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 $360 million to more than 8,174 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/sare-in-your-state/puerto-rico

$1,383,563 in total funding
30 grant projects (since 1988)

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

Total awards: **30 grants**

- 1 Sustainable Community Innovation
- 5 Professional Development Program
- 10 Farmer/Rancher
- 1 Graduate Student
- 10 Research and Education
- 3 On Farm Research/Partnership

Total funding: **$1,383,563**

- $10,000 Sustainable Community Innovation
- $218,683 Professional Development Program
- $98,518 Farmer/Rancher
- $10,000 Graduate Student
- $1,003,889 Research and Education
- $42,473 On Farm Research/Partnership

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/puerto- rico](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-pages/puerto- rico](southern.sare.org/state-pages/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](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 $1,383,563 grants to support 30 projects, including but not limited to, 10 research and/or education projects, 5 professional development projects and 10 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>LS22-385</td>
<td>An Agro-Ecological Incubator and Educational Programs for Beginner Farmers in Western Puerto Rico</td>
<td>$50,000</td>
<td>Rebekah Sanchez Cruz Plentitud PR Dr.Bryan Brunner Agricultural Experiment Station Paula Paoli Garrido Plentud PR</td>
</tr>
<tr>
<td>LS21-350</td>
<td>Puerto Rico Goat and Sheep Educational Program Initiative (PR-GOSHEPI)</td>
<td>$48,036</td>
<td>Abner Rodriguez University of Puerto Rico Dr.John Fernandez University of Puerto Rico</td>
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<tr>
<td>LS20-329</td>
<td>Agroecosystem Sustainable Guides</td>
<td>$41,040</td>
<td>Silmarie Crespo ECO-Services Gabriela Medina Finca La Jiba</td>
</tr>
<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 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 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 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 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 University of Puerto Rico Agric. Experiment Sta.</td>
</tr>
</tbody>
</table>
**Agronomic & Economic Benefits of Intercropping Bean with Banana**

**Li-chyuan Liu**
*University of Puerto Rico, College of Agricultural Sciences*

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### PROFESSIONAL DEVELOPMENT PROGRAM GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
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</tr>
</thead>
</table>
| SPDP22-14  | Learning to Teach Farmers about Agricultural Interpretation to Foster Sustainability and Food Security | $59,999      | Camille Collazo Ortiz
Dr. Robinson Rodriguez
Yes
University of Puerto Rico, Mayaguez Campus, School of Agriculture |
| ES20-152   | Soil Nutrient Management in Tropical Soils                                   | $69,335      | Dr. Daniel Bair
University of Puerto Rico, Mayaguez
Dr. Miguel Muñoz
University of Puerto Rico, Mayaguez
Mario Rodriguez
USDA-NRCS Caribbean Area |
University of Puerto Rico at Utuado |
| ES97-035   | Integrated Strategic Plan for Sustainable Agriculture                       | $25,740      | Hipólito O’Farrill-Nieves
University of Puerto Rico Agric. Ext. Service |
| ES97-033   | Alternative Sustainable Practices for Selected Crops in Puerto Rico          | $10,000      | Miguel F. Monroig
University of Puerto Rico |

### FARMER/RANCHER GRANTS

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

GRADUATE STUDENT GRANTS

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>GS08-070</td>
<td>The fate of the finca: Smallholders in the Hispanic Caribbean</td>
<td>$10,000</td>
<td>Gregory Knapp&lt;br&gt;University of Texas at Austin&lt;br&gt;Katia R. Aviles-Vazquez&lt;br&gt;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&lt;br&gt;N/A</td>
</tr>
<tr>
<td>OS07-033</td>
<td>Precious Indigenous Woods For Coffee Shade</td>
<td>$14,967</td>
<td>Jose Aponte&lt;br&gt;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&lt;br&gt;USDA NRCS - El Atlantico RC&amp;D</td>
</tr>
</tbody>
</table>

SUSTAINABLE COMMUNITY INNOVATION GRANTS

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

Total funding from the USDA SARE program to Puerto Rico

$1,383,563

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).