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 $307 million to more than 7,384 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: Training on a Better Way to Fight Banana Weevil
Agriculture has not played a large role in Guam’s economy since the significant changes brought by World War II. For example, bananas sold in the past few years were mostly imported. Today, local farmers on Guam and other Pacific Islands are growing more bananas and the number of banana plantations is on the rise. But as Guam’s banana industry is on the rise, so too is the banana weevil, a pest that can decimate the crop and cause a complete loss of yield if not controlled.

To help producers cope with the pest, the University of Guam’s Gadi Reddy used a 2009 SARE grant to advance local agriculture professionals’ knowledge of semiochemicals in pest management. Semiochemicals are pheromones and other chemicals used to attract insects to physical traps, a potentially low-cost way of managing the banana weevil without resorting to over-use of pesticides.

Reddy increased his colleagues’ knowledge base by creating a variety of training publications on the use of semiochemicals. In conjunction with the publications, he led a four-month class for 10 agricultural professionals on the benefits and methods of trapping the four most prominent weevil pests. Twenty-four ag professionals also attended a shorter workshop. Of those workshop participants, 67 percent reported leaving the event prepared to implement techniques learned.

For more information on this project, see sare.org/projects, and search for project number EW09-012.

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

$2,001,185 in total funding
46 grant projects
(since 1988)

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

Total awards: 46 grants

- 2 Enhanced State Grants
- 22 Farmer/Rancher
- 3 On Farm Research/Partnership
- 8 Professional Development Program
- 10 Research and Education
- 1 Research to Grass Roots

Total funding: $2,001,185

- $98,808 Enhanced State Grants
- $219,820 Farmer/Rancher
- $138,884 On Farm Research/Partnership
- $493,272 Professional Development Program
- $977,530 Research and Education
- $72,871 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

L. Robert (Bob) Barber
University of Guam Cooperative Extension Service
(671) 735-2080
bbarber@uguam.uog.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.
AGRICULTURE PROJECTS FUNDED IN GUAM
by USDA's Sustainable Agriculture Research and Education (SARE) Program

Guam has been awarded $1,902,377 grants to support 44 projects, including but not limited to, 10 research and/or education projects, 8 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>
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<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>
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<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>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 Dr. Robert Schlub 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>
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<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>
Expanding Small-scale Sustainable Agroforestry Demonstration Plots in the Western Pacific

$72,871

Joseph Tuquero
University of Guam

Mark Acosta
University of Guam, Cooperative Extension

Laninbwij Langmos
College of Marshall Islands Cooperative Research and Extension

Jackson Phillip
College of Micronesia

### PROFESSIONAL DEVELOPMENT PROGRAM GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| PDP20-001       | Fungal leaf spots: field, lab, and online tutorial for professionals in Guam and the Northern Mariana Islands | $66,013      | Dr. Robert Schlub  
University of Guam  
Dr. Marin Brewer  
University of Georgia  
Dr. Robert Kemereit  
University of Georgia  
Dr. Kisha Shelton  
University of Georgia  
Dr. Leilan Sumabat-Dacones  
University of Philippines |
| EW14-006        | Plant Disease Diagnostic Training for Agricultural Professionals in Guam and the Northern Mariana Islands | $63,900      | Dr. Robert Schlub  
University of Guam |
| EW09-012        | Increasing Ecological Insect Pest Management on Guam Through Building Agriculture Professionals’ Understanding of Semiochemicals | $59,990      | Gadi V.P. Reddy, Ph.D.  
University of Guam  
Dr. Michael Ivie  
Montana State University-Bozeman |
| EW08-018        | Enhancing Ecological Disease Management on Guam Through Building Agriculture professionals’ Understanding of Soil Nutrients | $49,962      | Roger Brown, Jr.  
University of Guam  
Dr. Robert Schlub  
University of Guam |
| EW05-007        | Transfer of Research Based Knowledge in Agriculture in the American Pacific | $74,507      | Dr. Manuel Duguies  
Cooperative Extension Service |
| EW05-017        | Capacity Building and Training in Commercial Aquaculture for Guam, Commonwealth of the Northern Marianas, and American Samoa | $90,000      | Dr. L. Robert (Bob) Barber, Jr.  
University of Guam Cooperative Extension Service |
| EW99-002        | People Improving Growth for Swine (PIGS) in Micronesia                      | $47,540      | Dr. Manuel Duguies  
Cooperative Extension Service |
| EW98-011        | Portable Extension Office for Program Literature Exchange (PEOPLE)        | $41,360      | Dr. L. Robert (Bob) Barber, Jr.  
University of Guam Cooperative Extension Service |

### FARMER/RANCHER GRANTS

<table>
<thead>
<tr>
<th>Project #</th>
<th>Project Title</th>
<th>SARE Support</th>
<th>Project Leaders</th>
</tr>
</thead>
</table>
| FW19-348        | Sheet Mulch Using Cardboard and NFTs                                         | $11,000      | Glenn Takai  
Takai Farm |
| FW17-014        | My Boars Are In Iowa                                                         | $13,597      | Eddie Saure  
Eddie Saure |
| FW17-050        | Ducks in a Row: Raising Ducks on Guam for Production and Pest Control       | $19,206      | Maegan Paloma  
Maegan Paloma |
| FW16-015        | From Peewee to Large Eggs                                                    | $11,393      | Alex Coloma  
Agriculture |
<table>
<thead>
<tr>
<th>Project Code</th>
<th>Project Title</th>
<th>Cost</th>
<th>Name/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>FW16-030</td>
<td>Rotating Paddock-style Systems in Tropical Environments</td>
<td>$17,196</td>
<td>Hertha Van Beurden Paradise Natural Farm</td>
</tr>
<tr>
<td>FW15-041</td>
<td>Raising Black Soldier Fly Larvae as Chicken Feed in a Tropical Region</td>
<td>$8,232</td>
<td>Chelsa Muna-Brecht P.U.N.G.Co Farms</td>
</tr>
<tr>
<td>FW08-046</td>
<td>Growing Papaya Using Aquaculture Effluent in an Automated Drip Irrigation System</td>
<td>$14,800</td>
<td>David Crisostomo</td>
</tr>
<tr>
<td>FW08-048</td>
<td>Living Mulch on Guam</td>
<td>$13,000</td>
<td>Laila Pierson</td>
</tr>
<tr>
<td>FW08-313</td>
<td>Kona to Guam Weaving the Farmer Chef Network</td>
<td>$19,625</td>
<td>Phoebe Wall University of Guam Dr. L. Robert (Bob) Barber, Jr. University of Guam Cooperative Extension Service</td>
</tr>
<tr>
<td>FW06-026</td>
<td>Multi-crops on Plant Beds on Guam</td>
<td>$5,915</td>
<td>Laila Pierson</td>
</tr>
<tr>
<td>FW05-003</td>
<td>Wastewater Delivery System for Irrigation and Soil Enrichment on Guam</td>
<td>$4,570</td>
<td>John Benaventa Triple B Farms</td>
</tr>
<tr>
<td>FW05-013</td>
<td>Recycling Fish Waste to Fertilize Guam Farms</td>
<td>$19,809</td>
<td>Ernie Wusstig</td>
</tr>
<tr>
<td>FW05-312</td>
<td>Maximizing Production Efficiency in a Three-Stage Integrated Agriculture System Using Taro, Tilapia, Aquatic Plants and Fancy Guppies</td>
<td>$9,951</td>
<td>Dr. L. Robert (Bob) Barber, Jr. University of Guam Cooperative Extension Service</td>
</tr>
<tr>
<td>FW04-104</td>
<td>Lei Making and Marketing - A New Approach to Marketing</td>
<td>$6,750</td>
<td>Antoinette Okada</td>
</tr>
<tr>
<td>FW04-302</td>
<td>Greenhouse Water Barrier</td>
<td>$10,871</td>
<td>Pete Terlane Guam Department of Agriculture</td>
</tr>
<tr>
<td>FW02-017</td>
<td>Decreasing Dependence on Man-Made Fertilizers for Crop Production in Tropical Limestone Soils</td>
<td>$5,200</td>
<td>Ernie Wusstig</td>
</tr>
<tr>
<td>FW00-064</td>
<td>Adopting Health Programs and Improving Weaning Facilities in Management of Piglet Diarrhea on Guam</td>
<td>$7,085</td>
<td>Ricardo Cruz, Jr.</td>
</tr>
<tr>
<td>FW99-015</td>
<td>Mushroom Production</td>
<td>$3,950</td>
<td>David Nelson</td>
</tr>
<tr>
<td>FW99-031</td>
<td>Genetic Upgrading and Improving Goat Management Practices on Guam</td>
<td>$6,000</td>
<td>Loella Armstrong</td>
</tr>
<tr>
<td>FW97-054</td>
<td>Use of Sunnhemp in Cucumber Production</td>
<td>$4,300</td>
<td>Felix Quan</td>
</tr>
<tr>
<td>FW96-029</td>
<td>Dry-Extrusion of Wet Garbage for Swine Feeding</td>
<td>$4,350</td>
<td>George Pangelinan</td>
</tr>
</tbody>
</table>
**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>OW15-031</td>
<td>Seven Trees, Seven Practices: Demonstrating Agroforestry in the Western Pacific</td>
<td>$47,899</td>
<td>Dr. L. Robert (Bob) Barber, Jr. University of Guam Cooperative Extension Service</td>
</tr>
<tr>
<td>OW14-026</td>
<td>Screening tomato varieties for suitability on Guam in response to the arrival of Tomato leaf curl Guam virus in the Western Region</td>
<td>$49,500</td>
<td>Dr. Robert Schlub University of Guam</td>
</tr>
<tr>
<td>OW10-322</td>
<td>Local Feed Formulation for Goats</td>
<td>$41,485</td>
<td>Dr. Manuel Duguies Cooperative Extension Service</td>
</tr>
</tbody>
</table>

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

$1,902,377

For further information on projects, contact Western SARE at (435) 797-2257 or wsare@usu.edu.
Sustainable Agriculture Research and Education (SARE) is funded by USDA’s National Institute of Food and Agriculture (NIFA).