

[Skip to content](#)

- [National NAT](#)
- [North Central NC](#)
- [Northeast NE](#)
- [Southern S](#)
- [Western W](#)

[Sustainable Agriculture](#)  
[Research and Education](#)  
[Projects Projects](#)

- [Jesse Bamba](#)
  - [View/Edit Profile](#)
  - [Logout](#)
- [Projects Home](#)
- [News](#)
- [About SARE](#)
- [Search Projects](#)
- [Search Project Coordinators](#)
- [Help](#)
- [Search](#)

## 5 Future Trainers: Developing a farmer run agriculture production monitoring program for the Farmer's Cooperative Association of Guam (FCAG)

2022 Western Professional + Producer Grant

[Instructions for saving to PDF](#)

ID: 817062

**Link to share:** <https://projects.sare.org/proposals/show/817062/14240>

[Download PDF](#)

**Grant Type:** On Farm Research/Partnership

**Region:** Western

**Application Year:** 2022

**Status:** Submitted on 11/03/2021 1:38pm EDT

**Amount Requested:** \$58,401

**Principal Investigator:**

[Jesse Bamba](#)

Extension Agent II

University of Guam

[jbamba@triton.uog.edu](mailto:jbamba@triton.uog.edu)

303 University Drive UOG Station Mangilao, Guam 96923 USA

Mangilao, GU 96923

Office/Day phone: (671) 735-2091

**Applicant:** [Jesse Bamba](#)

**Description for search results if funded:** The purpose of this project is to build a production monitoring and harvest projection program for the Farmer's Cooperative Association of Guam (FCAG). In addition to supporting FCAG's marketing efforts, this project will provide Guam agricultural professionals with accurate yield data.

## **I have read the Call for Proposal (CFP)**

### **I have read the Call for Proposal**

- Yes

## **Project Basic Information**

### **Subject Matter**

Economics/Marketing

### **Practices**

- **Education and Training**
  - farmer to farmer
- **Farm Business Management**
  - farm-to-institution
  - marketing management

### **Commodities**

- **Vegetables**

- beans
- cucurbits
- eggplant

## **Project Objectives**

1. Determine the opportunities and barriers in running a farmer production monitoring system for member farmers.
2. Determine the yields of the 10 plus core Guam crops monitored under this project to improve the FCAG's monthly harvest estimates?
3. Teach the core farmer management team the use and maintenance of the production monitoring system.
4. Conduct farmer trainings for member famers on field production monitoring, yield documentation and reporting.

## **Primary State**

Guam

## **Other State(s)**

none

## **Proposed Start Date**

June 1, 2022

## **Proposed End Date**

October 1, 2025

## **Brief Description of the Agricultural Business/Operation of the Project Members**

Farmers Cooperative Association of Guam (FCAG) - FCAG is a marketing cooperative of 70+ farmers, its origins go back to the WSARE sponsored 2007 Guam Subregional Sustainable Agriculture Conference where the need for a farmer's cooperative was identified. Since this time FCAG has grown, its current efforts in institutional sales to Government of Guam agencies have identified the need for the FCAG to have an effective and accurate production monitoring and harvest projection system.

Mike Aguon- Mike is the FCAG president and he farms in Southern Guam. His main crop during the dry season is watermelon, which can take up to 10-15 acres a year. He also grows chili pepper, cucumbers, and papaya on his 80-acre farm.

Ernie Wustig - The island's largest producer of sweet corn. He farms on approximately 40 acres of northern Guam on shallow soil (2-6 inches deep) over an uplifted coral limestone bedrock. In addition to sweet corn, he grows pechay, key lime, eggplant, and other vegetables. The sustainable agriculture practices he utilizes include contour practices, reduced tillage, drip irrigation, and incorporation of chicken manure.

Kathrina Reyes - Kat grows at least 2-5 acres of cucumber and 2-5 acres of long bean throughout the year. Kat has a total 10 acres available to her in the Northern area of Guam.

Tomas Camacho is a 3rd generation farmer and is a Northern farmer who has a total of 7 acres available to him. He and his son who is now the 4th generation to farm in the family grow eggplant, Breadfruit, cucumber, and banana year around.

Joe Paulino is a Southern farmer who grows cucumber, long beans, eggplant, coconut, banana, and plantains on his 2-acre farm. His farm is located on the side of a steep cliff which limits his ability to expand his operation.

## **Is this current submission a re-submission of a previous proposal to Western SARE?**

No

## **How did you learn about this call for proposal?**

- SARE state coordinator

## **Usefulness of Western SARE Resources**

- Western SARE Grant Writing Webinars

## **Summary**

### **Summary**

For the past 25-30 years Guam has struggled to collect data from locally produced farm products. WSARE PDP program has worked with FCAG for a decade in developing their penetration into local markets. Now wholesale operations handle the farmer's output and buyers need more accurate farmer production reporting and monthly harvest projections. The FCAG clearly needs a central production monitoring and near-term (1-2 month) harvest projection in the house system. Such

a system, to be easily maintained by the FCAG, should be spreadsheet-based. UOG developed a similar system for the regional departments of Agriculture between 1996-1998 under the ADAP Market Information System. It started as a series of spreadsheet templates with crop and fruit specific local and regional production data (yield, plant spacing, time to harvest, length of harvest, etc.) Unfortunately Guam DoAG stopped monthly monitoring of farmer production around 1999. This project will utilize the data from this effort but develop a custom set of spreadsheets for the FCAG and its seventy members' needs to manage production data, identify proven yields, and enable monthly harvest estimates. The project will utilize local agricultural professionals (and pay honorariums) to assist in both developing the system and training FCAG members in reporting, and FCAG Board of Directors and Staff in system data entry and maintenance. The 3 years of accumulated data from the 70 farms will be compiled and compared to the estimated yields from the 2016 UOG Guam Crop Charts publication in order to revise these Extension Publication.

## **Project Narrative**

### **Relevance and Benefits to Sustainable Agriculture, Project Value and Benefits: (15% of review criteria)**

The “**Developing a farmer-run agriculture production monitoring program for the Farmer’s Cooperative Association of Guam (FCAG)**” grant will improve the profitability of 70+ FCAG farmers and their associated FCAG businesses by bringing a new level of coordination and product knowledge to their cooperative marketing efforts. This will increase both the farmer profits and the profits of the FCAG. It will allow them to also demonstrate a higher level of consistency in supply and better market information to their developing institutional buyers. This should also increase the willingness of both their institutional buyers and will also meet request of their hospitality industry clients for warning when supplies are about to decline.

Increases in sales will enhance the quality of life for the farm families that are FCAG members. Monthly reports from the system to the farmer members will help them better understand the market dynamics in which they are operating and help reduce tensions that arise from needed price adjustments to account for oversupply or shortages. In setting up the system and initial one on one farm visits by Core farmer team and project staff the relationships between the farm families and the FCAG management will be increase and it will provide opportunities for the CE&O staff to observe farm production practices and offer technical suggestions for ways to improve production and the sustainability of the farm visited.

The project will also address several issues associated with not having a viable agriculture production data program in Guam. 1. The creation of the FCAG production data system will enable 70 local farmers to evaluate the outputs of the cultural methods they practice on their farms. In the one on one and workshop trainings E&O can recommend conservation practices that can utilize local resources to enhance the growing condition for improved production. For example one conservation practice we often recommend is mulching, while mulching is an old concept many local farmers do not see the need for mulch in agriculture production. And yet adding additional carbon to our soils is a near universal way to improve their productivity. The planning and the initial cost of adding mulch before establishing a crop sometimes seems out of reach for most local farmers. With the establishment of updated estimated production data, we anticipate that farmers can quantify how much they make or lose because of a more precise yield knowledge of crop they are growing (can show yield difference between those using mulch and those that do not). Another benefit that E&O has identified for this example of sustainable recommendations - using mulch as part of a profitable farm system, specifically paper and cardboard, is Guam's local landfill does not accept the material. The local recycling companies that take the material are giving it away for free because of the high cost of shipping it to Asia for reprocessing. To carry the example further an immediate benefit of paper or cardboard mulch comes in the form of reduced labor costs, weed control, water retention, and the need for chemical fertilizer. The long-term use of paper or cardboard mulch will result in the increase of quality and productivity of Guam's tropical soil. This is just one of the many sustainable practices impacting both the environment and bottom line the increased farm engagement of this project will provide.

This project (like many of our other outreach efforts) will encourage the above practice and others and will use this opportunity to promote the NRCS Environmental Quality Incentive Program which provides subsidies to farmers to adopt sustainable practices that address resource concerns with Guam's soils, in the North which are very shallow, limestone clay-based that has limited water holding capacity and sits over the islands main water lens and its Southern soils that suffer from soil erosion and sediment runoff into rivers that empty into bays and kill large areas of coral reef.

## **Stakeholder Needs and Support (5% of review criteria)**

The FCAG has been at the forefront of this grant proposal, its 70 members comprise a large majority of Guam's active farmers. The organization has graciously offered to help compile the yield data by volunteering five of its members. The president Mike Aguon, vice president Ernie Wusstig, Treasurer Kat Reyes, board member Joe Paulino, and long-time farmer and FCAG member Tomas

Camacho have all agreed to be the first of 65 FCAG members to start reporting planting information and compiling yield data. The 5 initial participants will eventually train the 65 members and any non-members of the FCAG on how to properly keep accurate yield data. They do this because they recognize the importance of accurate market supply information in the marketing of agricultural products in wholesale and institutional markets.

For over a decade wholesalers have felt local farmers could not meet their demand because they have no accurate information on the output of Guam farms. This project will allow the FCAG to make relatively accurate short term forecast of their expected market supply. In the support letters from the core farmers you are hearing the needs of this stakeholder organization.

## Project Team Members

[hide everyone's info](#)

### **Dr. L. Robert Barber, Jr.**

Roles: educator, extension, researcher, technical advisor

[bbarber@triton.uog.edu](mailto:bbarber@triton.uog.edu)

Extension Specialist, Agriculture Economics and Sustainable Agri  
University of Guam (1862 Land Grant)  
303 University Drive UOG Station Mangila  
Mangilao, GUAM 96923  
Guam  
(w) (671) 787-7391

<http://uog.edu/extension>

Dr. Bob is the grant Technical advisor, he was Co-PI on the original ADAP Market Information System Grant. He will assist in developing the spreadsheet based production monitoring system.

### **Thomas Camacho**

Role: farmer

[tom@camachoclan.com](mailto:tom@camachoclan.com)

Farmer  
camacho farm (Commercial (farm/ranch/business))  
P. O. Box 420 96932  
Hagatna, GUAM 96932  
(w) (671) 797-0005

Tom in addition to being one of the FCAG member farmers, is the former Farm Service Agency Guam field office Director. He understands the importance of proven yields and production monitoring to enable harvest projections. He is key in recruiting member participation.

### **Joseph Paulino**

Role: farmer

[jpaulino1951@hotmail.com](mailto:jpaulino1951@hotmail.com)

Farmer

Joe Paulino Farm (Commercial (farm/ranch/business))

P. O. Box 26814

Barrigada, GU 96921

(w) (671) 483-6163

Joe is well know by and will be key in recruiting the participation of the small market/gardener members of FCAG in these reporting efforts.

### **Kathrina Reyes**

Roles: farmer, ngo representative

[kreyes1999@gmail.com](mailto:kreyes1999@gmail.com)

Farmer

Gualo'ta Farm (Commercial (farm/ranch/business))

423 Spring Lane

Sinajana,, GU. 96910-3362

(w) (671) 797-1844

Kathrina is the FCAG marketing manager. She is key in the FCAG marketing efforts and will use the system on nearly a daily basis. She is the FCAG front line in communicating with member farmers and will be key in recruiting participants and ensuring reporting compliance.

### **Ernest Wusstig**

Role: farmer

[islandviewfarmsss@gmail.com](mailto:islandviewfarmsss@gmail.com)

Farmer

Island View Farms (Commercial (farm/ranch/business))

P. O. Box 20876 GMF 96921

GMF, GUAM 96921

(w) (671) 483-5699

Ernie is one of the best known FCAG members to the Guam public, he is an icon for his sweet corn. He is considered an agricultural innovator and leads by example. His participation and encouragement is important in getting some of the largest producers in FCAG to participate. He is also a Guam media magnet so when we engage in the outreach efforts his farm provides an excellent venue to attract the local media to cover the projects efforts.

### **Mike Aguon**

Roles: farmer, ngo representative

[medafarms@yahoo.com](mailto:medafarms@yahoo.com)

farmer

MEDA Farm (Commercial (farm/ranch/business))

3283



Hagatna, GUAM 96932

(w) (671) 482-1753

Mike is the president of the FCAG and the Chair of the Southern Soil and Water Conservation District. He is a melon producer and a driving force in the FCAG. He will be very active in initial connections and training on participants farms.

## **Project Team Members Responsibilities (5% of review criteria)**

Jesse Bamba - Principal Investigator- The principal investigator will help develop the methodology of how and what to collect in order to build a comprehensive yield data system. The PI will coordinate with the FCAG Project Manager to conduct site visits to assess and discuss the potential timelines, finalize crops to be grown, the size of the fields, and the planting cycles for each of the 5 farm sites. The PI will work with FCAG on how to disseminate the data to organizations like the Guam Department of Agriculture (GDOAG) Agriculture Development Service (ADS), Guam Hotel and Restaurant Association (GHRA), Guam Economic Development Agency (GEDA), Bureau of Statistical Planning (BSP), Farm Service Agency (FSA) and other Government of Guam and Federal agencies.

Kat Reyes - FCAG treasurer and project manager will work with the 4 other FCAG members and the PI to facilitate a mentorship process, coordinating 9 farm workshops at different FCAG farm sites. The FCAG project manager will help conduct demonstrations on how they collect harvest data from the crops grown.

Mike Aguon - FCAG president -The FCAG Project manager will coordinate with the FCAG president a 2-workshop series, 1 at a farm in the South and 1 at the UOG Inarajan Research & Education Center. The 5 FCAG Producers will train up to 20 FCAG and non-FCAG members on how they collect harvest data for the crops they grow.

Tomas Camacho - FCAG member. The FCAG project manager will help Tom Camacho to coordinate a 2-workshop series, 1 at Tom Camacho's farm in the North and 1 at the FCAG Dededo Facility. The trained FCAG producer and producers will train up to 20 FCAG and non-FCAG members on how they collect harvest data for the crops they grow.

Ernie Wusstig - FCAG Vice president - the FCAG project manager will help the member to coordinate a 2-workshop series, 1 at Ernie Wusstig's farm in the North and 1 at the FCAG Dededo Facility. The trained FCAG producer and Producers will train up to 20 FCAG and non-FCAG members on how they collect harvest data for the crops they grow.

Joe Paulino - FCAG board member - The FCAG Project manager will coordinate a 2-workshop series, 1 at Joe Paulino's farm in the South and 1 at the UOG Inarajan

Research & Education Center. The trained FCAG producer and producers will train up to 20 FCAG and non-FCAG members on how they collect harvest data for the crops they grow.

All trained FCAG producers will help E&O research, develop, and write, new educational materials about developing a production yield data system for tropical island crops. Educational materials will include PowerPoint presentations, Extension publications, and resource lists. The secondary producer group will provide feedback on the educational materials targeting beginning to intermediate-level farmers.

Bob Barber - Co-PI of former ADAP MIS project is happy to pull together the original team of ag professionals that developed the ADAP MIS to use the projects data and models to create spreadsheets for this project's production monitoring systems and next month harvest forecast. Also, thought honorariums this team is available to this project to conduct trainings on the importance of the system, how it works, and the farmer/participants role in reporting to the system.

## **Research Plan (30% of review criteria)**

This project has three applied research questions.

What are the opportunities and barriers to a farmer run production monitoring and harvest project system based on simple month farmer planting reports and past month verified yield information?

What are the actual field yields for the primary crops (10+) consistently produced by FCAG farmers? Note current estimates used by ag professionals on Guam come from a variety of source but not from multiple farmers actual yield reporting. This project potential biggest contribution to knowledge is this applied approach to cooperatively develop this information with the farmers of FCAG.

Will improved market information increase FCAG's institutional and wholesale sales?

The FCAG needs current agriculture planting and yield data to stabilize the market expectations that they have developed. If successful this improved information should increase their sales and ultimately the farmers agriculture production of its 70 members. This will increase the local produce's share in Guam import dominated markets. We believe that establishing a comprehensive and up-to-date data collection system over a 3-year period can benefit not only the FCAG but the island consumers who prefer fresh local produce. The initial plan is to use the skills and knowledge local agriculture professionals working with a core 5 of the 70 FCAG members who offer years of growing experience, operate individual farms,

and have a vested interest in the success of the FCAG and the agriculture industry in Guam to develop and pilot this system. E&O will train the 5 selected FCAG farmers on how to collect important planting and harvest data. Then operated the system for several months and test the harvest projections accuracy. Once the system has operated for several months E&O and the 5 FCAG trained members will then train the other 65 members. The accumulated data from the 70 farms will be compared to the estimated yields from the 2016 UOG Guam Crop Charts. The comparison of the two data sets will allow UOG CE&O to update their publications. Meanwhile the FCAG will utilize these harvest projection in their marketing efforts with their customers. When the agriculture production monitoring and harvest project program is developed it can be shared other interested groups among the islands in the region. We will attempt to address three questions.

## **Educational Plan (30% of review criteria)**

“5 Future Trainers” is a 3-year demonstration education project that will help FCAG develop an agriculture yield production program for Guam leveraging a peer education model and projecting to reach 70-100 total workshop attendees. The FCAG will use the skills and knowledge of the 70 FCAG members that offer years of growing experience, operate individual farms, and have a vested interest in the success of the FCAG and the agriculture industry in Guam. The FCAG will provide a Project manager and 1 employee to help E&O coordinate training, compile production data, and develop educational material.

In the first year, E&O will train 5 selected FCAG farmers on how to collect important harvest data.

E&O will train 5 FCAG farmers on how to collect and report data.

1. Mike Aguon
2. Joe Paulino
3. Thomas Camacho
4. Katherina Reyes - FCAG Project manager
5. Ernie Wusstig

Information to be collected

1. Crop and variety
2. Date of planting/estimated day of harvest
3. Number of plants planted per row/distance between each plant
4. Expected harvest/per 100-foot row/per Acre
5. Actual harvest/per 100-foot row/per Acre

## 6. Duration of harvest

### Crops to be grown

1. Cucumber (35-45 days before harvest)
2. Eggplant (55-65 days before harvest)
3. Long Beans (55-60 days before harvest)
4. Sweet corn (60-70 days before harvest)
5. Watermelon (60-70 days before harvest)

In the second year, E&O and the 5 FCAG trained members will then mentor and train 20 FCAG members on how to collect and report the actual yield of the crop at harvest.

In year 3, the 25 trained FCAG farmers will then mentor and train the remaining 40 FCAG members and any non-members who wish to participate. The accumulated data from the 70 farms will be compared to the estimated yields from the 2016 UOG Guam Crop Charts publication. The comparison of the two data sets will allow the FCAG to make a more accurate harvest projection in the future.

E&O and FCAG producers will research, develop, and write, new educational materials about developing a production yield data system for tropical island crops. Educational materials will include PowerPoint presentations, Extension publications, and resource lists. The secondary producer group will provide feedback on the educational materials targeting beginning to intermediate-level farmers.

## **Timeline (5% of review criteria)**

Year 1 Quarter 1 (Q1) (June-August 2022) Methodology will be developed by E&O on how and what to collect. PI and FCAG Project Manager will conduct site visits to assess and discuss the timelines, crops, size of the fields, and crop planting cycles.

Year 1 Q2 (September-November 2022), E&O will ensure that the crops at each of the 5 FCAG farm sites are planted. The project Manager will implement a monitoring process.

Year 1 Q3-4 (December 2022 - May 2023), E&O PI and FCAG Project manager will facilitate a mentorship process, coordinating 3 farm workshops at the 5 initial FCAG farm sites. Producers will conduct demonstrations on how they collect harvest data. The 3 workshops will be conducted over a 6-month period.

Year 2 Q1-2 (June - November 2023), E&O and the FCAG Project manager will coordinate a 2-workshop series, 1 at a farm in the North and 1 at the FCAG Dededo Facility. The 5 FCAG Producers will train 20 FCAG and non-FCAG members.

Year 2 Q3-4 (December 2023 - May 2024), E&O and the FCAG Project manager will coordinate 2-workshop series, 1 at a farm in the South and 1 at the UOG Inarajan Research & Education Center. The 5 FCAG Producers will train 20 FCAG and non-FCAG members.

Year 3 Q1-2 (June - November 2024), E&O and the FCAG Project manager will coordinate 2- workshop series, 1 at a farm in the North and 1 at the FCAG Dededo Facility. The 25 FCAG Producers will train 25 FCAG members and any non-FCAG.

Year 3 Q3-4 (December 2024 - October 2025), the FCAG Project manager and E&O will coordinate the collection of production data. E&O will work with FCAG to disseminate data to the Guam Department of Agriculture, Guam Hotel and Restaurant Association, and GuamEconomic Development Agency.

## **Evaluation and Producer Adoption (5% of review criteria)**

In the second quarter of the first project year (approximately September/October/November 2022) the FCAG Project Manager will implement a monthly follow-up monitoring process through which the participating FCAG farmers can start compiling the yield data from their harvested crops. They will also start informing the FCAG of the actual yield they harvest while comparing it to estimated amounts before harvest. Because the five FCAG farmers will be comparing their yield data with each other, some should be motivated to do something different in their operation to improve the crop yield.

At the end of the project, all participating farm sites will be assessed and compared to the current estimates available. From this effort, we will be able to identify how the FCAG can strengthen its crop forecasting. In the final quarter of the grant, the underlying assumption of this project's education component is that farmers learn best from their peers and are most likely to adopt practices if they see what is discussed in practice. By recruiting the FCAG leadership to implement the ideas and practices of maintaining detailed records other FCAG (65) members or non-members are more likely to realize the importance of keeping accurate yield data.

## **Budget and Justification**

### **Total Budget**

\$58,401

## Budget Worksheet for Awarded Institution

[GuamJBambaWSARE-Budget-WorksheetPPGS\\_FINAL](#)

## Sub-awards to Other Institutions

No

## Authorized Organizational Representative

[hide everyone's info](#)

**[Dr. Lee Yudin](#)**

[lyudin@triton.uog.edu](mailto:lyudin@triton.uog.edu)

Dean/Director CNAS

University of Guam

303 University Drive UOG Station Mangilao, Guam 96923 USA

Mangilao, GUAM 96923

Guam

(w) (671) 735-2000

[www.uog.edu](http://www.uog.edu)

## Supporting Documents

### Signature Page

[scanned signature](#)

### Current Vita

[CV 2021 WSARE](#)

[Bob Barber CV](#)

### Letters of Producer Cooperation

[Ernie W letter](#)

[Joe P letter](#)

[Tom C letter](#)

[Mike A letter](#)

[Kat R letter](#)

### Letter(s) of Commitment of Partner Institution(s)

### Current and Pending Support

[jesse current and pending2021](#)

[bobcurrent and pending10\\_2021](#)

## **Animal Welfare Assurance Statement**

[WSARE animal welfare](#)

## **Institutional Review Board Approval**

[IRB exemption](#)

## **Citations**

[ReferencesCited\\_PPG\\_guam](#)

## **Other Documents (Optional)**

[MG702 preliminary production estimates for Guam crops, may 1999](#)

[Crop\\_Chart\\_6\\_23\\_16\(1\)](#)

## **Sign up for all the latest news and updates from SARE**

**Sign Up For Our Newsletters**

### **NAVIGATION**

- [Projects Home](#)
- [Search Projects](#)
- [Search Project Coordinators](#)
- [Help for projects.sare.org](#)
- [SARE Projects Application and Reporting](#)

### **SITES**

- [National SARE](#)
- [North Central SARE](#)
- [Northeast SARE](#)
- [Southern SARE](#)
- [Western SARE](#)

### **OUR LOCATION**

- College of Agriculture and Natural Resources  
University of Maryland  
Symons Hall, Room 1296  
7998 Regents Drive  
College Park, MD 20742- 5505
- [Contact Us](#)

## FOLLOW US

- [Our Facebook Page](#)
- [Our Twitter Page](#)
- [Our YouTube Channel](#)



Sustainable Agriculture  
Research & Education

[US Department of Agriculture](#)



This site is maintained by SARE Outreach for the SARE program and is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under award No. 2019-38640-29881. SARE Outreach operates under cooperative agreements with the University of Maryland to develop and disseminate information about sustainable agriculture. [USDA is an equal opportunity provider and employer.](#)

---

© 2021 Sustainable Agriculture Research & Education