

## **SPECIALITY CROP BLOCK GRANT PROGRAM- FARM BILL**

GUAM DEPARTMENT OF AGRICULTURE FINAL REPORT

AMS Agreement 15-SCBGP-GU-0027

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**Suppression of orchid's diseases by influx of healthy plants to Guam's floral market.**

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#### **PROJECT SUMMARY**

Over the last several decades, most of the ornamental orchids on Guam were imported from Hawaii and South-East Asia. Over 80% of these imported orchids were infected with detrimental viral diseases. A massive influx of healthy orchids produced locally in tissue culture with simultaneous elimination of diseased ones brought about the desired improvement in the floriculture industry. About 10,000 plants were produced and about 7,000 have entered the Guam market (some were lost or were deemed unsuitable for the market). In the second year, a plant exchange program was initiated. Healthy plants (produced by Dept. of Agriculture nurseries) were exchanged for diseased plants from Guam's commercial nurseries and private collections. A large influx of free healthy plants made it possible for local producers to be competitive in the local market. Importation from Asia was reduced by approximately 60 percent and from Hawaii practically stopped. In addition, thousands of healthy plants replaced diseased plants in home gardens. The follow up SCBGP project that has been currently conducted at Dept. of Agriculture focuses on education and training of commercial and amateur orchid growers on Guam to assure that positive changes are maintained and eliminated viral diseases would not be reintroduced.

#### **Project Approach**

The main goal of this project was to suppress the existing level of orchid diseases by the influx of locally available healthy plants to the local floral market. Secondary purpose was elimination or significant reduction of Asian and Hawaiian imports that were a major source of viral diseases on Guam.

About 10,000 orchids were planted in the nursery from tissue culture propagated seedlings. About 5,000 healthy plants were produced in Dept. of Agriculture tissue culture lab and about 5,000 were from imported seedlings from Taiwan. Ms. Wiecko developed educational materials (posters, banner and a flyers) and distributed them in several nurseries as well as garden sections of Home Depot. All above educational materials were also presented several times at yearly University of Guam Charter Day and also yearly at the Department of Agriculture Organic May Festival. Ms. Wiecko conducted three seminars: two for the employees of two local nurseries and one Power Point presentation to garden growers. Training for over 10 groups of 20 agriculture students per group was conducted in the DoA nursery and tissue culture lab.

Tissue culture Laboratory and its effort in orchid exchange was presented in the University of Guam newsletter:

<https://cnas-re.uog.edu/looking-for-orchids/>

Western Pacific Tropical Research Center Annual Report

<http://cnas-re.uog.edu/wp-content/uploads/2018/01/wptrc2017web.pdf>

Guam Post local newspaper

[https://www.postguam.com/news/local/building-an-oasis-for-orchids/article\\_cc8453c2-ae5a-11e8-ab51-bb921b6b57c5.html](https://www.postguam.com/news/local/building-an-oasis-for-orchids/article_cc8453c2-ae5a-11e8-ab51-bb921b6b57c5.html)

and Pacific Daily News

<https://www.guampdn.com/picture-gallery/news/2018/09/06/learn-how-grow-virus-free-orchids/1209159002/>

Our orchid program was presented at the 2017 World Orchid Conference in Guayaquil, Ecuador as well as in 2018 American Horticulture Society Conference in Washington D.C.

Ms. Wiecko has visited orchid nurseries on a regular basis (every 6-8 weeks) and kept track of their inventories. She acquired data regarding numbers of different varieties and total numbers of diseased orchids. This information allowed her to determine and continuously update what varieties in what quantities need to be propagated and grown in DoA nursery.

A public seminar and training for small producers and gardeners was conducted on September 1, 2017. This survey showed that percentage of diseased orchids is still above 20 percent, therefore efforts to maintain production in tissue culture continued. Three thousand more seedlings were imported and planted in DoA nursery. Existing manpower and facilities were adequate to handle extra plants so this modification was fully achievable and assured full success of the project.

A Facebook page with instructions and other educational materials posted became available to many orchid growers. Some signed up and many others have been visiting the Facebook page looking for information, which lead them to our lab or to make contacts with other growers. We received questions about our activities from Northern America, South America and Europe.

Initially, projected incineration (in hot furnace) was unnecessary. Chemical method of destruction of viruses in diseased plants was equally effective.

## **Goals and Outcomes Achieved**

Goal 1: "to replace entire stocks of diseased orchids in Guam's commercial nurseries with healthy ones as well as to replace most orchids in private collections" was achieved. There are practically no diseased orchid plants in commercial nurseries. Before the project was initiated, diseased plants constituted over 80% of plants present in most of Guam's nurseries. Over the last two years, five nursery owners replaced practically their entire inventory. This approach was

strongly encouraged by Ms. Wiecko because Dept. of Agriculture nursery had enough orchid plants to provide, free of charge, to all willing nurseries. From the very beginning, once the orchid exchange program was initiated, it was evident that the program worked well. Nurseries that were first in exchanging diseased plants became leaders in competitive pricing. In a relatively small niche industry on a small island of Guam, information spreads quickly. Soon all the other nurseries as well as garden collectors requested exchanges. Five nurseries decided to close their doors and went out of business. It is much harder to measure the level of success among backyard orchid growers, but we are quite confident that targeted elimination of 50% diseased plants was achieved and exceeded. The educational campaign presently being conducted (follow up SCBGP project) would likely improve targeted 50% goal further.

### **Beneficiaries.**

Major beneficiaries were Guam's nurseries and several hundred homeowners. Five nurseries that are the core of floral industry benefited from this project utmost. The exchange of diseased orchids for the healthy ones helped them to replenish existing diseased inventory with a healthy and profitable one, generated more profit and developed more competitive businesses. Hundreds of gardens on Guam that grow from several orchids to several hundred orchids benefited as well. Many of them replaced parts of their collections and consequently reduced the number of diseased plants. Fortunately, most of infected orchids in garden collections are there to stay so diseases are contained and spread much slower than in nurseries. We discovered that there is a need for much more education and training. Therefore, we have applied and successfully obtained funding for improvement in disease prevention and education. Our Facebook page is comprehensive, continuously updated and reaches hundreds of people. Practical information, seminars and trainings are offered and enthusiastically attended. Modified management practices, (especially propagation techniques) were implemented by garden orchid growers and substantial progress affecting at least one hundred growers was achieved.

As an additional benefit, several Guam residents (employed by the project) developed the skills of tissue culture propagation, which will make them competitive in an emerging job market. These acquired skills would also allow them to start their own successful businesses capable of continued propagation after the duration of this project.

### **Lessons learned.**

Over one million tourists visiting Guam per year are experiencing the beauty of tropical flowers and lush vegetation, Giving them what they desire creates more incentive to come back. It was expected that the biggest indirect beneficiary of our project would be the industry catering for tourists. Disease free orchids available on Guam are far more appealing and bloom much longer. When conducting our exchange program and information campaign we concentrated our effort on suppliers and less on users such as hotels, restaurants, network of duty free shops and other similar businesses. There are very many of them and we assumed that exceedingly competent business managers in the most competitive industry would prefer to purchase healthy less expensive orchids locally rather than import them from Asia. We were proven wrong. Most of Guam hotels, entire duty free industry, many restaurants (especially upscale) are own by

Japanese, Korean and Chinese investors. They import from places that they have had long time connections and often quite complex business obligations. We achieved great success in nurseries and among garden growers, but poor results in the tourism industry. We believe there is sufficient knowledge as well as adequate environmental awareness among business decision makers to appreciate the importance of slowing orchid imports. We believe they can be persuaded to change old practices if they fully understand the reason. Perhaps an educational campaign focusing on the tourist industry should be the goal of another SCBGP grant proposal.