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 $404 million to more than 8,776 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...

Puerto Rico

Project Highlight: Cover Crops Improve Soil in Plantain Crops

Cover crops bring many benefits to farming systems, from protecting the soil against erosion to suppressing weeds to improving yields and profitability through healthier soil. In Puerto Rico, a team of researchers, educators and service providers used a SARE grant to start bringing these benefits to one of the island’s main crops, the plantain.

Starting in 2013, the research team conducted on-farm experiments to identify cover crops species that could be intercropped with plantains to improve soil health. They focused on jack beans, sunnhemp and sorghum, planted as cover crops both individually and as mixes. The team collected soil samples to measure soil fertility, microbial activity and other indicators of soil health, and they made some important discoveries that should help Puerto Rico farmers make informed decisions about using cover crops. Jack beans established most successfully and showed the most promise overall, whereas rodents and heavy rains impacted the sorghum, and the sunnhemp performed well but was more susceptible to weather conditions than the jack beans.

Most importantly, the cover crop trials revealed an economic benefit. To achieve yields of high-quality plantains by market standards, no nematicides were needed and fungicide applications were reduced 78 percent—representing a cost savings to the farmer.

For more information on this project, see sare.org/projects, and search for project number FS13-271.

SARE in Puerto Rico

southern.sare.org/state-profiles/puerto-rico/

$1,646,123 in total funding

39 grant projects

(since 1988)

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

Grants awarded
2019–2024

Total awards: **16 grants**

- 3 Farmer/Rancher
- 3 Professional Development Program
- 1 On Farm Research/Partnership
- 1 Graduate Student
- 8 Education Only

Total funding: **$597,448**

- $45,339 Farmer/Rancher
- $182,943 Professional Development Program
- $12,549 On Farm Research/Partnership
- $16,491 Graduate Student
- $340,126 Education Only

Find a complete list of projects on page 3.

Farmer and rancher impacts
2019–2024

SARE grantees have reported the following impacts from their projects:

- **2,475 farmers participated in a SARE-funded project**
- **181 farmers reported a change in knowledge, awareness, skills or attitude**
- **171 farmers changed a practice**

Learn about local impacts at:
southern.sare.org/sare-in-your-state/puerto-rico/

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-profiles/puerto-rico/ to learn more.

Nicolas Cartagena
University of Puerto Rico
(787) 752-0065
nicolas.cartagena@upr.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.
Puerto Rico has been awarded $1,569,123 grants to support 36 projects, including but not limited to, 6 research and/or education projects, 5 professional development projects and 11 producer-led projects. Puerto Rico 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>
<tbody>
<tr>
<td>LS14-263</td>
<td>Multisectoral and Transdisciplinary Coalition to Spearhead the Development of a Cohesive Network of Local Limited-resources Urban Community Farmers for Sustainable Agriculture Using the Capital City of Puerto Rico as Case Study</td>
<td>$250,000</td>
<td>Dr. Maria Calixta Ortiz&lt;br&gt;Universidad Ana G. Méndez</td>
</tr>
<tr>
<td>LS10-231</td>
<td>Weed management alternatives for organic coffee agroforestry systems of Puerto Rico</td>
<td>$150,000</td>
<td>Mariangie Ramos&lt;br&gt;University of Puerto Rico at Utuado</td>
</tr>
<tr>
<td>LS08-212</td>
<td>Integrating tropical legumes with condensed tannins into ruminant grass-based diets for sustainable production</td>
<td>$100,000</td>
<td>Dr. Elide Valencia&lt;br&gt;University of Puerto Rico, Mayaguez</td>
</tr>
<tr>
<td>LS04-162</td>
<td>Developing legume shade trees for Sustainable coffee production in Puerto Rico</td>
<td>$195,298</td>
<td>Eduardo Schröder&lt;br&gt;University of Puerto Rico</td>
</tr>
<tr>
<td>LS00-111</td>
<td>Structures of Sustainability: A Regenerative Model for Community Agriculture Development</td>
<td>$19,678</td>
<td>Vivian Carro-Figueroa&lt;br&gt;University of Puerto Rico Agric. Experiment Sta.</td>
</tr>
<tr>
<td>LS95-072</td>
<td>Agronomic &amp; Economic Benefits of Intercropping Bean with Banana</td>
<td>$99,845</td>
<td>Lii-chyuan Liu&lt;br&gt;University of Puerto Rico, College of Agricultural Sciences</td>
</tr>
</tbody>
</table>

### 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>SPDP22-14</td>
<td>Learning to Teach Farmers about Agricultural Interpretation to Foster Sustainability and Food Security</td>
<td>$59,999</td>
<td>Camille Collazo Ortiz&lt;br&gt;Yes&lt;br&gt;Dr. Robinson Rodriguez&lt;br&gt;University of Puerto Rico, Mayaguez Campus, School of Agricultur</td>
</tr>
</tbody>
</table>
### Soil Nutrient Management in Tropical Soils

- **Project #**: ES20-152
- **Leader**: Dr. Daniel Bair, Dr. Miguel Muñoz, Mario Rodriguez
- **Institution**: University of Puerto Rico, Mayaguez, USDA-NRCS Caribbean Area
- **SARE Support**: $69,335

### Agroforestry Management for Tropical and Subtropical Agroforestry Systems: Management guide and practical workshops

- **Project #**: ES19-149
- **Leader**: Andre Sanfiorenzo
- **Institution**: University of Puerto Rico at Utuado
- **SARE Support**: $53,609

### Alternative Sustainable Practices for Selected Crops in Puerto Rico

- **Project #**: ES97-033
- **Leader**: Miguel F. Monroig
- **Institution**: University of Puerto Rico
- **SARE Support**: $10,000

### Integrated Strategic Plan for Sustainable Agriculture

- **Project #**: ES97-035
- **Leader**: Hipólito O’Farrill-Nieves
- **Institution**: University of Puerto Rico Agric. Ext. Service
- **SARE Support**: $25,740

### FARMER/RANCHER GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
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</thead>
<tbody>
<tr>
<td>FS24-370</td>
<td>Roots of Resilience: Mulching for Higher Yields in Breadfruit Agroforestry and Island Food Sovereignty</td>
<td>$18,011</td>
<td>Fernando Maldonado Carite 3.0</td>
</tr>
<tr>
<td>FS21-334</td>
<td>Case Study for American Heritage Hogs in Puerto Rico</td>
<td>$14,885</td>
<td>Chris Ghosio</td>
</tr>
<tr>
<td>FS20-324</td>
<td>Building Soil and Plant Health with Compost and Compost Teas in Coffee Plantations</td>
<td>$12,443</td>
<td>Gabriela Medina Finca La Jiba</td>
</tr>
<tr>
<td>FS17-298</td>
<td>Weed Suppression by Compost Mulch in Plantains</td>
<td>$8,436</td>
<td>Reed Hepperly Hepperly Enterprises</td>
</tr>
<tr>
<td>FS13-271</td>
<td>Cover Crops for Improving Recalcitrant Soil Organic Matter and Soil Biota Management in Plantain Production Systems in Puerto Rico</td>
<td>$10,000</td>
<td>Duamed Colon-Carrion Agro Tropical, Inc.</td>
</tr>
<tr>
<td>FS07-213</td>
<td>Recycling Mushroom Spent Compost</td>
<td>$8,027</td>
<td>Reed Hepperly Hepperly Enterprises</td>
</tr>
<tr>
<td>FS05-193</td>
<td>Organic Farming in the Tropics with Legume Groundcover</td>
<td>$8,107</td>
<td>Luis Miguel Rico</td>
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<tr>
<td>FS03-172</td>
<td>Puerto Rico Shade Grown Coffee Project</td>
<td>$9,956</td>
<td>Luis Miguel Rico</td>
</tr>
<tr>
<td>Project #</td>
<td>Project Title</td>
<td>SARE Support</td>
<td>Project Leaders</td>
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<tr>
<td>FS99-095</td>
<td>Breaking the Herbicide Habit: Integrating Cover Crops with Herbicide Application</td>
<td>$9,960</td>
<td>Rebecca Perez-Rossello</td>
</tr>
<tr>
<td>FS99-098</td>
<td>Demonstrating the Benefits of Agroforestry Practices on Family Farms</td>
<td>$6,704</td>
<td>Andre Sanfiorenzo</td>
</tr>
<tr>
<td>FS95-028</td>
<td>Improving Tropical Soils by Utilizing Organic Wastes</td>
<td>$10,000</td>
<td>Andre Sanfiorenzo</td>
</tr>
</tbody>
</table>

**GRADUATE STUDENT GRANTS**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>GS23-287</td>
<td>The Taino: Can The Indigenous Agricultural Methods of Puerto Rico Feed the Island and Potentially Mitigate Climate Change?</td>
<td>$16,491</td>
<td>Dr.Krishnaswamy Jayachandran Florida International University Joseph Navarro Florida International University</td>
</tr>
<tr>
<td>GS08-070</td>
<td>The fate of the finca: Smallholders in the Hispanic Caribbean</td>
<td>$10,000</td>
<td>Gregory Knapp University of Texas at Austin Katia R. Aviles-Vazquez The University of Texas at Austin</td>
</tr>
</tbody>
</table>

**ON FARM RESEARCH/PARTNERSHIP GRANTS**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>OS20-134</td>
<td>Case study for Heritage American Guinea Hogs in Puerto Rico</td>
<td>$12,549</td>
<td>Julie North N/A</td>
</tr>
<tr>
<td>OS07-033</td>
<td>Precious Indigenous Woods For Coffee Shade</td>
<td>$14,967</td>
<td>Jose Aponte El Caribe RC&amp;D</td>
</tr>
<tr>
<td>OS05-027</td>
<td>Coffee Seedlings in Forestry Tubes</td>
<td>$14,957</td>
<td>Steven Welker USDA NRCS - El Atlantico RC&amp;D</td>
</tr>
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</table>

**SUSTAINABLE COMMUNITY INNOVATION GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
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<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS05-038</td>
<td>Puerto Rico PIG Project</td>
<td>$10,000</td>
<td>Steven Welker USDA NRCS - El Atlantico RC&amp;D</td>
</tr>
</tbody>
</table>

**EDUCATION ONLY GRANTS**

<table>
<thead>
<tr>
<th>Project #</th>
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<tbody>
<tr>
<td>EDS24-068</td>
<td>PR-GOSHEPI - PHASE II. Hands-on Training in Best Management Practices for Sustainable Small Ruminant Production</td>
<td>$38,970</td>
<td>Abner Rodriguez University of Puerto Rico Dr.John Fernandez University of Puerto Rico</td>
</tr>
</tbody>
</table>
| EDS24-058 | From the Classroom to the Farm: Exploring Integrated Pest Management & Climate Change for Farmers and Agricultural Educators in Puerto Rico | $25,089 | Dr. Sofía Macchiavelli Girón  
University of Puerto Rico  
Dr. Nicole Colón Carrión  
CORTEVA Agriscience |
|-----------|-------------------------------------------------------------------------------------------------|--------|-----------------------------|
| EDS23-053 | Education and Conservation Practices for a Sustainable Agriculture in Puerto Rico | $41,000 | Nicolás M. Cartagena  
University of Puerto Rico  
Dr. Aníbal II Ruiz-Lugo  
Puerto Rico Agricultural Extension Service, University of Puerto Rico |
| EDS23-044 | Tai Lamb Meat Marketing and Promotion Educational Program (TAILAM-EP) | $45,999 | Neftali Lluch, PE  
Tai Institute of Sustentable Livestock Research LLC  
Dr. John Fernandez  
University of Puerto Rico  
Abner Rodriguez  
University of Puerto Rico |
| EDS22-41  | An Agro-Ecological Incubator and Educational Programs for Beginner Farmers in Western Puerto Rico | $50,000 | Rebekah Sanchez Cruz  
Plenitud PR  
Dr. Bryan Brunner  
Agricultural Experiment Station  
Paula Paoli Garrido  
Plenitud PR |
| EDS21-29  | Puerto Rico Goat and Sheep Educational Program Initiative (PR-GOSHEPI) | $48,036 | Abner Rodriguez  
University of Puerto Rico  
Dr. John Fernandez  
University of Puerto Rico |
| EDS20-23  | Agro-Ecological Education for New Farmers in the Central Western Region of Puerto Rico | $49,992 | Paula Paoli Garrido  
Plenitud PR  
Bryan Brunner Montes  
University of Puerto Rico, Mayagüez  
Owen Ingle  
Plenitud PR  
Samantha Lopez  
Plenitud PR  
Gina Malley Campos  
Plenitud PR  
Rebekah Sanchez Cruz  
Plenitud PR |
| EDS20-22  | Agroecosystem Sustainable Guides | $41,040 | Silmarie Crespo  
ECO-Services  
Gabriela Medina  
Finca La Jiba |

**Total funding from the USDA SARE program to Puerto Rico**  
**$1,569,123**
For further information on projects, contact 770-412-4787 or ssare@uga.edu. Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).