PNW) | $74,555 | Dr. Steve Fransen, PhD  
Washington State University |
| EW16-021  | Climate Adaptation Training for Foresters                                     | $58,461 | Kirk Hanson  
Northwest Natural Resource Group |
| EW15-012  | Implications of Water Impacts from Climate Change: Preparing Agricultural Educators and Advisors in the Pacific Northwest | $75,000 | Dr. Joe Harrison  
Washington State University |
| EW12-026  | Technical Service Provider Training to Improve Services for Family Forest Landowners | $43,874 | Lindsay Malone  
Northwest Natural Resource Group |
| EW11-019  | Forage and Pasture Educational Program for Professionals in the Northwest     | $71,058 | Glenn Shewmaker  
University of Idaho |
<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>EW10-016</td>
<td>Forestry Certification Training for Agency Field Staff</td>
<td>$48,000</td>
<td>Lindsay Malone, Northwest Natural Resource Group</td>
</tr>
<tr>
<td>EW10-017</td>
<td>Organic Seed, Soils, and Sustainable Business: Three Intensives and an Online Tutorial</td>
<td>$76,712</td>
<td>Micaela Colley, Organic Seed Alliance</td>
</tr>
<tr>
<td>EW08-005</td>
<td>Training and Connecting Agricultural Professionals Through an Immersion Field Course and the Cultivating Success Instructor Training Program in Washington</td>
<td>$29,599</td>
<td>Catherine Perillo, Washington State University</td>
</tr>
<tr>
<td>EW07-009</td>
<td>Western Region Dairy Odor and Air Quality Education</td>
<td>$89,236</td>
<td>Dr. Pius Ndegwa, Washington State University</td>
</tr>
<tr>
<td>EW04-015</td>
<td>Sustainable Small-Acreage Farming from Field to Table</td>
<td>$57,220</td>
<td>Debra Kollock, WSU Stevens County Extension</td>
</tr>
<tr>
<td>EW03-003</td>
<td>Feeding Management in Nutrition and Nutrient Management for Livestock - Poultry Professionals</td>
<td>$99,635</td>
<td>Lynn Vanwieringen, Washington State University</td>
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<tr>
<td>EW02-003</td>
<td>Sustainable Agriculture and Education Grant</td>
<td>$19,500</td>
<td>Judy Janett, Washington Ag in the Classroom, John Brugger, USDA Rural Business Cooperative Service, Shirz Vira, USDA NRCS, Cheryl Dehaan, Whatcom Farm Friends, Diane Gasaway, Northwest Cooperative Development Center</td>
</tr>
<tr>
<td>EW01-006</td>
<td>Noxious Weed Control Through Multi-Species Grazing</td>
<td>$64,501</td>
<td>Dr. Donald D. Nelson, Washington State University</td>
</tr>
<tr>
<td>EW96-004</td>
<td>Extension Faculty Learning with Farmers - A Seminar Series on Sustainable Agriculture</td>
<td>$36,424</td>
<td>Diana Roberts, PhD, WSU Extension</td>
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</tbody>
</table>

**FARMER/RANCHER GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
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<tbody>
<tr>
<td>FW22-389</td>
<td>Investigating the Addition of Clay to Feedstocks for Increased Nutrient Density and Carbon Stabilization in Compost</td>
<td>$24,745</td>
<td>David Bill, Midnight’s Farm</td>
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<tr>
<td>FW21-373</td>
<td>Adoption of Rootstocks for Sustainable Wine Grape Production in Columbia Valley, Washington</td>
<td>$25,000</td>
<td>Kevin Judkins, Inland Desert Nusery, Inc.</td>
</tr>
<tr>
<td>FW21-374</td>
<td>Ecological and Economic Impacts of Transition to an Apple/Hay Agroforestry System</td>
<td>$24,818</td>
<td>Nichlos Pate, Raising Cane Ranch</td>
</tr>
<tr>
<td>Project Number</td>
<td>Description</td>
<td>Budget</td>
<td>Principal Investigator and Location</td>
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<tr>
<td>FW20-360</td>
<td>Minimizing inputs with fall seeded cover crop mixes in the high precipitation zone of the Palouse Region</td>
<td>$19,998</td>
<td>Frank Wolf, Lester Wolf Farms</td>
</tr>
<tr>
<td>FW20-362</td>
<td>Manure and Pasture Management to Reduce Swine Parasites in Western Washington Organic Pastured Pork Production</td>
<td>$19,899</td>
<td>Katie &amp; Matthew Pencke &amp; McDermott, Alluvial Farms</td>
</tr>
<tr>
<td>FW19-347</td>
<td>Sheep Grazing in Potato Production Systems</td>
<td>$16,300</td>
<td>Dr. Jessica Gigot, Harmony Fields</td>
</tr>
<tr>
<td>FW19-353</td>
<td>Optimizing Amendment and Seeding Rate for Heritage Spring Wheat Production in Western Washington</td>
<td>$19,432</td>
<td>Nathan Hodges, Barn Owl Bakery &amp; Heritage Grains</td>
</tr>
<tr>
<td>FW18-030</td>
<td>Does More Diverse Plant Architecture in Pollinator Habitats Influence Native Pollinator and Beneficial Insect Abundance and Diversity?</td>
<td>$20,000</td>
<td>Susan Fluegel, Grey Duck Garlic, LLC</td>
</tr>
<tr>
<td>FW18-021</td>
<td>Evaluating the impact of aeration and over-seeding on soil health, forage quality, and forage quantity in perennial hay pastures in Western Washington</td>
<td>$19,948</td>
<td>Adam Greene, Oak Knoll Farm</td>
</tr>
<tr>
<td>FW18-041</td>
<td>A rapid method to screen oyster broodstock for resistance to Ostreid Herpesvirus</td>
<td>$25,000</td>
<td>David Nisbet, Goosepoint Oyster Co.</td>
</tr>
<tr>
<td>FW18-039</td>
<td>Quantifying the impact of feed hydration and fermentation on poultry nutrition and farm economics</td>
<td>$19,814</td>
<td>Matt Steinman, Foothill Farms</td>
</tr>
<tr>
<td>FW17-015</td>
<td>Development of a Locally-Adapted Apple Rootstock for the Maritime Northwest</td>
<td>$13,988</td>
<td>Eric Lee-Mader, Eric Lee-Mader</td>
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<td>FW16-020</td>
<td>Cryogenic Preservation of Oyster Gametes to Improve Hawaii and West Coast Oyster Stocks</td>
<td>$25,000</td>
<td>David Nisbet, Goosepoint Oyster Co.</td>
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<td>FW15-024</td>
<td>Do Soil and Foliar Applied Minerals Improve Soil Health, Nutrient Density, and Flavor in organic Blueberries</td>
<td>$14,969</td>
<td>Larry Bailey, Clean Food Farm</td>
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<td>FW15-044</td>
<td>Cover Crops for Hop Production in Semi-arid Yakima Valley, Washington</td>
<td>$15,144</td>
<td>Sarah Del Moro, N/A</td>
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<td>FW14-012</td>
<td>Natural predators as a means to limit wildlife damage at the dairy-fruit interface</td>
<td>$24,287</td>
<td>John Steensma, Steensma Dairy</td>
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<td>FW12-035</td>
<td>Comparing Organic No till with Conventional Tillage methods when Direct Seeding Vegetables and Incorporating Cover Crops</td>
<td>$14,701</td>
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<td>FW12-074</td>
<td>Study and Control of Pseudomonas Syringae on Blueberry Plants</td>
<td>$14,120</td>
<td>Parmjit Uppal, Fraser Valley Packers (US) Inc.</td>
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<td>FW10-062</td>
<td>NOP Compliant Antimicrobial Rinses on Leafy Greens and the Effect on Foodborne Pathogen Indicator Presence</td>
<td>$14,944</td>
<td>Dan Hulse, Tahoma Farms</td>
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| FW10-069     | Cover cropping and seasonal landscape fabric mulch for weed and mummy berry control in organic blueberries | $12,138 | Amy Turner  
Blue Dog Farm  
Mylind Fawcett  
WSARE |
| FW09-016     | Local Farms, Health Kids - The Small-Scale, Sustainable Producer's Role in This Legislatively Mandated Opportunity | $14,600 | Laura Plaut  
Common Threads Farm |
| FW08-007     | Integrated Nutrient Management for Small Swine and Sheep Production            | $8,905  | Bruce Dunlop  
Lopez Island Farm |
| FW07-008     | Farm Duckweed Harvesting                                                      | $8,519  | Jerry Darnall |
| FW07-009     | Leafy Spurge Management in Shrub Steppe Rangeland                             | $10,000 | Craig Madsen  
Healing Hooves LLC |
| FW06-002     | Evaluation of Digested Manure on Potatoes and Raspberries                     | $19,575 | Darryl Vander Haak  
Vander Haak Dairy |
| FW06-007     | Rhizoctonia and Soil Compaction Under Direct Seed                             | $6,894  | Ron Jirava |
| FW06-018     | Evaluation of Environmentally Sustainable Methods to Control Dagger Nematode Infestation in Blueberry Production | $9,842  | Michael White |
| FW06-020     | Strategies for Building Regional Markets for Pastured Poultry Growers         | $11,360 | Jamie Henneman  
Lazy Lightning Ranch |
| FW06-309     | Organic Seed Producer Database                                                 | $15,960 | Matthew Dillon  
Organic Seed Alliance |
| FW06-311     | Youth Entrepreneurs in Agriculture                                            | $7,739  | Joan Vance  
Washington State University |
| FW06-325     | On-farm Evaluation and Demonstration of Small-scale Biogas Technology         | $20,000 | Chad Kruger  
Washington State University |
| FW05-025     | Determining the Feasibility of Compost Production from Agronomic Waste and Wood Byproducts through Mushroom Cultivation Techniques for the Small Farmer | $2,419  | Christopher Tchudi  
Fido's Farm |
| FW04-006     | Agricultural Science Class: Principles of Ecological Food Production         | $7,441  | Henning Sehmsdorf  
S&S Homestead Farm |
| FW04-040     | Mobile Poultry Processing Feasibility Study                                   | $9,637  | Louis Sukovaty  
Crown 'S' Ranch |
<p>| FW04-105     | Felted Wool for Orthotic Use                                                  | $10,382 | Jayne Deardorff |
| FW04-116     | Producer, Retail, Consumer Demo Program for Fresh Pears                      | $14,907 | Sherry Amos |</p>
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<td>Bio-Intensive Forage and Hay Production</td>
<td>$7,499</td>
<td>Dr. Steve Fransen, PhD</td>
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<td>FW03-106</td>
<td>Application to Develop a Business Plan for a USDA-certified Mobile Livestock Unit</td>
<td>$14,988</td>
<td>Carey Hunter</td>
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<td>FW03-202</td>
<td>Controlling Flea Beetles in Arugula Using Traps and Sprays</td>
<td>$7,500</td>
<td>Andrew Stout</td>
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<td>FW03-308</td>
<td>Planned Grazing as a Means of Enhancing the Ecosystem and Improving Range for Big Game and Livestock</td>
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<td>FW03-317</td>
<td>Use of Interseeding Grass Technology to Reduce Nitrate Concentration in New Seeding Grass Silage</td>
<td>$6,000</td>
<td>Dr. Joe Harrison</td>
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<td>FW02-019</td>
<td>Mechanical Introduction of Soil Nutrients through a mulch layer</td>
<td>$12,400</td>
<td>Peter Savage</td>
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<td>FW02-037</td>
<td>South Whidbey Tilth Forest Restoration for Sustainable Wildcraft Production</td>
<td>$3,000</td>
<td>Michael Seraphinoff</td>
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<td>FW02-038</td>
<td>On-farm composting for residue managementin Spokane County, WA</td>
<td>$14,992</td>
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<td>FW02-043</td>
<td>Alternative Crops to Sustain Native Alfalfa Pollinators</td>
<td>$4,500</td>
<td>Mark Wagoner</td>
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<td>FW01-019</td>
<td>Tilth-Agroforestry Niche Demonstration Project - Native Forest Restoration for Sustainable Wildcraft Production on the Farm</td>
<td>$4,500</td>
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<td>FW01-052</td>
<td>Application of Oyster Shell Mulch for Lavender Production</td>
<td>$6,000</td>
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<td>FW01-081</td>
<td>Sustainable Small-Scale Grain Raising</td>
<td>$2,040</td>
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<td>On-Farm Biodiesel Production from Waste Vegetable Oil</td>
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<td>Rotating Vessel Composter for Small Farms</td>
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<td>Alternative Crops No-Till Field Trials</td>
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<td>FW00-041</td>
<td>Demonstration Project to Promote Niche Farming in Heirloom Vegetable Varieties</td>
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<td>FW99-013</td>
<td>Options for Asparagus Cover Crops</td>
<td>$3,817</td>
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<td>FW99-036</td>
<td>Managing Grasshoppers in Tree Fruit Using Pastured Poultry</td>
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<td>Compost Thermal Subsidies in Commercial Passive Solar Greenhouse Design</td>
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<td>Harvesting Alternatives for Burdock as an Alternative Crop in an Organic Production System</td>
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<td>FW98-002</td>
<td>Baby Corn-Alternative Crop for Southwest Washington</td>
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<td>FW98-067</td>
<td>Low Cost Vacuum Silage in the Pacific Northwest</td>
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<td>Alternative Techniques for Control of Apple Replant Disease</td>
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<td>FW97-019</td>
<td>Vegetation Management on Small Acreages Using Short Duration, Intensive, Rotational Grazing</td>
<td>$2,043</td>
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<td>FW97-033</td>
<td>Release of the Predator Mite, Amblyseius fallacis to Control Spider Mites in Red Raspberries and Reduce Reliance on Pesticides</td>
<td>$1,850</td>
<td>Brian Cieslar, Curt Mayberry Farm</td>
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<td>Dryland Corn Production in Columbia and Walla Walla Counties (WA)</td>
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<td>Improved Nitrogen Utilization and Herbicide Reduction Through Relay Intercropping</td>
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<td>Weed Control in Organic Apple Orchard</td>
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<td>Alternative Crop Production in a &quot;Direct Seed Annual Crop Intense Rotation Program&quot;</td>
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<td>Organic vs. Synthetic Fertilizer-Container Nursery Trials</td>
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<td>FW95-057</td>
<td>Intensive Grazing in Asian Pear Orchards</td>
<td>$899</td>
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<td>Relay/Cover Crop for Corn</td>
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<td>GW23-245</td>
<td>Overcoming Roadblocks to IPM Adoption in Washington Pears</td>
<td>$29,096</td>
<td>Dr. Louis Nottingham Washington State University</td>
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<td>Overcoming Roadblocks to IPM Adoption in Washington Pears</td>
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<td>Molly Sayles Washington State University</td>
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<td>GW22-238</td>
<td>Significance of seedborne Stemphylium vesicarium in Stemphylium leaf spot of spinach</td>
<td>$25,322</td>
<td>Dr. Lindsey du Toit Washington State University</td>
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<td>GW22-238</td>
<td>Significance of seedborne Stemphylium vesicarium in Stemphylium leaf spot of spinach</td>
<td>$25,322</td>
<td>Kayla Spawton Washington State University Washington State University, Northwestern Washington Research and Extension Center</td>
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<td>GW21-228</td>
<td>Understanding the impact of the peaola microbiome on soil fertility, crop yield, and plant nitrogen content</td>
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<td>GW20-208</td>
<td>Enhancing the Ecological and Socioeconomic Benefits of Silvopasture Systems in Washington State through Participatory Research and Education</td>
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<td>Dr. Marcia Ostrom School of Environment, Washington State University</td>
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<td>GW20-208</td>
<td>Enhancing the Ecological and Socioeconomic Benefits of Silvopasture Systems in Washington State through Participatory Research and Education</td>
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<td>GW18-039</td>
<td>Assessment of the Positive and Negative Effects of Earwigs in Apple Orchards</td>
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<td>Dr. David Crowder Washington State University</td>
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<td>GW18-039</td>
<td>Assessment of the Positive and Negative Effects of Earwigs in Apple Orchards</td>
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<td>Dr. Robert Orpet Washington State University</td>
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<td>GW18-034</td>
<td>Understanding the Molecular Basis of Plant Response to Organic Versus Conventional Fertilizer Using A Metatranscriptomic Approach</td>
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<td>Amit Dhingra Washington State University</td>
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<td>Seanna Hewitt Washington State University</td>
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<td>GW18-152</td>
<td>Rapid Estimation of Straw Residue Decomposition in Winter Wheat</td>
<td>$24,627</td>
<td>Dr. Arron Carter Washington State University</td>
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<td>GW18-152</td>
<td>Rapid Estimation of Straw Residue Decomposition in Winter Wheat</td>
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<td>Nathan Nielsen Washington State University</td>
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<td>GW17-058</td>
<td>Effects of Subsurface Micro-irrigation on Water Use Efficiency and Grapevine Growth</td>
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<td>Effects of Subsurface Micro-irrigation on Water Use Efficiency and Grapevine Growth</td>
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<td>GW17-019</td>
<td>Biodegradable plastic mulches: performance, degradation, and impacts on agroecosystems</td>
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<td>GW17-021</td>
<td>Introducing Organic Quinoa and Grain Cropping Systems in the Palouse</td>
<td>$24,954</td>
<td>Dr. John Reganold Washington State University</td>
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<td>GW17-021</td>
<td>Introducing Organic Quinoa and Grain Cropping Systems in the Palouse</td>
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<td>Evaluating the exclusion and non-target effects of shade netting on apple orchards</td>
<td>$23,678</td>
<td>Dr. Elizabeth Beers Washington State University</td>
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<td>GW17-025</td>
<td>Evaluating the exclusion and non-target effects of shade netting on apple orchards</td>
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<td>Adrian Marshall WSU Tree Fruit Research Extension Center</td>
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GW16-021 Identification of peony diseases in the Pacific Northwest and Alaska
$24,979
Gary Chastagner
Washington State University
Andrea Garfinkel
Washington State University

GW16-033 Assessing the effects of non-honeybee insects on pollination in diversified organic farms
$24,871
Dr. David Crowder
Washington State University
Rachel Olsson
Washington State University

GW16-055 Seed Transmission and Management of White Leaf Spot and Light Leaf Spot Pathogens in Brassicas in the Pacific Northwest
$15,675
Dr. Lindsey du Toit
Washington State University
Shannon Carmody
Washington State University

GW15-012 Climate-Sustaining Agriculture: Carbon Footprints of Organic and Conventional Onions and Wheat
$24,980
Lyne Carpenter-Boggs
Washington State University
Cornelius Adewale
Washington State University

GW15-022 Promoting Native Bee Health and Pollination Services on Diversified Organic Produce Farms
$24,918
Dr. David Crowder
Washington State University
Elias Bloom
Washington State University

GW14-011 Old World Honey Bee Populations: A Genetic Resource for U.S. Honey Bee Breeding
$20,865
Dr. Walter Sheppard
Department of Entomology, Washington State University
Megan A. Taylor
Washington State University

GW11-005 Combining Trap Cropping with Companion Planting to Control the Crucifer Flea Beetle
$8,270
William Snyder
Washington State University
Joyce Parker
Washington State University Department of Entomology

GW10-003 A Proactive Approach to Understanding Resistance to Novel OP alternatives as a Strategy for Sustainable Management of Obliquebanded Leafroller
$21,239
Jay F. Brunner
Washington State University
Dr. Ashfaq Sial
Washington State University
Ashfaq Sial
Washington State University

GW09-015 Habitats and landscape interactions of tachinid parasitoids important in biological control of leafrollers (Lepidoptera: Tortricidae) in central Washington tree fruit
$11,910
Vincent Jones
Washington State University
Nik Wiman
Washington State University Tree Fruit Research and Extension Center

GW09-021 Sustainable root rot and soil management in raspberry
$17,628
Thomas Walters
Washington State University-NWREC
Jessica Gilgot
WSU

GW08-001 Using Bluegrass Straw to Modulate the Elevated Dietary Crude Protein and Phosphorus Caused by Including Distillers Grains and Solubles in Dairy Diets
$14,914
Ronald Kincaid
Washington State University
Stacey Cobb
Washington State University
Adrina Huisman
Washington State University

GW08-005 Characterization of soils properties associated with suppression of Fusarium wilt in spinach seed crops, and development of a quantitative molecular assay for Fusarium oxysporum f. sp. spinaciae.
$19,960
Dr. Lindsey du Toit
Washington State University
Emily Catch
Washington State University

GW06-011 Soil Community Structure, Function, and Spatial Variation in an Organic Agroecosystem
$10,000
Doug Collins
WSU
Craig Cogger
WSU Research and Extension Center
ON FARM RESEARCH/PARTNERSHIP GRANTS

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<td>On-farm evaluation of shade cloth as a tool for reducing heat-related losses in tomato seed production</td>
<td>$74,757</td>
<td>Jared Zystro&lt;br&gt;Organic Seed Alliance</td>
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<td>OW23-386</td>
<td>Plant sap analysis as a diagnostic tool for winter wheat nutrient use efficiency</td>
<td>$74,929</td>
<td>Ryan Boylan&lt;br&gt;Palouse Conservation District</td>
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<td>OW19-342</td>
<td>Investigating the elasticity of biochar: manure handling, compost feedstock, soil amendment and carbon storage.</td>
<td>$49,988</td>
<td>Dr. Nathan Stacey&lt;br&gt;Washington State University&lt;br&gt;Doug Collins&lt;br&gt;WSU&lt;br&gt;Alana Siegner&lt;br&gt;University of California, Berkeley</td>
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<td>OW19-350</td>
<td>Seedling Release and Young-Stand Thinning as a Way to Increase Forest Health and Production</td>
<td>$49,884</td>
<td>Kirk Hanson&lt;br&gt;Northwest Natural Resource Group&lt;br&gt;Lindsay Malone&lt;br&gt;Northwest Natural Resource Group</td>
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<td>OW18-018</td>
<td>Surveying the distribution of introduced wireworms in Washington State and evaluating trap cropping as a low-cost management option</td>
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<td>Dr. Brook Brouwer&lt;br&gt;Washington State University Extension</td>
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<td>OW17-051</td>
<td>Sustainable Crop-Livestock Integration for the System Health in the Dryland Inland Pacific Northwest</td>
<td>$47,344</td>
<td>Leslie Michel&lt;br&gt;Okanogan Conservation District</td>
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<td>OW15-008</td>
<td>Optimizing nitrogen management on organic and biologically-intensive farms</td>
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<td>Doug Collins&lt;br&gt;WSU</td>
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<td>OW14-003</td>
<td>Accelerating Adoption of Sustainable Practices for Small Forest Producers</td>
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<td>Lindsay Malone&lt;br&gt;Northwest Natural Resource Group</td>
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<td>OW12-030</td>
<td>Companion and Cover Cropping for Eastern Washington Dryland Grain Farms</td>
<td>$49,986</td>
<td>Diana Roberts, PhD&lt;br&gt;WSU Extension</td>
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<tr>
<td>OW11-315</td>
<td>Composted Horse Manure and Stall Bedding Pilot Project</td>
<td>$39,410</td>
<td>Caitlin Price Youngquist&lt;br&gt;Snohomish Conservation District</td>
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<td>OW10-310</td>
<td>Sustainable Alternatives to the Conservation Reserve Program (CRP)</td>
<td>$50,000</td>
<td>Dr. Donald D. Nelson&lt;br&gt;Washington State University&lt;br&gt;Stephen Van Vleet&lt;br&gt;WSU</td>
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<td>FW03-302</td>
<td>Determination of Whole Farm Nutrient Flows on a Dairy Operation</td>
<td>$6,000</td>
<td>Dr. Joe Harrison&lt;br&gt;Washington State University</td>
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EDUCATION ONLY GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
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<tr>
<td>EDS19-13</td>
<td>Southern Organic Seed Summit</td>
<td>$49,957</td>
<td>Jared Zystro&lt;br&gt;Organic Seed Alliance</td>
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Total funding from the USDA SARE program to Washington
$12,492,230

For further information on projects, contact Western SARE at (406) 994-4789 or wsare@montana.edu.
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