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 8,542 initiatives.

SARE is grassroots with far-reaching impact

Four regional councils of expert practitioners set priorities and make grants in every state and island protectorate.

SARE communicates results

SARE shares project results by requiring grantees to conduct outreach and grower engagement, and by maintaining an online library of practical publications, grantee-produced information products and other educational materials.

SARE: Advancing the Frontier of Sustainable Agriculture in...

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

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

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

This report includes summaries of competitive grant programs only. Some competitive grant programs that are no longer offered may be included or excluded from the totals in this report depending on the grant program and SARE region.
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.

<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 |
| 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  
Dr.Eric Jones  
Oregon State University  
Patrick Shults  
Washington State University, ANR Extension Unit  
Kevin Zobrist  
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

**SW20-916**  
- 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  
- $348,733

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

**SW18-103**  
- Stephen Bramwell  
- WSU Dept. Crop and Soil Sciences  
- $248,229

### Exploring relationships between pollinators and canola on the Palouse

**SW18-031**  
- Dr. David Crowder  
- Washington State University  
- $207,134

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

**SW16-013**  
- Dr. Amber Adams-Progar  
- Washington State University  
- $238,105

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

**SW15-061**  
- Dr. Kevin Murphy  
- Washington State University  
- $223,119

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

**SW14-013**  
- Doug Collins  
- WSU  
- $249,949

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

**SW12-122**  
- James Harsh  
- Washington State University/ARS  
- $193,448

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

**SW11-00B**  
- Dr. Danna L. Moore  
- Social and Economic Sciences Research Center  
- $22,035

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

**SW11-072**  
- Doug Collins  
- WSU  
- $196,626

### Native Habitat Restoration, Sustainable IPM and Beneficial Insect Conservation

**SW10-052**  
- Dr. David James  
- Washington State University  
- $191,106

### Development of Organic Hop Production in the Pacific Northwest

**SW09-050**  
- Dr. Kevin Murphy  
- Washington State University  
- $123,465

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

**SW08-049**  
- Lawrence Lacey  
- USDA-ARS  
- Peter Landolt  
- USDA ARS  
- $120,598

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

**SW08-052**  
- David Horton  
- USDA-ARS  
- $121,092

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

**SW08-102**  
- William Snyder  
- Washington State University  
- $191,868
<table>
<thead>
<tr>
<th>Project Code</th>
<th>Description</th>
<th>Funding</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>
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<th>Project Leaders</th>
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<tbody>
<tr>
<td>SW03-115</td>
<td>Riparian Buffers: Function, Management, and Economic Implications for Agriculture</td>
<td>$242,035</td>
<td>Jon Johnson Washington State University - Puyallup Res. &amp; Ext.</td>
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<td>SW01-039</td>
<td>Management of Perennial Wheat as a Sustainable Alternative Cropping System in the Pacific Northwest</td>
<td>$63,641</td>
<td>Stephen Jones Crop and Soil Science Dept. WSU</td>
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<tr>
<td>SW00-020</td>
<td>Demonstrating, Evaluating, and Extending Diversified Direct-Seeded Cropping Systems for Grower Risk Management in the Inland Northwest</td>
<td>$53,687</td>
<td>Diana Roberts, PhD WSU Extension Dennis Roe USDA-NRCS</td>
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<tr>
<td>SW99-011</td>
<td>Enhancing biological control in mating disruption pear orchards by understory management</td>
<td>$110,497</td>
<td>David Horton USDA-ARS</td>
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<tr>
<td>SW98-006</td>
<td>Hybrid Poplars in Natural Buffer Systems for Agricultural Pollution Reduction and Income Enhancement</td>
<td>$157,721</td>
<td>Barry C. Moore Washington State University</td>
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<td>SW97-011</td>
<td>Sustainable Crop Production Practices with Mixed Leguminous and Non-leguminous Cover Crops</td>
<td>$118,000</td>
<td>Shiou Kuo Washington State University (WSU) Research and Extension Center</td>
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<tr>
<td>SW97-034</td>
<td>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</td>
<td>$125,842</td>
<td>Tim Veseth Washington State University, Dept. of Crop and Soil Sciences</td>
</tr>
<tr>
<td>SW97-043</td>
<td>Building Community Support for Agriculture on the Urban Edge</td>
<td>$113,000</td>
<td>Dyvon Havens WSU/Skagit County Cooperative Extension</td>
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<tr>
<td>SW94-008</td>
<td>Fall-Planted Cover Crops in Western Washington: A Model for Sustainability Assessment</td>
<td>$80,000</td>
<td>Wilbur Anderson Washington State University (WSU), Puyallup Research and Extension Center</td>
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<tr>
<td>SW94-023</td>
<td>Apple Production Without the Input of Neuroactive Insecticides</td>
<td>$268,000</td>
<td>Jay F. Brunner Washington State University</td>
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<tr>
<td>LW89-017</td>
<td>Silvopastoral Alternatives for Fruit Growers</td>
<td>$65,641</td>
<td>Linda Hardesty, Ph.D Washington State University</td>
</tr>
<tr>
<td>LW88-002</td>
<td>Options to Enhance the Sustainability of Dryland Cereal Cropping in the Northwest</td>
<td>$470,000</td>
<td>David Granatstein WSU Tree Fruit Research and Extension Center</td>
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</table>

**RESEARCH TO GRASS ROOTS GRANTS**

<table>
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<tr>
<th>Project #</th>
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</thead>
<tbody>
<tr>
<td>WRGR23-002</td>
<td>Building Access to Growing Mushrooms with the Squaxin Island Tribe</td>
<td>$71,126</td>
<td>Jade Frolic Metamimicry Mack Kleiva Metamimicry</td>
</tr>
<tr>
<td>WRGR23-004</td>
<td>Supporting transition to integrated pest management in pear and apple with education and training in European earwig releases</td>
<td>$100,000</td>
<td>Dr.Robert Orpet Washington State University</td>
</tr>
</tbody>
</table>
**Restoration and Resilience: Sustaining forest productivity in the face of current and emerging threats**

**WRGR22-009**

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

$89,178

**Building a grassland grazing association to support conservation grazing on working lands in southwest WA**

**WRGR21-009**

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

$80,000

**Increasing Farm Resiliency Through Implementing and Modeling Pollinator Habitat**

**WRGR21-003**

Alison Nichols
Pierce Conservation District
Rusty Milholland
Washington Farmland Trust

$84,480

**Beneficial Insects in the Vineyard**

**RGR20-001**

lynda oosterhuis
Walla Walla County Conservation District

$43,515

**The Soil Health Stewards: Establishing a Producer-Driven Soil Health Research Network in Northeastern Washington**

**RGR20-005**

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

$70,583

**On-Farm Cover Crop Use, Evaluation, and Data Sharing with the Western Cover Crop Council**

**WRGR19-02**

Doug Collins
WSU
Nick Andrews
Oregon State University
Lauren Golden
University of Idaho
Clare Sullivan
Oregon State University

$49,983

**The Peri-urban Agriculture Network: Strategies for Agricultural Viability in Urbanizing and High Land-Use-Pressure Regions**

**WRGR19-04**

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
Oregon State University

$49,928

**PROFESSIONAL DEVELOPMENT PROGRAM GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
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<tbody>
<tr>
<td>WRGR22-009</td>
<td>Restoration and Resilience: Sustaining forest productivity in the face of current and emerging threats</td>
<td>$89,178</td>
<td>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</td>
</tr>
<tr>
<td>WRGR21-009</td>
<td>Building a grassland grazing association to support conservation grazing on working lands in southwest WA</td>
<td>$80,000</td>
<td>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</td>
</tr>
<tr>
<td>WRGR21-003</td>
<td>Increasing Farm Resiliency Through Implementing and Modeling Pollinator Habitat</td>
<td>$84,480</td>
<td>Alison Nichols, Pierce Conservation District, Rusty Milholland, Washington Farmland Trust</td>
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<tr>
<td>RGR20-001</td>
<td>Beneficial Insects in the Vineyard</td>
<td>$43,515</td>
<td>lynda oosterhuis, Walla Walla County Conservation District</td>
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<tr>
<td>RGR20-005</td>
<td>The Soil Health Stewards: Establishing a Producer-Driven Soil Health Research Network in Northeastern Washington</td>
<td>$70,583</td>
<td>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</td>
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<tr>
<td>WRGR19-02</td>
<td>On-Farm Cover Crop Use, Evaluation, and Data Sharing with the Western Cover Crop Council</td>
<td>$49,983</td>
<td>Doug Collins, WSU, Nick Andrews, Oregon State University, Lauren Golden, University of Idaho, Clare Sullivan, Oregon State University</td>
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<tr>
<td>WRGR19-04</td>
<td>The Peri-urban Agriculture Network: Strategies for Agricultural Viability in Urbanizing and High Land-Use-Pressure Regions</td>
<td>$49,928</td>
<td>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, Oregon State University</td>
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</tbody>
</table>
WPDP21-030  Visualizing Microbial Agroecology $100,000
  Maren Friesen  Washington State University
  Dr. Douglas Finkelnburg  University of Idaho
  Dr. Christina Hagerty  Oregon State University
  Dr. Clay 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

WPDP21-008  Digital Agriculture Training Workshop: Managing Input Using On-farm Data $76,365
  haiying tao  Washington state university
  Drew Lyon  MSU
  Bruce Maxwell  MSU
  Dr. Sanaz Shafian  University of Idaho

PDP20-002  Farmland for the Next Generation Training in the Pacific Northwest $74,903
  Addie Candib  American Farmland Trust

PDP20-003  The Soil Life Short Course: Empowering Ag Professionals to Recognize, Quantify, and Conserve Beneficial Soil Animals $64,985
  Eric Mader  The Xerces Society
  Stephanie Frischie  The Xerces Society
  Eric Lee-Mader  The Xerces Society
  Corin Pease  The Xerces Society

WPDP19-10  Enhancing the Understanding of Opportunities for Nutrient Recycling and Food Safety in the Pacific and Mountain Northwest $75,000
  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

WPDP19-22  Advancing expertise in Honey Bee Stock Improvement Techniques: Stock Selection, Germplasm Cryopreservation and Instrumental Insemination $71,500
  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

WPDP19-23  Guiding Farmers to Legal Resiliency through Farm Law Education for Washington Ag Professionals $16,362
  Rachel Armstrong  Farm Commons
  Libby Reed  SnoValley Tilth
<table>
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<th>Code</th>
<th>Description</th>
<th>Amount</th>
<th>Principal Investigator</th>
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<td>WPDP19-09</td>
<td>Inland Northwest Pasture Calendar for Agricultural Professionals</td>
<td>$74,623</td>
<td>Dr. Steve Fransen, PhD</td>
<td>Washington State University</td>
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<td>Sergio Arispe, PhD</td>
<td>Oregon State University</td>
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<td>Mylen Bohle</td>
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<td>Brendan Brazee</td>
<td>USDA-NRCS</td>
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<td>Tim Deboodt</td>
<td>Oregon State University</td>
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<td>Scott Duggan</td>
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<td>Richard Fleenor</td>
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<td>Leticia Henderson</td>
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<td>Tipton Hudson</td>
<td>Washington State University</td>
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<td>Scott Jensen</td>
<td>University of Idaho</td>
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<td>Rich Koenig, PhD</td>
<td>Washington State University</td>
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<td>Dr. Don Llewellyn</td>
<td>Washington State University Extension</td>
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<td>Ian McGregor, M.S.</td>
<td>Oregon State University, Klamath Basin</td>
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<td>J. Shannon Neibergs</td>
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<td>Steve Norberg, PhD</td>
<td>Washington State University</td>
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<td>Cory Owens, M.S.</td>
<td>Natural Resources Conservation Service</td>
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<td>Glenn Shewmaker</td>
<td>University of Idaho</td>
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<td>Guojie Wang</td>
<td>Oregon State University - Eastern Oregon</td>
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<td>Carmen Willmore</td>
<td>Agricultural Research C</td>
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<td>Carmen Willmore</td>
<td>University of Idaho</td>
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<tr>
<td>WPDP19-05</td>
<td>In-Service Training for Biodegradable Mulch</td>
<td>$74,580</td>
<td>Dr. Carol Miles</td>
<td>WSU Mount Vernon NWREC</td>
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<td>EW18-016</td>
<td>Healthy Soil, Healthy Region</td>
<td>$67,692</td>
<td>Leslie Michel</td>
<td>Okanogan Conservation District</td>
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<td>EW17-021</td>
<td>Westside Pasture Calendar for Agricultural Professionals in the Pacific Northwest (PNW)</td>
<td>$74,555</td>
<td>Dr. Steve Fransen, PhD</td>
<td>Washington State University</td>
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<tr>
<td>EW16-021</td>
<td>Climate Adaptation Training for Foresters</td>
<td>$58,461</td>
<td>Kirk Hanson</td>
<td>Northwest Natural Resource Group</td>
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<tr>
<td>EW15-012</td>
<td>Implications of Water Impacts from Climate Change: Preparing Agricultural Educators and Advisors in the Pacific Northwest</td>
<td>$75,000</td>
<td>Dr. Joe Harrison</td>
<td>Washington State University</td>
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<tr>
<td>EW12-026</td>
<td>Technical Service Provider Training to Improve Services for Family Forest Landowners</td>
<td>$43,874</td>
<td>Lindsay Malone</td>
<td>Northwest Natural Resource Group</td>
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<tr>
<td>EW11-019</td>
<td>Forage and Pasture Educational Program for Professionals in the Northwest</td>
<td>$71,058</td>
<td>Glenn Shewmaker</td>
<td>University of Idaho</td>
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</table>
Forestry Certification Training for Agency Field Staff
Lindsay Malone
Northwest Natural Resource Group

Organic Seed, Soils, and Sustainable Business: Three Intensives and an Online Tutorial
Micaela Colley
Organic Seed Alliance

Training and Connecting Agricultural Professionals Through an Immersion Field Course and the Cultivating Success Instructor Training Program in Washington
Catherine Perillo
Washington State University

Western Region Dairy Odor and Air Quality Education
Dr. Pius Ndegwa
Washington State University

Sustainable Small-Acreage Farming from Field to Table
Debra Kollock
WSU Stevens County Extension

Feeding Management in Nutrition and Nutrient Management for Livestock - Poultry Professionals
Lynn Vanwieringen
Washington State University

Sustainable Agriculture and Education Grant
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

Noxious Weed Control Through Multi-Species Grazing
Dr. Donald D. Nelson
Washington State University

Organic Food Production and Marketing - Educational Resource Development
Leslie Zenz
Washington State Dept. of Ag.

Alternative Crops for Dryland Agriculture in the Intermountain Pacific Northwest
Edward Adams
Washington State University Cooperative Extension

Extension Faculty Learning with Farmers - A Seminar Series on Sustainable Agriculture
Diana Roberts, PhD
WSU Extension

Organic Food Production and Marketing - Tours and Resource Guide
Leslie Zenz
Washington State Dept. of Ag.

FARMER/RANCHER GRANTS

Project # | Project Title | SARE Support | Project Leaders
--- | --- | --- | ---
FW22-389 | Investigating the Addition of Clay to Feedstocks for Increased Nutrient Density and Carbon Stabilization in Compost | $24,745 | David Bill
Midnight’s Farm

FW21-373 | Adoption of Rootstocks for Sustainable Wine Grape Production in Columbia Valley, Washington | $25,000 | Kevin Judkins
Inland Desert Nusery, Inc.

FW21-374 | Ecological and Economic Impacts of Transition to an Apple/Hay Agroforestry System | $24,818 | Nichlos Pate
Raising Cane Ranch
<table>
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<tr>
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<th>Funding</th>
<th>Principal Investigator</th>
<th>Institution</th>
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</thead>
<tbody>
<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</td>
<td>Lester Wolf Farms</td>
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<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 Pencke</td>
<td>Alluvial Farms</td>
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<tr>
<td>FW19-347</td>
<td>Sheep Grazing in Potato Production Systems</td>
<td>$16,300</td>
<td>Dr. Jessica Gigot</td>
<td>Harmony Fields</td>
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<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</td>
<td>Barn Owl Bakery &amp; Heritage Grains</td>
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<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</td>
<td>Grey Duck Garlic, LLC</td>
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<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</td>
<td>Oak Knoll Farm</td>
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<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</td>
<td>Goosepoint Oyster Co.</td>
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<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</td>
<td>Foothill Farms</td>
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<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</td>
<td>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</td>
<td>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</td>
<td>Clean Food Farm</td>
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<tr>
<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</td>
<td>N/A</td>
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<tr>
<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</td>
<td>Steensma Dairy</td>
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<tr>
<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>
<td>Gary Miller</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</td>
<td>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</td>
<td>Tahoma Farms</td>
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</table>
Cover cropping and seasonal landscape fabric mulch for weed and mummy berry control in organic blueberries

Local Farms, Health Kids - The Small-Scale, Sustainable Producer's Role in This Legislatively Mandated Opportunity

Integrated Nutrient Management for Small Swine and Sheep Production

Farm Duckweed Harvesting

Leafy Spurge Management in Shrub Steppe Rangeland

Evaluation of Digested Manure on Potatoes and Raspberries

Rhizoctonia and Soil Compaction Under Direct Seed

Evaluation of Environmentally Sustainable Methods to Control Dagger Nematode Infestation in Blueberry Production

Strategies for Building Regional Markets for Pastured Poultry Growers

Organic Seed Producer Database

Youth Entrepreneurs in Agriculture

On-farm Evaluation and Demonstration of Small-scale Biogas Technology

Determining the Feasibility of Compost Production from Agronomic Waste and Wood Byproducts through Mushroom Cultivation Techniques for the Small Farmer

Agricultural Science Class: Principles of Ecological Food Production

Mobile Poultry Processing Feasibility Study

Felted Wool for Orthotic Use

Producer, Retail, Consumer Demo Program for Fresh Pears
<table>
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<tr>
<th>Project Code</th>
<th>Project Title</th>
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<td>FW04-305</td>
<td>Bio-Intensive Forage and Hay Production</td>
<td>$7,499</td>
<td>Dr. Steve Fransen, PhD</td>
<td>Washington State University</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>
<td>Full Circle Farm</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>
<td>$5,000</td>
<td>Doug Warnock</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>
<td>Washington State University</td>
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<tr>
<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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<tr>
<td>FW02-037</td>
<td>South Whidbey Tilth Forest Restoration for Sustainable Wildcraft Production</td>
<td>$3,000</td>
<td>Michael Seraphinoff</td>
<td>South Whidbey Tilth</td>
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<tr>
<td>FW02-038</td>
<td>On-farm composting for residue management in Spokane County, WA</td>
<td>$14,992</td>
<td>David Ostheller</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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<tr>
<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>
<td>Michael Seraphinoff</td>
<td>South Whidbey Tilth</td>
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<td>FW01-052</td>
<td>Application of Oyster Shell Mulch for Lavender Production</td>
<td>$6,000</td>
<td>Mike Reichner</td>
<td>WSU Coop Ext.</td>
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<td>FW01-081</td>
<td>Sustainable Small-Scale Grain Raising</td>
<td>$2,040</td>
<td>Henning Sehmsdorf</td>
<td>S&amp;S Homestead Farm</td>
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<td>FW00-014</td>
<td>On-Farm Biodiesel Production from Waste Vegetable Oil</td>
<td>$1,805</td>
<td>Joseph Gabiou</td>
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<td>FW00-022</td>
<td>Rotating Vessel Composter for Small Farms</td>
<td>$3,100</td>
<td>Jack Caldicott</td>
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<td>FW00-040</td>
<td>Alternative Crops No-Till Field Trials</td>
<td>$5,000</td>
<td>Ron Jirava</td>
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<td>FW00-041</td>
<td>Demonstration Project to Promote Niche Farming in Heirloom Vegetable Varieties</td>
<td>$4,425</td>
<td>Michael Seraphinoff</td>
<td>South Whidbey Tilth</td>
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<tr>
<td>FW99-013</td>
<td>Options for Asparagus Cover Crops</td>
<td>$3,817</td>
<td>Mark Miller</td>
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<td>FW99-036</td>
<td>Managing Grasshoppers in Tree Fruit Using Pastured Poultry</td>
<td>$1,732</td>
<td>Terry Swagerty</td>
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<tr>
<td>FW99-063</td>
<td>Compost Thermal Subsidies in Commercial Passive Solar Greenhouse Design</td>
<td>$1,750</td>
<td>Rebecca Thistlewaite</td>
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<td>FW99-089</td>
<td>Harvesting Alternatives for Burdock as an Alternative Crop in an Organic Production System</td>
<td>$3,000</td>
<td>Del Wisdom</td>
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<td>FW98-002</td>
<td>Baby Corn-Alternative Crop for Southwest Washington</td>
<td>$3,460</td>
<td>Owen Schaffner</td>
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<td>FW98-067</td>
<td>Low Cost Vacuum Silage in the Pacific Northwest</td>
<td>$3,460</td>
<td>Tim Clark</td>
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<td>FW98-082</td>
<td>Alternative Techniques for Control of Apple Replant Disease</td>
<td>$3,200</td>
<td>Fred Barkley</td>
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<td>FW97-010</td>
<td>Bamboo Alternative Crop for Southwest Washington</td>
<td>$2,000</td>
<td>R.D. Northcraft</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>
<td>Terry Swagerty</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>FW97-046</td>
<td>Dryland Corn Production in Columbia and Walla Walla Counties (WA)</td>
<td>$3,000</td>
<td>David Carlton</td>
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<td>FW97-051</td>
<td>Small Farm Harvest Labor Reduction Project</td>
<td>$2,500</td>
<td>Therese Critchley</td>
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<td>FW96-014</td>
<td>Improved Nitrogen Utilization and Herbicide Reduction Through Relay Intercropping</td>
<td>$4,230</td>
<td>Gene Tinkelberg</td>
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<td>FW96-016</td>
<td>Weed Control in Organic Apple Orchard</td>
<td>$2,550</td>
<td>Gary Holwegner</td>
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<td>FW96-041</td>
<td>Alternative Crop Production in a &quot;Direct Seed Annual Crop Intense Rotation Program&quot;</td>
<td>$4,400</td>
<td>Karl Kupers</td>
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<td>FW96-042</td>
<td>Carrot Rust Fly Control</td>
<td>$1,150</td>
<td>Betsie DeWreede</td>
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<td>FW96-055</td>
<td>Achieving Sustainability in San Juan County Hay Fields</td>
<td>$2,750</td>
<td>Julie Matthews</td>
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<td>FW96-067</td>
<td>Organic vs. Synthetic Fertilizer-Container Nursery Trials</td>
<td>$4,575</td>
<td>Nils Sundquist, Sundquist Nursery</td>
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<td>FW95-008</td>
<td>Managing Riparian Areas with Remote Livestock Watering Facilities</td>
<td>$5,000</td>
<td>Craig Boesel</td>
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### GRADUATE STUDENT GRANTS

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<tr>
<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, Molly Sayles, Washington State University</td>
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<tr>
<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, Kayla Spawton, Washington State University, Northwestern Washington Research and Extension Center</td>
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<tr>
<td>GW21-228</td>
<td>Understanding the impact of the peaola microbiome on soil fertility, crop yield, and plant nitrogen content</td>
<td>$29,982</td>
<td>Maren Friesen, Washington State University, Janice Parks, 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>
<td>$24,998</td>
<td>Dr. Marcia Ostrom, School of Environment, Washington State University, Mark Batcheler, Washington State University, Lynne Carpenter-Boggs, Washington State University, Dr. Mark Swanson, Washington State University, Mark Batcheler, Washington State University</td>
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<tr>
<td>GW18-039</td>
<td>Assessment of the Positive and Negative Effects of Earwigs in Apple Orchards</td>
<td>$17,875</td>
<td>Dr. David Crowder, Washington State University, 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>
<td>$25,000</td>
<td>Amit Dhingra, Washington State University, 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, Nathan Nielsen, Washington State University</td>
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<tr>
<td>GW17-058</td>
<td>Effects of Subsurface Micro-irrigation on Water Use Efficiency and Grapevine Growth</td>
<td>$25,000</td>
<td>Dr. Pete Jacoby, Washington State University, Xiaochi Ma, Washington State University</td>
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<tr>
<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, Rachel Wieme, Washington State University</td>
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<tr>
<td>GW17-025</td>
<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, Adrian Marshall, WSU Tree Fruit Research Extension Center</td>
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</tbody>
</table>
| 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 | Lynne 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 |
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 GiGiot  
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 Gatch  
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

<table>
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<td>OW23-385</td>
<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, Organic Seed Alliance</td>
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<tr>
<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, 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, Washington State University, Doug Collins, WSU, Alana Siegner, University of California, Berkeley</td>
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<tr>
<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, Northwest Natural Resource Group, Lindsay Malone, Northwest Natural Resource Group</td>
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<tr>
<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>
<td>$49,576</td>
<td>Dr. Brook Brouwer, 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, Okanogan Conservation District</td>
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<tr>
<td>OW15-008</td>
<td>Optimizing nitrogen management on organic and biologically-intensive farms</td>
<td>$49,997</td>
<td>Doug Collins, WSU</td>
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<tr>
<td>OW14-003</td>
<td>Accelerating Adoption of Sustainable Practices for Small Forest Producers</td>
<td>$47,167</td>
<td>Lindsay Malone, 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, WSU Extension</td>
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<td>OW11-315</td>
<td>Composted Horse Manure and Stall Bedding Pilot Project</td>
<td>$39,410</td>
<td>Caitlin Price Youngquist, Snohomish Conservation District, Dr. Caitlin Youngquist, SnapLands</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, Washington State University, Stephen Van Vleet, WSU</td>
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<tr>
<td>FW03-302</td>
<td>Determination of Whole Farm Nutrient Flows on a Dairy Operation</td>
<td>$6,000</td>
<td>Dr. Joe Harrison, 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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<tbody>
<tr>
<td>EDS19-13</td>
<td>Southern Organic Seed Summit</td>
<td>$49,957</td>
<td>Jared Zystro, 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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