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

Arkansas

Project Highlight: Maximizing Cover Crop Use in High Tunnels

Cover crops are becoming a vital tool in soil management, yet vegetable growers who use high tunnels may decline to plant them inside structures due to a variety of factors. In the warm indoor environment, cover crops could potentially provide habitat for overwintering pests. Economically, the benefits may not seem clear since there are fewer off-season periods for a cover crop to fill and growers in such a capital-intensive system may not want to use valuable ground for a crop that has no immediate return.

Funded by a SARE grant, University of Arkansas graduate student Luke Freeman sought to determine the optimum timing for planting cover crops in Southern high tunnels to minimize the negatives and maximize the benefits. Cover crops can be beneficial in high tunnels for reducing nitrogen fertilizer use and improving soil quality. Since local growers stated that mid-November through mid-February was the least productive season, Freeman researched four winter cover crops, followed by summer tomatoes and fall broccoli, during that time period.

He found that winter peas contributed a greater amount of biomass nitrogen than all other treatments. This led to a 48 percent increase in mean tomato yield compared to the control. Sharing these results gives Southern high tunnel vegetable growers a better understanding of the benefits of cover crops.

For more information on this project, see sare.org/projects, and search for project number GS14-136.

SARE in Arkansas
southern.sare.org/sare-in-your-state/arkansas

$6,845,036 in total funding

93 grant projects

(since 1988)

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

Total awards: 93 grants
- 9 Farmer/Rancher
- 19 Graduate Student
- 12 On Farm Research/Partnership
- 17 Professional Development Program
- 36 Research and Education

Total funding: $6,845,036
- $96,767 Farmer/Rancher
- $202,967 Graduate Student
- $179,458 On Farm Research/Partnership
- $1,211,917 Professional Development Program
- $5,153,927 Research and Education

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: southern.sare.org/sare-in-your-state/Arkansas

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 southern.sare.org/state-pages/Arkansas to learn more.

Henry English  Amanda McWhirt
University of Arkansas at Pine Bluff  University of Arkansas
(807) 575-7246  (501) 671-2229
englishh@uapb.edu  amcwhirt@uaex.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.
Arkansas has been awarded $6,894,865 grants to support 95 projects, including but not limited to, 33 research and/or education projects, 17 professional development projects and 9 producer-led projects. Arkansas has also received additional SARE support through multi-state projects.

### RESEARCH AND EDUCATION GRANTS

<table>
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<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
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</thead>
<tbody>
<tr>
<td>LS19-316</td>
<td>Forage Establishment and Management in Arkansas' Silvopasture for Small Beef Producers</td>
<td>$251,321</td>
<td>Dr. Dirk Philipp&lt;br&gt;University of Arkansas</td>
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<td>LS19-317</td>
<td>Innovative Nutrient Management Options for Sustainable Pasture Land Intensification</td>
<td>$296,352</td>
<td>Michael Popp&lt;br&gt;University of Arkansas</td>
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<tr>
<td>LS18-292</td>
<td>Taking Your Farm to the Next Level: Business and financial planning for sustainable farms and ranches</td>
<td>$47,000</td>
<td>Margo Hale&lt;br&gt;NCAT</td>
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<tr>
<td>LS18-295</td>
<td>Increasing Farm Profitability Through Whole Farm Record-Keeping and Analysis</td>
<td>$43,000</td>
<td>Elizabeth Young&lt;br&gt;Southern SAWG</td>
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<tr>
<td>LS17-282</td>
<td>High Tunnel Grape Production Systems: A Novel Sustainable Approach to Growing Grapes</td>
<td>$266,986</td>
<td>Renee Threlfall&lt;br&gt;University of Arkansas</td>
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<td>Dr. M. Elena Garcia&lt;br&gt;University of Arkansas Division of Agriculture</td>
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<tr>
<td>LS16-274</td>
<td>The Impact of Mineral Particle Film on Blackberry Diseases and Insects, and Primocane Fruit Quality and Yield</td>
<td>$174,290</td>
<td>Sherri Sanders&lt;br&gt;University of Arkansas CES</td>
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<tr>
<td>LS16-276</td>
<td>Validating Sustainability/Resilience and Quality of Life Indices to Identify Farm- and Community-Level Needs and Research and Education Opportunities</td>
<td>$203,560</td>
<td>Dr. James Worstell&lt;br&gt;Delta Land &amp; Community</td>
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<tr>
<td>LS13-259</td>
<td>Participatory assessment of progress, barriers and opportunities for sustainability in Southern agricultural systems</td>
<td>$100,000</td>
<td>Dr. James Worstell&lt;br&gt;Delta Land &amp; Community</td>
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<tr>
<td>LS12-250</td>
<td>Extending the Market Season with High Tunnel Technology for Organic Fruit Production</td>
<td>$214,948</td>
<td>Dr. Curt Rom&lt;br&gt;University of Arkansas</td>
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<td>LS10-226</td>
<td>Integrating Free Range Poultry with Ruminant and Agroforestry Production in a Systems Approach</td>
<td>$210,000</td>
<td>Dr. Anne Fanatico&lt;br&gt;Appalachian State University</td>
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<tr>
<td>LS08-204</td>
<td>Sustainable control of gastro-intestinal nematodes in organic and grass-fed small ruminant production systems</td>
<td>$230,000</td>
<td>Dr. Joan Burke&lt;br&gt;USDA, Agricultural Research Service</td>
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<tr>
<td>LS05-176</td>
<td>Best management practices for organic orchard nutrition</td>
<td>$200,000</td>
<td>Dr. Curt Rom&lt;br&gt;University of Arkansas</td>
</tr>
</tbody>
</table>
Using Parasitoids in an Integrated Pest Management Approach to Control Flies on Dairy Farms

Increasing the effectiveness of assisting farmers with sustainable on-farm enterprise

The Southern Region Organic Fruit Production Initiative: Identifying Barriers, Needed Research, Markets, and Opportunities

Technical and Economic Analysis of the Potential for Conversion of Poultry and Swine Production Facilities to Greenhouses and Mushroom Houses

Rotational Grazing on Land Receiving Manure Applications; Impacts of Land Management Practices on Soil and Water Quality

Building from excellent agents to effective organizers of collaborative, sustainable rural enterprise

Whole Farm Planning for Grass-fed Beef

Intergenerational Education for Sustainable Agriculture

Integrating Farmer-driven, Value-added Enterprises Into Sustainable Agricultural Systems

Integration of Pastured Poultry Production Into the Farming Systems of Limited Resource Farmers

The Development of Pasture-Based Swine Production Systems for Limited Resource Farms in the Mississippi Delta

Integrating Sustainable Forestry into Whole Farm Management of Minority and Limited Resource Landowners in Two Regions of Arkansas

Organic Soil Amendments of Agricultural By-Products for Vegetable Production Systems in the Mississippi Delta Region

Developing and Extending Minimum Input Strategies for Weed Control in Agronomic and Horticultural Crops

Use of Poultry Litter as a Soil Amendment in Southern Row Crop Agriculture: A Feasibility Study Based on Agronomic, Environmental, and Economic Factors (AS93-10)

Utilization of Winter Legume Cover Crops for Pest and Fertility Management in Cotton
A Mid-South Conference on LISA-Related Agroforestry Practices and Policies $18,000 D. Henderson
Winrock International Institute for Agricultural Development

Development of a Plan for Implementing a Low-input Sustainable Forage Production System in the Oklahoma-Arkansas Ozark Highland Region and Similar Land Areas $15,000 Douglas Butts
Soil Conservation Service

Planning Grant: Development of a Farmer/Extension/Research Network and Farming Systems Data Base for Low-Input Agriculture $15,000 Ted Jones
University of Arkansas

Developing and Extending Minimum Input Strategies for Weed Control in Agronomic and Horticultural Crops $190,000 Ford L. Baldwin
University of Arkansas, Cooperative Extension

Developing and Extending Minimum Input Strategies for Weed Control in Agronomic and Horticultural Crops $100,000 Ford L. Baldwin
University of Arkansas, Cooperative Extension

PROFESSIONAL DEVELOPMENT PROGRAM GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
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</thead>
</table>
| ES20-154  | Demystifying Regenerative Grazing and Soil Health | $79,866 | Steve Thompson
National Center for Appropriate Technology |
| ES20-155  | Utilizing Insect and Irrigation Monitoring to Enhance Sustainable Vegetable Production: Extension Educator Training for Arkansas | $69,328 | Dr. Aaron Cato
University of Arkansas System Division of Agriculture |
| ES17-135  | Integrating Cover Crops into Vegetable Production: Extension educator training for Arkansas | $72,493 | Dr. Amanda McWhirt
University of Arkansas Cooperative Extension |
| ES13-116  | Increasing the Professional Technical Support for Local, Sustainable Food Distribution Systems in the Southern Region | $79,776 | Keith Richards
Southern SAWG |
Southern SAWG |
| ES08-089  | Toolbox for Small Ruminant Educators: Building on the Small Ruminant Resource Manual | $61,523 | Linda Coffey
National Center for Appropriate Technology (NCAT) |
| ES08-091  | Organic Dairy Training Conferences and Educational Materials for Professionals | $97,456 | Dr. Wayne Kellogg
University of Arkansas |
| ES07-088  | Building Organic Agriculture Extension Training Capacity in the Southeast | $195,000 | Heather Friedrich
University of Arkansas
Dr. M. Elena Garcia
University of Arkansas Division of Agriculture |
| ES04-076  | Putting it all together: using livestock to manage natural resources | $80,187 | Teresa Mauerer
NCAT |
| ES02-060  | Enhancing Educator Knowledge of Sheep and Goat Production | $49,998 | Linda Coffey
National Center for Appropriate Technology (NCAT) |
| ES00-051  | Preparing Traditional Providers for Delivery of Sustainable Agriculture Information | $8,976 | Rex Doufour
National Center for Appropriate Technology (NCAT) |
ES99-044  Development of a Dairy Farm Sustainability Checksheet and Establishment of Distance Education Program for Training CES and NRCS Personnel to Work with Dairy Farmers  $54,621  Ann Wells  National Center for Appropriate Technology

ES98-038  Motivating Teams for Enterprise Facilitation  $96,000  Dr. James Worstell  Delta Land & Community

ES97-019  Nuisances in the Community: Training on the Issues and the Methods of Mediation  $56,000  Jim Horne  Kerr Center for Sustainable Agriculture  Janie Simms Hipp  National Center for Ag Law Research & Info, University of Arkansas

ES97-031  Development of Sustainability Checksheet, Manual and Workshops to Train Educators Planning Beef Programs  $69,936  Ron Morrow  NCAT/ATTRA

ES97-034  Multi-state Value-Added Team Building in the Northern Mississippi River Delta Region  $20,000  Dr. James Worstell  Delta Land & Community

LST96-013  Sustainable Agriculture Marketing through Collaborative Policy Development  $40,900  Dr. James Worstell  Delta Land & Community

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**FARMER/RANCHER GRANTS**

**Project #**  **Project Title**  **SARE Support**  **Project Leaders**
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FS19-320  Implementation of Biointensive Organic Production Principles in Agroforestry Systems: An examination of efficacious cultivated berry and vegetable production in temperate forests through alley cropping and companion planting  $8,695  Krissy Waters  Sunchild Flourish Co., LLC

FS06-207  Networking Sheep and Goat Producers: Strength in Numbers  $10,000  Janice Neighbor

FS04-178  Farmers Working with Farmers to Establish Managed Grazing Systems  $14,740  Frank Bostwick  Grassroots Grazing Group

FS03-165  Economics of Plant Spacing on Tomato Yield and Quality  $7,378  Paul E. Cooper  100 East First

FS02-160  Small Dairy Business Plan for On-Farm Mini-Processing Facility  $9,980  Sam Ward

FS01-143  Biological Fly Control on Arkansas Dairies Utilizing Parasitoids  $15,000  Floyd Wiedower  Arkansas Dairy Cooperative Association

FS00-123  Cooperative Marketing of Organic Produce and Animal Products Direct to Consumers  $15,000  Margaret Carey  Organic Growers Assoc.

FS95-032  Native Pecan Orchard Management Using Best Management Practices  $5,986  Bill Wilson

FS94-015  Farmer-to-Farmer Transfer of Knowledge About Rotational Grazing  $9,988  Luane Schroeder

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**GRADUATE STUDENT GRANTS**
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<th>Project #</th>
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<tbody>
<tr>
<td>GS19-208</td>
<td>Evaluation of Different Ensiling Methods and the Effect on Feeding Value of the Residual Material from Edamame Soybean Processing</td>
<td>$16,500</td>
<td>Dr. Beth Kegley University of Arkansas Division of Agriculture</td>
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<td>Ellen Herring University of Arkansas</td>
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<tr>
<td>GS19-218</td>
<td>Educational Resources to Develop Value-added Products from Farmers Market Surplus</td>
<td>$14,475</td>
<td>Renee Threlfall University of Arkansas</td>
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<td>Morgan Gramlich University of Arkansas</td>
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<tr>
<td>GS19-207</td>
<td>The Impacts of Native Plant Diversity on Native Bee Development and Soil Health</td>
<td>$13,101</td>
<td>Neelendra Joshi University of Arkansas</td>
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<td>Olivia Kline University of Arkansas, Department of Entomology</td>
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<tr>
<td>GS18-189</td>
<td>Exploring Cover Crops in an Integrated Approach to Reduce Disease Pressure and Increase Beneficial Insects in Watermelon Production</td>
<td>$13,664</td>
<td>Dr. Jackie Lee University of Arkansas Cooperative Extension Service</td>
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<td>Paige Hickman University of Arkansas, Department of Entomology</td>
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<td>GS18-186</td>
<td>Development of Native Pollinator Habitat within Livestock Pasture</td>
<td>$11,324</td>
<td>Neelendra Joshi University of Arkansas</td>
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<td>Roshani Sharma Acharya University of Arkansas</td>
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<tr>
<td>GS16-154</td>
<td>Kairomone-Based Control of Sesiid Borers in Peach Orchards</td>
<td>$2,066</td>
<td>Dr. William Baltosser University of Arkansas at Little Rock</td>
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<td>Matthew Hetherington University of Arkansas at Little Rock</td>
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<tr>
<td>GS15-143</td>
<td>Pollinator Communities On Native Emergent Wetlands, Managed Emergent Wetlands, and Adjacent Croplands in the Lower Mississippi Alluvial Valley of Arkansas</td>
<td>$11,000</td>
<td>Ashley Dowling University of Arkansas</td>
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<td>Phillip Stephenson University of Arkansas</td>
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<tr>
<td>GS14-136</td>
<td>Sustainable management of high tunnel organic vegetable production with short-season winter cover crops</td>
<td>$10,951</td>
<td>Dr. Curt Rom University of Arkansas</td>
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<td>Luke Freeman University of Arkansas</td>
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<tr>
<td>GS13-122</td>
<td>Improving lamb performance with sericea lespedeza and molybdenenum</td>
<td>$10,007</td>
<td>Dr. Charles Rosenkrans University of Arkansas</td>
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<td>Mohan Acharya University of Arkansas</td>
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<tr>
<td>GS13-123</td>
<td>Ground cover and organic nutrient management practices altering the denitrifier community in an organic apple orchard soil</td>
<td>$11,000</td>
<td>Dr. Mary Savin University of Arkansas</td>
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<td>Jade Ford University of Arkansas</td>
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<td>GS11-106</td>
<td>Evaluation of the Utility of Adding Artificial Bumble Bee Nesting Sites to Increase Pollination Services in a Small Farm Environment</td>
<td>$9,000</td>
<td>Allen Szalanski University of Arkansas</td>
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<td>Amber Tripodi University of Arkansas</td>
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<td>GS09-084</td>
<td>Microbial changes associated with use of brassica cover crops in a strawberry production system</td>
<td>$9,971</td>
<td>Craig S. Rothrock University of Arkansas, Plant Pathology</td>
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<td>Dr. Terry Kirkpatrick University of Arkansas</td>
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<td>Mandy Cox University of Arkansas</td>
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<tr>
<td>GS07-061</td>
<td>Importance of Brassica soil amendments for managing soilborne disease in ornamentals and vegetables</td>
<td>$9,944</td>
<td>Craig S. Rothrock University of Arkansas, Plant Pathology</td>
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<td>Kimberly Cochran University of Arkansas</td>
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<tr>
<td>GS05-048</td>
<td>The Effects of Different Organic Apple Production Systems on Seasonal Variation of Soil Properties and Foliar Nutrient Concentration</td>
<td>$10,000</td>
<td>Dr. Curt Rom University of Arkansas</td>
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</tbody>
</table>
GS04-033  Impact of Potential Organic Pesticides and Potential Fruit Crop Load Regulators on Photosynthesis and Growth of Apple  $10,000  Dr.Curt Rom  University of Arkansas  Jason D. McAfee  University of Arkansas

GS03-026  Compatibility of Plant Defense Elicitors with Aphid- and Nematode-Resistant Tomato Varieties in Integrated Pest Management  $10,034  William Cooper  University of Arkansas Department of Entomology

GS03-029  Performance and Quality of Pasture-raised Poultry: Label Rouge – Type  $9,940  Dr.Anne Fanatico  Appalachian State University

GS03-030  Evaluation of Microbial Ecology in Pasture Ecosystems with Long-term Poultry Litter Additions  $9,990  Dr.Mary Savin  University of Arkansas  Peter J. Tomlinson  University of Arkansas - Fayetteville

GS01-010  Enhancing the Sustainability of Tall Fescue Forage Systems for Beef Cattle Production with Non-Toxic Endophyte Technology  $10,000  Jane Parish  Univ. of Arkansas Cooperative Extension Service

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ON FARM RESEARCH/PARTNERSHIP GRANTS

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<tr>
<td>OS19-124</td>
<td>The Impact of Estimated Breeding Values on Parasite Resistance and Reduced Parasitism in Sheep</td>
<td>$15,000</td>
<td>Dr.Joan Burke  USDA, Agricultural Research Service</td>
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<tr>
<td>OS18-116</td>
<td>Cover Crop Effect on Nematode Activity in the Soil</td>
<td>$15,000</td>
<td>Matthew Davis  University of Arkansas Jackson County Extension Service</td>
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<tr>
<td>OS13-073</td>
<td>Investigation of Potential Biological Control Agents for Internal Parasite Control in Goats</td>
<td>$14,930</td>
<td>Dr.Yong Park  University of Arkansas Pine Bluff</td>
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<tr>
<td>OS13-077</td>
<td>Establishment of native pollinator habitat in organic and conventional small ruminant pastures</td>
<td>$15,000</td>
<td>Dr.Joan Burke  USDA, Agricultural Research Service</td>
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<tr>
<td>OS12-064</td>
<td>An alternative organic strawberry production system grown vertically in high tunnels</td>
<td>$15,000</td>
<td>Dr.M. Elena Garcia  University of Arkansas Division of Agriculture</td>
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<tr>
<td>OS09-045</td>
<td>Identifying ewes resistant to gastrointestinal parasitic worms during gestation and lactation</td>
<td>$14,866</td>
<td>Dr.Joan Burke  USDA, Agricultural Research Service</td>
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<tr>
<td>OS08-044</td>
<td>The Use of Controlled Grazing, Chicory Pasture and Herbal Treatments to Prevent Parasitism in Sheep and Goats, Phase II</td>
<td>$14,941</td>
<td>Dr.Ann Wells  Heifer Ranch</td>
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<tr>
<td>OS07-036</td>
<td>Sensory Evaluation of Alternative Turkey Genotypes</td>
<td>$14,962</td>
<td>Dr.Anne Fanatico  Appalachian State University</td>
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<td>OS07-039</td>
<td>The Use of Controlled Grazing and two Herbal Treatments to Prevent Parasitism in Sheep and Goats</td>
<td>$14,967</td>
<td>Dr.Ann Wells  Heifer Ranch</td>
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<tr>
<td>OS06-028</td>
<td>An alternative planting strategy for establishing clover in pastures</td>
<td>$14,992</td>
<td>John Jennings  University of Arkansas</td>
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<tr>
<td>OS05-024</td>
<td>Sustainable Grazing Systems for Arkansas: Native warm season grass establishment and control of cool season annual weeds</td>
<td>$14,800</td>
<td>Ron Morrow  USDA-NRCS</td>
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</tbody>
</table>
OS03-016 Use of Parasitoids and Passive Traps as Alternative Methods of Fly Control on Dairy Farms in Arkansas $15,000 Jodie A. Pennington University of Arkansas CES

### SUSTAINABLE COMMUNITY INNOVATION GRANTS

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<tbody>
<tr>
<td>CS12-089</td>
<td>Next Steps: Creating a Sustainable Farm to School Program</td>
<td>$10,000</td>
<td>Dana Smith Fayetteville Public Schools</td>
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<tr>
<td>CS11-085</td>
<td>Building a Model Farm to School Program using Community Partnerships</td>
<td>$10,000</td>
<td>Dr. Curt Rom University of Arkansas</td>
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<tr>
<td>CS07-057</td>
<td>Integrating Nature into Agri-tourism</td>
<td>$9,950</td>
<td>Kathy Radomski Phillips Community College UA</td>
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<tr>
<td>CS05-035</td>
<td>Assessing and Meeting the Growing Needs of Arkansas’ Women in Agriculture</td>
<td>$9,901</td>
<td>Dr. Jennie Popp University of Arkansas</td>
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<td>CS03-014</td>
<td>Northwest Arkansas Local Food Initiative: Promoting All-Ozark Meals</td>
<td>$9,978</td>
<td>Julia Sampson ATTRA</td>
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**Total funding from the USDA SARE program to Arkansas**

$6,894,865

For further information on projects, contact Candace Pollock, Southern SARE public relations coordinator, at (770) 412-4786 or cpollock@uga.edu. Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).