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, granteeproduced information products and other educational materials.

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

Guam

Project Highlight: Sheet Mulch Using Cardboard and NFTs
Weeds grow at a very fast pace in Guam. Hand weeding, herbicides, and bush cutting (commercial high powered gas trimmers) are common methods to suppress weeds. However, bush cutters can damage crops and be costly and hand weeding takes a lot of labor.

In this project, farmer Glen Takai proposed testing sheet mulch and nitrogen fixing trees (NFTs) as a solution. Sheet mulching is a layered method of mulching. Typical sheet mulching methods consists of initially laying single or multiple layers of cardboard over a targeted area. Cardboard layers can be topped with shredded/chipped organic waste material. Cardboard is an abundant resource on this remote island due to high imports, and it creates much waste into the landfill. The use of cardboard and NFTs as sheet mulch to manage weeds could also improve soil quality through adding organic matter.

The project has demonstrated significant differences in labor cost savings using sheet mulch compared to not using sheet mulch. Yield data shows that plants using sheet mulch produced significantly higher than plants not mulched. The common use of herbicides was completely eliminated. Lastly, the project promotes the idea of reduce, reuse, and recycle.

For more information on this project, see sare.org/projects, and search for project number FW19-348.

SARE in Guam
western.sare.org/sare-in-your-state/guam

$2,209,446 in total funding
48 grant projects
(since 1988)

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

www.sare.org
SARE Grants in Guam

Total awards: 48 grants
- 10 Professional Development Program
- 22 Farmer/Rancher
- 4 On Farm Research/Partnership
- 10 Research and Education
- 2 Research to Grass Roots

Total funding: $2,209,446
- $642,564 Professional Development Program
- $219,820 Farmer/Rancher
- $197,285 On Farm Research/Partnership
- $977,530 Research and Education
- $172,247 Research to Grass Roots

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: western.sare.org/sare-in-your-state/guam

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 western.sare.org/state-pages/guam to learn more.

Mark Acosta  
University of Guam, Cooperative Extension  
(671) 687-2028  
macosta@triton.uog.edu

Bob Barber  
University of Guam Cooperative Extension  
(671) 787-7391  
bbarber@triton.uog.edu

SARE is funded by the USDA’s National Institute of Food and Agriculture (NIFA).

For detailed information on SARE projects, go to www.SARE.org

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.
Guam has been awarded $2,209,446 grants to support 48 projects, including but not limited to, 10 research and/or education projects, 10 professional development projects and 22 producer-led projects. Guam 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>SW19-906</td>
<td>Reducing tree decline of Casuarina equisetifolia in Guam through replacement of bacterial wilt infected trees and research into the bacterial microbiomes of trees and associated termites</td>
<td>$304,273</td>
<td>Dr. Robert Schlub University of Guam</td>
</tr>
<tr>
<td>SW09-304</td>
<td>Replacing Feed Imports With Local Feed Resources in the Western Pacific</td>
<td>$47,207</td>
<td>Dr. Manuel Duguies Cooperative Extension Service</td>
</tr>
<tr>
<td>SW09-067</td>
<td>Island to Island, Farmer to Chef: Ag Agricultural Marketing Proposal</td>
<td>$133,967</td>
<td>Dr. L. Robert (Bob) Barber, Jr. University of Guam Cooperative Extension Service</td>
</tr>
<tr>
<td>SW08-067</td>
<td>Decline of Casuarina equisetifolia: A Loss to Pacific Island Agroforestry</td>
<td>$140,680</td>
<td>Roger Brown, Jr. University of Guam</td>
</tr>
<tr>
<td>SW05-00B</td>
<td>Preservation of Traditional Medicinal Plants on Guam</td>
<td>$18,615</td>
<td>Dr. L. Robert (Bob) Barber, Jr. University of Guam Cooperative Extension Service</td>
</tr>
<tr>
<td>SW02-048</td>
<td>Alternative Housing Structure for Livestock and Poultry in Micronesia</td>
<td>$26,857</td>
<td>Dr. Manuel Duguies Cooperative Extension Service</td>
</tr>
<tr>
<td>SW01-017</td>
<td>Commercial Production of Tropical Mushrooms Grown Organically</td>
<td>$36,081</td>
<td>George Wall CALS/AES, University of Guam</td>
</tr>
<tr>
<td>SW99-048</td>
<td>Evaluation and implementation of nitrogen fixing species in hedgerow intercropping in Marianas</td>
<td>$132,000</td>
<td>Mari Marutani College of Nat. &amp; Appl. Sciences, Univ. of Guam</td>
</tr>
<tr>
<td>SW99-047</td>
<td>Strengthening through Education the Sustainability of Solanaceous Crop Production in the Western Pacific Region</td>
<td>$16,000</td>
<td>Dr. Robert Schlub University of Guam</td>
</tr>
<tr>
<td>SW98-041</td>
<td>Evaluation of Processing Food Refuse and By-products for Growing Finishing Swine</td>
<td>$121,850</td>
<td>Farouq Abawi University of Guam</td>
</tr>
</tbody>
</table>

### RESEARCH TO GRASS ROOTS GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRGR22-003</td>
<td>Developing the Economic Sustainability and Viability of Value-added Products on Guam</td>
<td>$99,376</td>
<td>Kuan-Ju Chen University of Guam Tanisha Aflaque College of Natural and Applied Sciences, University of Guam Jian Yang</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>WPDP22-006</td>
<td>Information Network for Sustainable Pacific Islands Research and Education (INSPIRE)</td>
<td>$98,653</td>
<td>Mark Acosta University of Guam, Cooperative Extension Outreach, Dr. Jeng-Hung Liu University of Guam, Christopher Byrd North Dakota State University, Dr. Jennifer Young North Dakota State University</td>
</tr>
<tr>
<td>WPDP22-012</td>
<td>The promotion of Heat Stress awareness and Animal Nutrition for egg and hog production on Guam and the Western Region</td>
<td>$50,639</td>
<td>Dr. Robert Schlub University of Guam, Dr. Marin Brewer University of Georgia, Dr. Robert Kemerait University of Georgia, Dr. Kisha Shelton University of Georgia, Dr. Leilani Sumabat-Dacones University of Philippines</td>
</tr>
<tr>
<td>PDP20-001</td>
<td>Fungal leaf spots: field, lab, and online tutorial for professionals in Guam and the Northern Mariana Islands</td>
<td>$66,013</td>
<td>Dr. Robert Schlub University of Guam, Dr. Marin Brewer University of Georgia, Dr. Robert Kemerait University of Georgia, Dr. Kisha Shelton University of Georgia, Dr. Leilani Sumabat-Dacones University of Philippines</td>
</tr>
</tbody>
</table>

### 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>FW19-348</td>
<td>Sheet Mulch Using Cardboard and NFTs</td>
<td>$11,000</td>
<td>Glenn Takai Takai Farm</td>
</tr>
<tr>
<td>FW17-014</td>
<td>My Boars Are In Iowa</td>
<td>$13,597</td>
<td>Eddie Saure</td>
</tr>
</tbody>
</table>
Ducks in a Row: Raising Ducks on Guam for Production and Pest Control $19,206 Maegan Paloma Maegan Paloma
Rotating Paddock-style Systems in Tropical Environments $17,196 Hertha Van Beurden Paradise Natural Farm
From Peewee to Large Eggs $11,393 Alex Coloma Agriculture
Raising Black Soldier Fly Larvae as Chicken Feed in a Tropical Region $8,232 Chelsa Muna-Brecht P.U.N.G.Co Farms
Kona to Guam Weaving the Farmer Chef Network $19,625 Phoebe Wall University of Guam Dr.L. Robert (Bob) Barber, Jr. University of Guam Cooperative Extension Service
Living Mulch on Guam $13,000 Laila Pierson
Growing Papaya Using Aquaculture Effluent in an Automated Drip Irrigation System $14,800 David Crisostomo
Multi-crops on Plant Beds on Guam $5,915 Laila Pierson
Wastewater Delivery System for Irrigation and Soil Enrichment on Guam $4,570 John Benaventa Triple B Farms
Maximizing Production Efficiency in a Three-Stage Integrated Agriculture System Using Taro, Tilapia, Aquatic Plants and Fancy Guppies $9,951 Dr.L. Robert (Bob) Barber, Jr. University of Guam Cooperative Extension Service
Recycling Fish Waste to Fertilize Guam Farms $19,809 Ernie Wusstig
Greenhouse Water Barrier $10,871 Pete Terlane Guam Department of Agriculture
Lei Making and Marketing – A New Approach to Marketing $6,750 Antoinette Okada
Decreasing Dependence on Man-Made Fertilizers for Crop Production in Tropical Limestone Soils $5,200 Ernie Wusstig
Adopting Health Programs and Improving Weaning Facilities in Management of Piglet Diarrhea on Guam $7,085 Ricardo Cruz, Jr.
Genetic Upgrading and Improving Goat Management Practices on Guam $6,000 Loella Armstrong
Mushroom Production $3,950 David Nelson
FW97-054  Use of Sunnhemp in Cucumber Production  $4,300  Felix Quan

FW96-029  Dry-Extrusion of Wet Garbage for Swine Feeding  $4,350  George Pangelinan

FW96-030  Vegetable Soybean Cultivar Trials  $3,020  Felix Quan

**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>
</table>
| OW22-375   | 5 Future Trainers: Developing a farmer run agriculture production monitoring program for the Farmer’s Cooperative Association of Guam (FCAG) | $58,401      | Jesse Bamba  
University of Guam |
| OW15-031   | Seven Trees, Seven Practices: Demonstrating Agroforestry in the Western Pacific | $47,899      | Dr.L. Robert (Bob) Barber, Jr.  
University of Guam Cooperative Extension Service |
| OW14-026   | Screening tomato varieties for suitability on Guam in response to the arrival of Tomato leaf curl Guam virus in the Western Region | $49,500      | Dr.Robert Schlub  
University of Guam |
| OW10-322   | Local Feed Formulation for Goats                                               | $41,485      | Dr.Manuel Duguies  
Cooperative Extension Service |

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

$2,209,446

For further information on projects, contact Western SARE at (406) 994-4789 or wsare@montana.edu. Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).