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 $309 million to more than 7,408 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...

Tennessee

Project Highlight: Cover Crops Help Manage Appletree Borer

The flatheaded appletree borer (FAB) is a significant economic pest in orchards, nurseries and urban landscapes, and in Tennessee’s production nurseries, red maples are one of the most problematic trees for FAB attacks. Determined to find a solution to this problem, Tennessee State University researcher Karla Addesso and her project team used a SARE grant to evaluate the efficacy of applying a winter cover crop to field-grown nursery red maple trees to act as a barrier to FAB oviposition, an aid to preventing leaching of imidacloprid (a commonly used insecticide) from the root zone of the trees, and as a natural weed suppression technique.

After trying a few mixes, the team determined that a ryegrass/crimson clover mix was extremely effective at camouflaging the tree trunks from the pest, making it less likely to lay eggs. The cover crops reduced pest attacks by 95 percent. In addition to acting as a barrier, the cover crop mix also reduced the temperatures of the tree trunks, making the trees a less preferable egg-laying site.

Based on their highly promising results, the team proposes a systems approach to in-field nursery tree production by incorporating a winter cover crop combined with optimized pesticide use to simultaneously maximize FAB control and plant growth while minimizing crop damage, weed competition and insecticide runoff.

For more information on this project, see sare.org/projects, and search for project number OS14-084.

SARE in Tennessee

southern.sare.org/sare-in-your-state/tennessee

$2,508,372 in total funding

60 grant projects

(since 1988)

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

Total awards: 60 grants
- 23 Farmer/Rancher
- 14 Graduate Student
- 5 On Farm Research/Partnership
- 6 Professional Development Program
- 12 Research and Education

Total funding: $2,508,372
- $229,826 Farmer/Rancher
- $151,561 Graduate Student
- $74,772 On Farm Research/Partnership
- $429,818 Professional Development Program
- $1,622,395 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/tennessee

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/tennessee to learn more.

Roy Bullock
Tennessee State University
(615) 963-5449
fbullock@tnstate.edu

Rob Holland
University of Tennessee
(931) 486-2777
rwholland@utk.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.
Tennessee has been awarded $2,634,570 grants to support 66 projects, including but not limited to, 11 research and/or education projects, 6 professional development projects and 23 producer-led projects. Tennessee 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>
| LS20-335   | Cover Crops and Cropping System Sustainability in a Changing Global Climate   | $299,995     | Dr. Samuel Haruna  
                     |                                 |              | Middle Tennessee State University  
                     |                                 |              | Dr. Song Cui  
                     |                                 |              | Middle Tennessee State University  
                     |                                 |              | Dr. Audrey Gamble  
                     |                                 |              | Auburn University  
                     |                                 |              | Dr. Seockmo Ku  
                     |                                 |              | Middle Tennessee State University  
                     |                                 |              | Dr. Chaney Mosley  
                     |                                 |              | Middle Tennessee State University  
                     |                                 |              | Dr. Edwin Ritchey  
                     |                                 |              | University of Kentucky |
| LS18-287   | Cover Crops in Woody Ornamental Production: Impact on Plant Growth, Arthropod | $284,869     | Dr. Karla Addesso  
                     |                                 |              | Tennessee State University |
| LS13-254   | Improving Fitness in Meat Goat Herds through Better Genetic Management       | $230,000     | Dr. Richard Browning, Jr.  
                     |                                 |              | Tennessee State University |
| LS12-253   | Breeding Organic Corn varieties to resist GMO contamination                   | $48,183      | Dr. Dennis West  
                     |                                 |              | University of Tennessee |
| LS05-172   | Forage systems for the sustainable production of uniform goat carcasses      | $200,000     | Richard Joost  
                     |                                 |              | University of Tennessee at Martin |
| LS03-147   | Bioactive Natural Products: A feasible method of organic disease management in | $19,883      | Kimberly Gwinn  
                     |                                 |              | University of Tennessee |
|            | float bed production systems                                                  |              | Carl Sams  
                     |                                 |              | The University of Tennessee |
| LS03-152   | Improving Organic Crop Production with Enhanced Biofumigation and Composting  | $273,440     | Tim Cross  
                     |                                 |              | University of Tennessee, Ag Economics |
| LS95-068   | Using Farm Family Studies to Teach Sustainable Agriculture                    | $146,630     | University of Tennessee, Entomology & Plant Pathology |
| LS94-064   | Development of Sustainable Area-Wide Weed Management Practices for Improved  | $3,760       | Michael D. Mullen  
                     |                                 |              | University of Tennessee, Plant and Soil Science |
| LS93-052   | Utilization of Dairy Manure in Low-input, Conservation Tillage Animal Feed    | $90,635      |                       |
|            | Production Systems                                                            |              |                       |
Influence of Integrated Pest Management (IPM) On Low-input Sustainable Agriculture (LISA) in the Southern Region

**PROFESSIONAL DEVELOPMENT PROGRAM GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES18-141</td>
<td>Soil SMaRTS (Specific Management and Resources Training for Sustainability) for Soil Health in Tennessee</td>
<td>$77,413</td>
<td>Dr. Jason deKoff, Tennessee State University</td>
</tr>
<tr>
<td>ES14-121</td>
<td>Sustainable ACEs (Agriculture, Curricula, Energy) for Tennessee</td>
<td>$77,757</td>
<td>Dr. John Skinner, Tennessee State University</td>
</tr>
<tr>
<td>ES03-069</td>
<td>Training Educators to Protect Honey Bee Pollinators with Sustainable Pest Management</td>
<td>$126,648</td>
<td>Dr. John Skinner, Univ. Tennessee</td>
</tr>
<tr>
<td>ES02-061</td>
<td>A Statewide Journey of Sustainable Success: Hands-On Training</td>
<td>$48,000</td>
<td>Rob Holland, Center for Profitable Agriculture</td>
</tr>
<tr>
<td>ES97-029</td>
<td>Implementing Tennessee’s Strategic Plan for Sustainable Agriculture: Utilizing On-Farm Case Studies for Teaching Advanced Management and Marketing to Extension Staff</td>
<td>$10,000</td>
<td>Dr. Clark Garland, University of Tennessee</td>
</tr>
<tr>
<td>LST94-004</td>
<td>Sustainable Dairy Systems Manual and Training</td>
<td>$90,000</td>
<td>Dr. Clark Garland, University of Tennessee</td>
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**FARMER/RANCHER GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS19-315</td>
<td>A Study of the Effects of Black Woven Polypropylene on Soil Biota</td>
<td>$9,670</td>
<td>Tera Kurtz</td>
</tr>
<tr>
<td>FS18-310</td>
<td>Increasing Farm Fertility and Profits with Mushroom Mulches</td>
<td>$9,774</td>
<td>David Wells, III, Henosis</td>
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<tr>
<td>FS17-295</td>
<td>Incorporating Conservation Solutions into Alternative Crop Transplant Systems</td>
<td>$9,999</td>
<td>Sarah Bellos, Farmer</td>
</tr>
<tr>
<td>FS17-297</td>
<td>Bacillus thuringiensis var. Israeensis as a Larvical on a Rotational Grazing System for Ruminants to Combat Haemonchus contortus</td>
<td>$10,000</td>
<td>Jo Ann Harris, Farmer</td>
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<tr>
<td>FS17-294</td>
<td>Adaptive Winter Squash</td>
<td>$1,822</td>
<td>Megan Allen, Care of the Earth Community Farm</td>
</tr>
<tr>
<td>FS12-263</td>
<td>Selective breeding of honey bees for multiple traits with a priority on nosema disease resistance</td>
<td>$10,000</td>
<td>Michael Wilson, Rosecomb Apiaries</td>
</tr>
<tr>
<td>FS10-241</td>
<td>Sustainable Cultivation of Plant-derived Indigo for Diversification and On-farm Value-added Dye Pigment Production</td>
<td>$9,871</td>
<td>Sarah Bellos, Farmer</td>
</tr>
<tr>
<td>FS07-214</td>
<td>Sustainable Low-Cost Heating for Season Extension Structures</td>
<td>$14,928</td>
<td>Steve Hodges, Clinch Appalachian Farm Enterprises</td>
</tr>
</tbody>
</table>
**Natural Comb Management of Honey Bees for Varroa Control**  
$15,000  
Michael Wilson

**Establishing Natural Controls of Competitive Fungi in the Production of Shiitake Mushrooms**  
$8,832  
James D'Agay

**A Demand-Driven Approach to Specialty Crop Market Development**  
$12,324  
Dianne Levy  
Appalachian Spring Cooperative

**Aquaculturally Derived Products as Fertilizers for High-value Organic Crop Production**  
$9,953  
Marc Cardosa

**Salsa Pepper Project**  
$9,660  
Sara Gardner

**Selection of Hygienic Honey Bee Queens Resistant to Tracheal Mites**  
$9,987  
Edwin Holcombe

**Cooperating for Success: Building a Value-added Marketing Cooperative for Advantage in the Marketplace**  
$15,000  
Paul Miller  
Appalachian Spring Cooperative

**Northern Tennessee Farmer’s Association Cooperative Farmers Market Project**  
$13,755  
Michael Osborne  
Northern Tennessee Farmer’s Assn. Cooperative

**Fungicidal Effects of Compost Tea on Organic Strawberry Production**  
$9,814  
John Dysinger  
Bountiful Blessings Organic Farm

**The Effect of Municipal Compost on Christmas Trees**  
$6,985  
Curtis Buchanan

**Evaluating the Cost of Production of Row Crops Using Precision Farming Technologies**  
$7,816  
J. Tucker

**Low Input Sustainable Agriculture Short Course**  
$9,650  
Alexander McGregor

**Sustainable Cultivation of Medicinal Herbs as a Cash Crop Alternative to Tobacco**  
$5,004  
Paul D. Miller  
Tamsen Farm

**Grazing Alternatives to Tall Fescue for Stocker Cattle**  
$9,982  
Chris Pitts

**Swine Lagoon Management System**  
$10,000  
Kenneth Moore

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### GRADUATE STUDENT GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| GS20-228  | Sustainable Management of Phytophthora Cinnamomi and Ambrosia Beetles Under Stress Conditions | $16,335 | Dr. Fulya Baysal-Gurel  
Tennessee State University  
Krishna Neupane  
Tennessee State University |
| GS17-168  | Evaluating Soil Microbial Communities and Cropping Systems for Biomass Feedstock Production on Degraded Lands | $14,838 | E. Kudjo Dzantor  
Tennessee State University  
Ekundayo Adeleke  
Tennessee State University |
Investigating the Impact of Plant Spacing on Yields of Sweet Potato Produced in Organic Systems

Sustainable Management of Soil-borne Diseases in Nursery Production

Integration of Silvopasture and Nut Production in the Southeast

Assessment of beneficial microorganisms: Trichoderma, Actinomycetes, and Bacillus in anaerobic soil disinfestation (ASD)

Examining the Influence of Farmers’ Market Managers Perceived Roles on Business Opportunities for Small- and Moderate-size Farms and Access to Healthful Foods for Low-income Households

Efficacy of entomopathogenic fungi in an integrated pest management plan for cucumber beetles in melons and pumpkins

Testing the efficacy of three new alternative treatments for Nosema disease of honey bees in Tennessee

Providing habitat for native pollinators and determination of native pollinator contribution to pollination of cucurbits and blueberries at farm sites


Collaborative Learning among Farmers as an Approach to Alternative Agricultural Education

Suppression of Soilborne Phytopathogenic Fungi of Tomatoes via Integrated Production Systems that Utilize Biofumigation, Composted Amendments, Solarization, and Chemical Fumigants.

Control of Soilborne Plant Pathogens of tomatoes with incorporation of Indian Mustard (Brassica juncea)

Biofumigants for Sustainable Soil-borne Disease Management in Nursery Production

ON FARM RESEARCH/PARTNERSHIP GRANTS
<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS10-077</td>
<td>Live Green and Prosper Community Education and Outreach Initiative</td>
<td>$10,000</td>
<td>Erica Duarte</td>
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<td></td>
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<td>Upper Cumberland Broadcast Council - WCTE</td>
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<tr>
<td>CS10-075</td>
<td>Building Sustainable Families through a Celebration of Low-Impact and Organic Community-Supported Agriculture</td>
<td>$10,000</td>
<td>Ruth Correll</td>
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<td>UT Extension, Wilson County</td>
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<tr>
<td>CS07-056</td>
<td>&quot;Gathering&quot; of Homestead Economic and Entrepreneurs of Food Based, Organic Foods and Other Related Businesses</td>
<td>$10,000</td>
<td>Martha Pile</td>
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<td>UT Extension of Montgomery County</td>
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<tr>
<td>CS07-056A</td>
<td>&quot;Gathering&quot; of Homestead Economic and Entrepreneurs of Food Based, Organic Foods and Other Related Businesses</td>
<td>$10,000</td>
<td>Martha Pile</td>
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<tr>
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<td>UT Extension of Montgomery County</td>
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<tr>
<td>CS06-048</td>
<td>Schools + Potatoes Upper E. Tennessee Development System (SPUDS)</td>
<td>$39,762</td>
<td>Steve Hodges</td>
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<td>Clinch Appalachian Farm Enterprises</td>
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<tr>
<td>CS06-049</td>
<td>Appalachian Sustainable Agriculture and Energy Project</td>
<td>$40,000</td>
<td>John Jackson</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Appalachian Native Plants Inc</td>
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<tr>
<td>CS02-004</td>
<td>Homegrown, From Our Farms to Your Table: Growing a Farmers’ Cooperative in East Tennessee</td>
<td>$6,436</td>
<td>Steve Hodges</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Clinch Appalachian Farm Enterprises</td>
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</tbody>
</table>

**Sustainable Community Innovation Grants**

**Total funding from the USDA SARE program to Tennessee**

$2,634,570

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).