

SPECIALTY CROP BLOCK GRANT PROGRAM - FARM BILL

GUAM DEPARTMENT OF AGRICULTURE

FINAL PERFORMANCE REPORT

AMS Agreement 12-25-B- 1063

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In-Vitro Propagation of Disease Resistant Bananas for Guam's Local Production Agreement 12-25-B-1063
Final Performance Report
5/7/14

Project Summary

Banana is an important crop, contributing largely to Guam's agricultural economy. However, production is restricted by a limited availability of clean planting stock and by several diseases as Panama disease, Black Leaf Streak disease, Banana Bunchy Top Virus, Banana Streak Virus and Cucumber Mosaic Virus. All of them can be spread by infected plant material. Till 2012 there was no formal banana planting stock production other than the traditional production done by suckers, which means there is no guarantee that they are disease-free. This could be overcome by *in vitro* propagation, which is efficient, fast and also yields disease-free plants. We have produced 11 varieties of bananas in large quantity, where all of them are resistant banana to the most common diseases and mostly lots of them were free of viruses and they are available at little cost to local farmers and banana growers. This project started in March 2011 and finalized in February 2014 but with continuations of SCBGP funding banana cultures are maintained in tissue culture lab, in the nursery and in the field.

Project Approach

In the last 2 years we were able to establish 5 new certified varieties of bananas, from international germplasm banks in SPC, Fiji and 3 new bananas varieties from Tropical Agriculture Research Station, Puerto Rico.

We saved \$8,519.75 assigned for benefits category, which was not requested from the grantor.

Goals and Outcomes Achieved

- 11 new bananas varieties were established in tissue culture.
- In the last 2 years we were able to import 5 new to Guam varieties of bananas. Two are from Puerto Rico, FHIA-01 and FHIA-02, both varieties are dessert type of bananas both of them are resistant to Black Sigatoka and Panama Wilt disease. Other three varieties are from SPC, Fiji Island and all of them are both dessert and cooking type of bananas. All 3 varieties, FHIA 03, FHIA 17, FHIA 18 are resistant to Panama Wilt disease and Black Sigatoka.
- We were also able to propagate and maintained our local varieties, which are also showing the resistance to the most common disease in our region. Ducasse, variety resistant to Black Leaf Streak, Dwarf French Plantain, variety resistant to Panama Wilt, Black Leaf Streak, Fusarium and wind

Dwarf Cavendish, variety resistant to Panama Wilt and wind Williams, variety resistant to Panama Wilt Yangambi, variety resistant to Black Leaf Streak and nematodes, Saba variety resistant to Panama Wilt, Black Leaf Streak and Fusarium.

- In a year we were able to produce 3 thousands banana plants in the rooting medium and then plant all of them in the nursery.
- As the bananas plants were adjusted to the natural conditions we were able to distribute them among local farmers and residents on Guam.
- Through the Extension Service as well as local newspapers we made several announcement about new resistant varieties. The respond was huge. We received many orders from local farmers. We were able to produce 80% bananas of their request. Thanks to the grant “In vitro propagation of Pacific Crops for Guam” we able to continue tissue culture propagation of the most wanted varieties.
- Overall we distributed 3000 plants to two banana’s growers on Guam.
- Rest of banana plants (around 1000) were sold for a symbolic price of 10 cents per plant to the public. Income of around \$100 was used for drinks and donuts during students visit to our lab.
- This year local newspaper printed an article about our resistant bananas collection (article is also available at UOG website).
- Twice a year students from our University visit our laboratories where we give a presentation about disease resistant bananas and do a lab exercise explaining to them how to produce disease and virus free bananas.
- For each banana variety we produced brochures with pictures of the plant and fruits and basic information about the variety.
- Each year two hundred plants from the field and the nursery were tested for Banana Bunchy Top Virus to be sure our plant material is free of this most devastating disease to banana plants on Guam.

BENEFICIARIES

Farmers.

Three thousands banana plants, all of them resistant to common diseases on Guam were sold for a symbolic price to two major banana growers.

Homeowners.

Each year several hundreds homeowners visit our nursery where they can get healthy and resistant to diseases banana plants. Many of them are coming back to get more plants because they already know that our plants are growing much faster and healthier and produce fruits in a shorter time.

Department of Agriculture

In April, 2013 Manny Cruz, The Deputy Director from Guam Department of Agriculture attended 14th Regular Session of the Commission on Genetic resources for Food and Agriculture in Rome, Italy

He was able to learn about the CGRFA's policies, programs, and activities related to genetic resources for food and agriculture. Because of the developed tissue culture program at the Guam DOA and the increasing needs to exchange germplasm materials of bananas, taro, yams and other tropical plants between Guam and other Pacific Islands and Countries, his participation in this Meeting was important and encouraged. I believe that his presence in the Meeting gave Guam an opportunity to interact directly with representatives from all over the world, including all SPC member countries, as well as relevant FAO decision-makers.

On the final day of the Meeting, CGRFA delegates met to adopt the report reflecting the Meeting's deliberations and including its decisions. They agreed on section related to the report on State of the World's Biodiversity for Food and Agriculture, targets and indicators, climate change, and genetic resources for food and agriculture.

LESSONS LEARNED

We learned that local residents are very interested in opportunities to obtain new varieties, especially resistant to common diseases on Guam. But we observed that most popular local varieties are still their favorite one and they would always ask for those.

It is entirely opposite with farmers. They want varieties that are recommended by researchers, resistant to diseases, high yield and good taste.

- All varieties tested for BBTv were showing negative results.
- Continuation of SCBGP-Farm Bill Program will allow us to expand as well as maintain new banana varieties presently cultured in the lab.