

## 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 \$406 million to more than 8,802 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.



[www.sare.org](http://www.sare.org)

## 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](http://sare.org/projects), and search for project number [FS13-271](#).

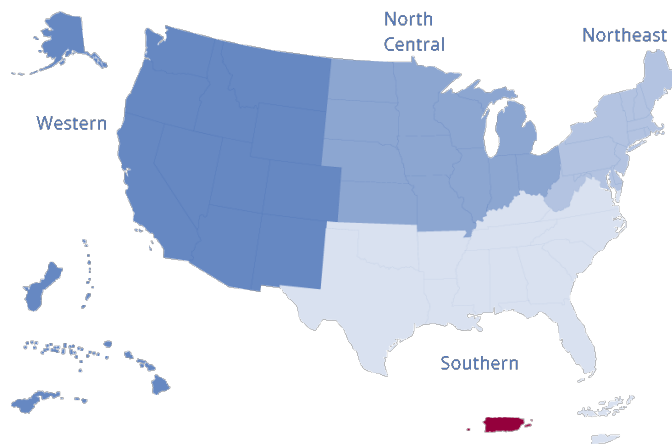
## SARE in Puerto Rico

[southern.sare.org/state-profiles/puerto-rico/](http://southern.sare.org/state-profiles/puerto-rico/)

**\$597,448**  
**in total funding**

**16 grant project**  
(since 1988)

For a complete list of grant projects state by state, go to [www.sare.org/state-summaries](http://www.sare.org/state-summaries)



# SARE in Puerto Rico

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## 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:

**1,112 farmers participated in a SARE-funded project**

**161 farmers reported a change in knowledge, awareness, skills or attitude**

**144 farmers changed a practice**



Learn about local impacts at:  
[southern.sare.org/sare-in-your-state/puerto-rico/](https://southern.sare.org/sare-in-your-state/puerto-rico/)

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## 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/](https://southern.sare.org/state-profiles/puerto-rico/) to learn more.

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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.

For detailed information on SARE projects, go to  
**[www.SARE.org](https://www.SARE.org)**



# AGRICULTURE PROJECTS FUNDED IN PUERTO RICO

by USDA's  
Sustainable Agriculture Research and Education (SARE) Program

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

| Project #                | Project Title   | SARE Support | Project Leaders   |
|--------------------------|---|--------------|---|
| <a href="#">LS14-263</a> | 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 | \$250,000    | Dr.Maria Calixta Ortiz<br>Universidad Ana G. Méndez                           |
| <a href="#">LS10-231</a> | Weed management alternatives for organic coffee agroforestry systems of Puerto Rico   | \$150,000    | Mariangie Ramos<br>University of Puerto Rico at Utuado                        |
| <a href="#">LS08-212</a> | Integrating tropical legumes with condensed tannins into ruminant grass-based diets for sustainable production  | \$100,000    | Dr.Elide Valencia<br>University of Puerto Rico, Mayaguez                      |
| <a href="#">LS04-162</a> | Developing legume shade trees for Sustainable coffee production in Puerto Rico  | \$195,298    | Eduardo Schröder<br>University of Puerto Rico                                 |
| <a href="#">LS00-111</a> | Structures of Sustainability: A Regenerative Model for Community Agriculture Development  | \$19,678     | Vivian Carro-Figueroa<br>University of Puerto Rico Agric. Experiment Sta.     |
| <a href="#">LS95-072</a> | Agronomic & Economic Benefits of Intercropping Bean with Banana   | \$99,845     | Lii-chyuan Liu<br>University of Puerto Rico, College of Agricultural Sciences |

## PROFESSIONAL DEVELOPMENT PROGRAM GRANTS

| Project #                 | Project Title  | SARE Support | Project Leaders   |
|---------------------------|--|--------------|---|
| <a href="#">SPDP22-14</a> | Learning to Teach Farmers about Agricultural Interpretation to Foster Sustainability and Food Security | \$59,999     | Camille Collazo Ortiz<br>Yes<br>Dr.Robinson Rodriguez<br>University of Puerto Rico, Mayaguez Campus, School of Agricultur |

|          |   |          |  |
|----------|---|----------|--|
| ES20-152 | Soil Nutrient Management in Tropical Soils  | \$69,335 | Dr.Daniel Bair<br>University of Puerto Rico, Mayaguez<br>Dr.Miguel Muñoz<br>University of Puerto Rico, Mayaguez<br>Mario Rodriguez<br>USDA-NRCS Caribbean Area |
| ES19-149 | Agroforestry Management for Tropical and Subtropical Agroforestry Systems: Management guide and practical workshops | \$53,609 | Andre Sanfioenzo<br>University of Puerto Rico at Utuado  |
| ES97-033 | Alternative Sustainable Practices for Selected Crops in Puerto Rico   | \$10,000 | Miguel F. Monroig<br>University of Puerto Rico   |
| ES97-035 | Integrated Strategic Plan for Sustainable Agriculture   | \$25,740 | Hipólito O’Farrill-Nieves<br>University of Puerto Rico Agric. Ext. Service   |

#### FARMER/RANCHER GRANTS

| Project # | Project Title  | SARE Support | Project Leaders                             |
|-----------|--|--------------|---|
| FS24-370  | Roots of Resilience: Mulching for Higher Yields in Breadfruit Agroforestry and Island Food Sovereignty                             | \$18,011     | Fernando Maldonado<br>Carite 3.0            |
| FS21-334  | Case Study for American Heritage Hogs in Puerto Rico   | \$14,885     | Chris Ghosio                                |
| FS20-324  | Building Soil and Plant Health with Compost and Compost Teas in Coffee Plantations   | \$12,443     | Gabriela Medina<br>Finca La Jiba            |
| FS17-298  | Weed Suppression by Compost Mulch in Plantains   | \$8,436      | Reed Hepperly<br>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<br>Agro Tropical, Inc. |
| FS07-213  | Recycling Mushroom Spent Compost   | \$8,027      | Reed Hepperly<br>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                            |

|                          |  |          |                        |
|--------------------------|--|----------|------------------------|
| <a href="#">FS99-095</a> | Breaking the Herbicide Habit: Integrating Cover Crops with Herbicide Application | \$9,960  | Rebecca Perez-Rossello |
| <a href="#">FS99-098</a> | Demonstrating the Benefits of Agroforestry Practices on Family Farms             | \$6,704  | Andre Sanfioenzo       |
| <a href="#">FS95-028</a> | Improving Tropical Soils by Utilizing Organic Wastes                             | \$10,000 | Andre Sanfioenzo       |

#### GRADUATE STUDENT GRANTS

| Project #                | Project Title  | SARE Support | Project Leaders  |
|--------------------------|--|--------------|--|
| <a href="#">GS23-287</a> | The Taino: Can The Indigenous Agricultural Methods of Puerto Rico Feed the Island and Potentially Mitigate Climate Change? | \$16,491     | Dr.Krishnaswamy Jayachandran<br>Florida International University<br>Joseph Navarro<br>Florida International University |
| <a href="#">GS08-070</a> | The fate of the finca: Smallholders in the Hispanic Caribbean  | \$10,000     | Gregory Knapp<br>University of Texas at Austin<br>Katia R. Aviles-Vazquez<br>The University of Texas at Austin         |

#### ON FARM RESEARCH/PARTNERSHIP GRANTS

| Project #                | Project Title   | SARE Support | Project Leaders                                |
|--------------------------|---|--------------|--|
| <a href="#">OS20-134</a> | Case study for Heritage American Guinea Hogs in Puerto Rico | \$12,549     | Julie North<br>N/A                             |
| <a href="#">OS07-033</a> | Precious Indigenous Woods For Coffee Shade                  | \$14,967     | Jose Aponte<br>El Caribe RC&D                  |
| <a href="#">OS05-027</a> | Coffee Seedlings in Forestry Tubes                          | \$14,957     | Steven Welker<br>USDA NRCS - El Atlantico RC&D |

#### SUSTAINABLE COMMUNITY INNOVATION GRANTS

| Project #                | Project Title           | SARE Support | Project Leaders                                |
|--------------------------|-------------------------|--------------|--|
| <a href="#">CS05-038</a> | Puerto Rico PIG Project | \$10,000     | Steven Welker<br>USDA NRCS - El Atlantico RC&D |

#### EDUCATION ONLY GRANTS

| Project #                 | Project Title   | SARE Support | Project Leaders  |
|---------------------------|---|--------------|--|
| <a href="#">EDS24-068</a> | PR-GOSHEPI - PHASE II. Hands-on Training in Best Management Practices for Sustainable Small Ruminant Production | \$38,970     | Abner Rodriguez<br>University of Puerto Rico<br>Dr.John Fernandez<br>University of Puerto Rico |

|                  |   |          |  |
|------------------|---|----------|--|
| <b>EDS24-058</b> | 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<br>University of Puerto Rico<br>Dr.Nicole Colón Carrión<br>CORTEVA Agriscience   |
| <b>EDS23-053</b> | Education and Conservation Practices for a Sustainable Agriculture in Puerto Rico   | \$41,000 | Nicolás M. Cartagena<br>University of Puerto Rico<br>Dr.Anibal II Ruiz-Lugo<br>Puerto Rico Agricultural Extension Service, University of Puerto  |
| <b>EDS23-044</b> | Tai Lamb Meat Marketing and Promotion Educational Program (TAILAM-EP)   | \$45,999 | Neftali Lluch, PE<br>Tai Institute of Sustainable Livestock Research LLC<br>Dr.John Fernandez<br>University of Puerto Rico<br>Abner Rodriguez<br>University of Puerto Rico   |
| <b>EDS22-41</b>  | An Agro-Ecological Incubator and Educational Programs for Beginner Farmers in Western Puerto Rico   | \$50,000 | Rebekah Sanchez Cruz<br>Plenitud PR<br>Dr.Bryan Brunner<br>Agricultural Experiment Station<br>Paula Paoli Garrido<br>Plenitud PR   |
| <b>EDS21-29</b>  | Puerto Rico Goat and Sheep Educational Program Initiative (PR-GOSHEPI)  | \$48,036 | Abner Rodriguez<br>University of Puerto Rico<br>Dr.John Fernandez<br>University of Puerto Rico   |
| <b>EDS20-23</b>  | Agro-Ecological Education for New Farmers in the Central Western Region of Puerto Rico  | \$49,992 | Paula Paoli Garrido<br>Plenitud PR<br>Bryan Brunner Montes<br>University of Puerto Rico, Mayagüez<br>Owen Ingley<br>Plenitud PR<br>Samantha Lopez<br>Plenitud PR<br>Gina Malley Campos<br>Plenitud PR<br>Rebekah Sanchez Cruz<br>Plenitud PR |
| <b>EDS20-22</b>  | Agroecosystem Sustainable Guides  | \$41,040 | Silmarie Crespo<br>ECO-Services<br>Gabriela Medina<br>Finca La Jiba  |

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**Total funding from the USDA SARE program to  
Puerto Rico  
\$1,569,123**

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For further information on projects, contact 770-412-4787 or [ssare@uga.edu](mailto:ssare@uga.edu).  
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