Commonwealth of the Northern Mariana Islands
Department of Lands and Natural Resources
Division of Agriculture

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Specialty Crop Block Grant Program — Farm Bill
Final Performance Report
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Project One: Seed Trials and Soil Testing on Farm Sites
Project Summary

Availability of specialty crop seeds is a major problem in the CNMI. Although some of these seeds are being sold at Taro Sue Store in Garapan and Ace Hardware at several locations on Saipan, the seeds are limited in numbers and varieties. Thus, varieties of SC seeds were imported from the University of Hawaii's Agricultural Experiment Station to be planted and tested for yield, plant health and vigor, product quality, as well as resistance to plant pests and diseases. Most of the seeds were distributed to farmers utilizing government owned commercial farm plots in Kagman.

Soil samples from various farm sites were sent to the University of Hawaii for a battery of tests, including pH, nutrient content or quality, presence of toxic chemicals or residues, physical properties, etc. Test results were to be made available to participating farmers with proper recommendations on how to improve their particular soils for the type of SC to be grown.

Soil testing for the presence of nematodes and the identification of the type of species present was also to be undertaken.

Project Approach

Over 2,000 packages of specialty crop seeds were purchased and received from University of Hawaii's Agricultural Experiment Station. Most of them were distributed to the farmers, especially those farming at the government owned commercial farm plots. They were distributed for free to help the farmers increase their crop varieties and to determine which ones were better for them to plant.

Participating farmers and partner agencies, such as the Northern Marianas College's CREES (Cooperative Research, Extension & Education Services in particular), were involved in the decision to select which SC were to be tested first to determine the best varieties for Saipan planting.

Goals and Outcomes Achieved

One of the findings of this project was that selected SC varieties that were planted produced year-round with profitable yields included: tomatoes, bell peppers, Chinese and head cabbage, cucumbers, broccoli, cauliflower, eggplants and okra.

These were especially important findings in light of the many challenges of being a farmer in the islands where the supply of farm laborer is very limited and very difficult to recruit from off island.

Beneficiaries

Most of the beneficiaries were farmers operating at government owned commercial farm plots in Kagman. They not only got free specialty crop seeds for their use but participated in a study in which SC were used and tested to determine the best varieties for Saipan planting.

Based on the knowledge obtained from the study, the Division of Agriculture continued to purchase specialty crop seeds that were proven to be economically beneficial to the farmers. The Division also continued to invest in other specialty crop seeds which have not yet been tested for the farmers to plant in order to determine their economic advantage.

Lessons Learned
More and more farmers are planting only certain specialty crops that have been proven to be economically advantageous. With limited or no farm laborers, farming is now focused on and is limited to tested crops which can produce year-round profitable yields. This, in turn, reduces the importation of these crops from other places.

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Project Two: Outreach to Specialty Crops Stakeholders, Socially Disadvantaged and Beginning Farmers, including Veterans

Project Summary
It is important to disseminate information about the special crop program. To this end, education and outreach activities were held during the monthly and quarterly meetings with Saipan farmers including: socially disadvantaged, beginning, and veteran farmers. About ten to fifteen individuals usually showed up for these meetings. Some were beginning farmers but majority were well-seasoned farmers, having assisted since early childhood with farm chores on family operated farms and ranches.

Project Approach
Participating government agencies in this outreach program included NRCS (Natural Resources Conservation Services), Northern Marianas College's CREES (Cooperative Research, Extension and Education Services), BECQ (Bureau of Environmental and Coastal Quality), FSA (Farm Service Agency), DFW (Division of Fish & Wildlife), DLNR (Department of Lands & Natural Resources), and CHCC (Commonwealth Health Center Corporation).

Goals and Outcomes Achieved
Pamphlets, posters, newspaper and magazine ads, billboards, the annual agricultural fair, radio stations and television interviews were used to conduct outreach and educational programs, to disseminate information regarding Specialty Crops and their value to families, farmers and the CNMI communities.

Thirteen (13) school garden projects were established at various schools. The SC Project Coordinator and his assistant taught students about the fundamentals of gardening and the values of specialty crops as an important source of food, nutrition, vitamins, minerals, protein, carbohydrates, energy, and that some specialty crops were even used for medicinal purposes. The students were taught how to build a simple nursery to plant SC seeds for germination, and the seedlings for planting in small gardens on school grounds or family backyards. Hands-on demonstrations were done, allowing eager students (elementary and middle school levels to high school) to get their hands in the prepared soil to plant seeds or seedlings, and later to harvest and eat or take the fresh vegetables like tomatoes, eggplant and okra home for the family table.

The students (as well as farmers) were also taught about plant pests and diseases, the use of fertilizer where needed, how to use animal wastes to fertilize plants, how to control or treat them using certain approved chemicals (pesticides) with proper warning to observe mixing instructions, the use of rubber gloves, goggles or masks where required, and protective clothing to prevent skin exposure or contact with the chemicals, and were advised to always follow the written instructions that come with the chemical, and the proper disposal of empty containers to avoid contamination of water, other food and the environment.

Public schools that participated in the school garden program and the number of students involved as SC stakeholders were as follows (School Year 2017-2018):

Kagman High School: 30
Chacha Ocean View Middle School: 90
Kagrnan Elementary School: 182
San Vicente Elementary School: 142
Dandan Middle School: 290
Koblerville Elementary School: 28
Marianas High School: 30
Hopwood Junior High School: 147
Seventh Day Adventist Elementary School: 20
Tinian Elementary School: 48
Tinian Junior High School: 14
Sinapalo Elementary School: 67
Dr. Rita Inos Junior High School: 39

Total Student Participation: 1,031 Students

Beneficiaries
The beneficiaries directly affected are not just farmers but beginning farmers and students who learned how to plant different species of specialty crops at their respective farms and schools.

Lessons Learned
While we saw an increase in the number of participants attending these meetings, the attendance was most notable by our partner agencies. They serve an important role in benefiting our target population with respect to their own programs, and together we provided a coordinated approach in serving our farmers.

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Project Three: High Tunnels for SC Uses

Project Summary

In the U.S., High Tunnel farming has been around for many years but for the CNMI, it was something fairly new to many farmers and the community. The use of common practices by farmers meant they weren't exposed enough to new farming technology, often due to fiscal limitations. With the introduction of the High Tunnel farming, farmers would be able to culture and produce crops that hardly grow here on the islands such as bell peppers and some varieties of tomatoes. Since the CNMI experiences only the rainy and dry seasons, high tunnel farming productivity would be appropriate for controlling the elements. Ultimately, the purpose of this project is to promote the use of High Tunnel farming to enhance, promote, and improve the competitiveness of island grown specialty crops.

Project Approach

Farmers were informed about the project that DLNR-DOA was pursuing with the Specialty Crop Block Grant Program, namely the introduction of High Tunnel projects in the CNMI. While new technology was part of the project, many of our Saipan farmers were willing to participate with high expectations and enthusiasm.

At the same time, an "Advisory Committee" was formed to assist the Project Manager with the selection of applicants for the High Tunnel project awards. The Committee came up with an application form that had the criteria for the selection process. Also, a draft agreement and Memorandum of Understanding were made, detailing the responsibilities of the selected participants. The Committee was composed of five (5) members, which included active farmers and partnering agencies such as the Public School System (PSS) and the Northern Marianas College CREES (Cooperative, Research, Education, and Extension Services).

Solicitation was made for assistance from the Northern Marianas College for student volunteers to conduct monitoring of crops grown in the High Tunnel. Students worked a certain amount of hours to attain four (4) credit hours from the class. Unfortunately, a stipend wasn't provided to the students for there was no funding from the initial plan under the grant.

Solicitation was made for price quotations from local and outside vendors for the installation and erection of a High Tunnel unit for the Division of Agriculture. This unit was to be utilized as a nursery for seed germination, seedling growth and plant management, experimentation, and educational purposes for the public.

Seeds were ordered from the University of Hawai'i Laboratory and were received.
Arrangement was made with the CNMI Government Procurement Office for the purchase of the High Tunnel equipment/materials.

A vendor was selected for the purchase of the High Tunnel units and a ninety (90) day "Notice to Proceed" was issued. Seven units of HTS were then ordered and received, and were initially stored at the Kagman Agriculture Station warehouse.

Goals and Outcomes

For the program's goals and outcomes, the main priority of this project was to enhance and promote the competitiveness of specialty crops through the use of high tunnels provided by the

program. With a total of seven (7) high tunnel units purchased under the program, one (1) has successfully been installed and erected at one of the Kagman Commercial Farm Plot belonging to Mr. Bill Ada.

With the erection of the high tunnel, Mr. William Ada has expanded his SC growing capacity to a wide extent which includes tomatoes, hot peppers, and bell peppers. The CNMI has been importing many SC produce from the U.S. Mainland and some nearby foreign countries, including all three types of produce that Mr. Ada now produces using his HT, especially bell peppers. He has shown that these crops could be grown successfully, under different circumstances and weather conditions, inside a high tunnel unit. As weather in the CNMI is random and sometimes persistent, the high tunnel is ideal for planting crops and vegetables under changing and different weather conditions, rain or shine. It is hoped that the rest of the HT units would soon be distributed and erected with one as a demonstration unit at the Kagman Agriculture Station, and one each for Rota and Tinian. The unit for Kagman Station will be used for teaching and demonstration purposes for interested farmers, students and members of the Saipan communities, as well as for conducting research and development such as planting trials, testing of new seed varieties for germination, rate of growth, yield, pest and disease resistance, quality of produce, etc.

Another farmer has recently erected the frames for his high tunnel. He is anxious to return from his off island trip to put up the plastic cover for his high tunnel and work on his irrigation system.

Contributions in the form of education materials, lectures, demonstrations and training made by partnering agencies were used to further the importance of the high tunnel projects. Partnering agencies included the Northern Marianas College Cooperative Research, Extension, and Education Services (NMC-CREES), Department of Lands and Natural Resources (DLNR), Department of Public Works (DPW), Bureau of Environmental and Coastal Quality (BECQ and Natural Resource and Conservation Services (NRCS). These agencies were able to make this project better known to farmers and the public in addition to staff inputs.

Since meetings were held on a monthly basis, these agencies came out and explained, in detail, why we need high tunnel farming here in the CNMI. With NMC-CREES, they have assisted with new propagation methods and new seeds suitable for growth. BECQ came out explaining the importance of testing the soil, with the result of higher growth rates with specialty crops and other commodities, and explained other methods of making the soil richer with nutrients such as through mulching, composting, tilling, etc. NRCS provides farmers with assistance on soil and water conservation methods through proper land tilling, and planting for windbreaks. Lastly, DPW has assisted the program with the delivery of the high tunnel units to the Division of Agriculture.

Beneficiaries

The direct beneficiary of this project was Mr. William Ada, the first recipient of the high tunnel. He received and erected his high tunnel last year. He has been using the high tunnel ever since. Mr. Jess Castro also received and erected his high tunnel last month, and beginning next month a high tunnel will be given to Mr. Ivan Blanco. All three have been farming at the government owned commercial farm plots in Kagman. Other beneficiaries will be the recipients of the

remaining two high tunnels who have been identified and contacted to start preparing to receive their high tunnels.

These farmers with High Tunnels will be able to produce throughout the year SC now being imported into the islands, thereby promoting and enhancing competitiveness of locally grown specialty crops. The amount of imported SC commodities will be reduced. Their crops will be better protected from adverse weather conditions, plant pests and insects. Flooding would be lessened or avoided through ditching and diversion of flood water. They would enjoy better soil management by avoiding erosion problems, and producing healthier plants with increased yields and product quality. Soil conditions will also improve through more effective weed management and mulching practices.

Indirect beneficiaries will be other farmers who have heard about the tunnels and their advantages and will be interested to purchase their own high tunnels. These will be farmers not only residing on Saipan, but also on Rota and Tinian where high tunnel was received for demonstration purposes. Although these high tunnels have not yet been erected, they will be put to use before summer.

Lessons Learned

Before acquiring a high tunnel (or any novel equipment or farm implement in general), staff personnel must have some knowledge about what needs to be done. With this project, there was a lot of confusion about what to expect, and there were many parts and pieces that came with each unit, including some units that were incomplete when received.

A better understanding and awareness of the government procurement process, purchasing and receiving of products from the CNMI Procurement Office must be acquired. Project staff must be fully trained about the procurement process and the length of time required for delivery of items or products necessary to be procured. The cost for the seven (7) high tunnel units was $66,370.00.

Another unusual development that occurred within the three-year period was the delayed start-up of the high tunnel for public display and education at the Division of Agriculture. In the beginning, a construction company was ready and willing to erect the HT. However, this did not go through. The reason was that contract foreign workers (CW) were unable to work due to the lack of ongoing work authorization. The vendor that was going to put up the HT unit had workers that were not U.S. citizens, and whose work permits were not renewed.

The polythene plastic covering the tunnel utilizes makes the work environment too hot and the plastic is easy to break, especially during the summer months. The best material according to Mr. Ada would be windbreak netting. It is cheaper, easy to manage, and can be taken down with only one or two people. This is especially important when a storm is approaching, like Super Typhoon Yutu which devastated the island of Saipan and Tinian.

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Project Four: Data Collection for HT
Project Summary
The project was designed to capture important information about the uses of the high tunnel. This includes the type of specialty crops planted, when they were planted, when harvested, number of pounds harvested and so on. The collected information will be used by different people for different purposes, one of which is to enhance the competitiveness of the specialty crop program.

Project Approach
Data collection of planting, harvesting, marketing and other data sets should be collected on a timely and continuous basis.

Goals and Outcomes
The group had developed a data collection form. The form is being used at the Garapan Public Market where the farmers are members and are supplying the market with their locally grown fresh special crops.

The market personnel have been collecting and compiling data on the different types of crops, number of pounds, and the amount of commodities were purchased.

Beneficiaries
The beneficiaries are the farmers, management and policy makers who may see the need to use the data collected on the use of the high tunnel to appropriate funds to help the farming methods.

Lessons Learned
In the beginning the collection of data was at the Garapan Public Market. This was an easy task since only farmers who are members of the market are the only ones allowed to sell their crops and vegetables at the market. However, as time goes by other farmers, who are not members, including those from the other inhabited islands of Tinian and Rota, have started to sell their specialty crops at the market. This has increased the number of sales at the market, which is good, but the data form was not updated to reflect the additional farmers who were not included in the plan. Thus, the form has been revised to capture these and other important information.

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Project Five: Selection of Reviewers for Grant Proposals (Review Panel of Experts)
Project Summary

An Advisory Committee for Specialty Crops Grant Proposals composed of members with expertise in their fields of work or public service was formed. The agencies represented were:

1. Northern Marianas College CREES (Cooperative Research, Extension & Education Services): Representing Entomologists, Plant Pathologists, Soil Scientists, etc.
2. Department of Lands & Natural Sources (DLNR) State Forestry: Represented by CNMI State Forester
3. BECQ (Bureau of Environmental and Coastal Quality): Represented By Experts in Environmental Science and Public Health
4. Public School System's Food Nutrition Program: Represented by Nutritionists
5. Commonwealth Health Center Corporation (CHCC): Represented By Nutritionists
6. Community Members

The SC Advisory Committee meets on a quarterly basis to discuss about project proposals dealing with specialty crops, to promote and enhance their competitiveness and consumer needs.

Project Approach

The SC Advisory Committee was formed to assist the Project Manager with the selection of applicants for the High Tunnel project awards. The Committee came up with an application form that had the criteria for the selection process. Also, a draft agreement and Memorandum of Understanding were made, detailing the responsibilities of the selected participants.

The selected farmer has been or will be required to allow students, other farmers, community groups and interested stakeholders to tour their farms as part of the outreach program, demonstration and information sharing.

Goals and Outcomes

The Advisory Group, together with the Project Manager, have selected the recipients of the high tunnel. Five of the seven recipients are farmers who are farming at the government owned commercial farm plots in Kagman.

Of the five recipients on Saipan, one has already erected his tunnel and has been planting specialty crops for commercial purposes. Another farmer had recently erected the frames for his high tunnel and this month another farmer will be ready to receive and erect his high tunnel. The remaining two farmers, who are also farming in the commercial farm plot in Kagman, most likely would not get any tunnel because recently they have not been farming.

The last two remaining high tunnels were shipped to the islands of Tinian and Rota. To date, the tunnels, which were given to the Division of Agriculture on Tinian and Rota, have not been erected due to expensive cost in the amount of $10,000 quoted from on island contractors for the erection of the tunnels.

A Memorandum of Understanding was developed and is being used for the farmer and DOA to sign. The MOU outlines the duties and responsibilities of the parties, in this case the farmer and DOA, regarding the use of the high tunnel.

Beneficiaries
The beneficiaries are the selected farmers, other individuals, students and stakeholders interested to utilize the advantages of the high tunnel farming methods.

Lessons Learned
One of the major problems during the process of selecting the recipients for the high tunnel was that the farmers were not aware about the amount they have to spend for land clearing, digging for the foundation, and purchasing cement and hollow blocks, not to mention the cost of labor. Based on Mr. Ada's experience, he managed to get his tunnel completed at around $2,000. This was a major expense which was not communicated to the farmers and after being selected, thus their high tunnels continue to sit idly at the Division of Agriculture warehouse. Mr. Ada also mentioned the need to provide two high tunnels for follow-up.

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