

# TARO PRODUCTION AND VALUE ADDING IN PALAU

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## INTRODUCTION

Taro in Palau dates back to the misty past. Taro is a prominent and identifying component of Palau's culture. The traditional system of utilizing wetlands to produce taro is ancient, distinctive, rich and varied. Palau has a vast reservoir of traditional knowledge and skills related to taro. The three main types of taro grown in Palau are *Colocasia*, *Cyrtosperma* and *Xanthosoma*. The number of varieties of *Colocasia* currently present in Palau is estimated at about 100. Palau Community College – Cooperative Research & Extension, maintains sixty-eight varieties. The number of varieties is rapidly dwindling. The number of varieties available during traditional times has been estimated as over 200 (least) and over 400 (most). Since traditional times, few taro varieties have been introduced from the outside. The most notable exception being varieties introduced by SPC due to their resistance to taro rot and salt water. In everyday diet, taro is being gradually replaced by rice and cassava.

## CULTURAL SIGNIFICANCE OF TARO

The cultural significance of taro is illustrated well by the oft-quoted proverb: "A mesei a delal a telid." which is usually translated to "The taro patch is the mother of our life." Traditionally, taro was the most important and most prominent and most revered (prestige) food and crop in Palau. As with most Palauan proverbs, stories and legends, this proverb has different levels of meaning. A more literally translation of the proverb renders it: "The taro patch is the mother of our breath." This implies that at the end of the last day that the last Palauan woman goes to the last taro patch, Palau's culture will have breathed its last breath. The highly productive taro patch system enabled and sustained the Palauan 'way of life'.

In traditional Palau, a woman's skill level and how well and how diligently she tended her, her family's, the clan's and the community's taro patches and her provision and preparation of food and other resources from the patches to others was crucial in determining her position and status in the family, clan and village. It provided one of the few vehicles for advancement and wealth accumulation. Advancement and wealth accumulation are important driving forces in Palau's culture. To illustrate, the more adept and hard-working a woman was in the taro patch the more say she had in the selection of her husband.

The taro patch was the 'school' where mothers taught their family's closely guarded secrets, especially privilege knowledge of the taro patch, The taro patch was also the 'school' where mothers taught their children especially their daughters: life skills, what it is to be "Palauan", who they are, what their roles were and social values such as deference, reciprocity, thrift, diligence, and responsibility. This traditional education was devalued, ignored and discouraged by formal educators. Moreover since younger people are increasingly disinterested in agriculture there are less and less opportunities to pass on knowledge, values and skills.

Traditionally, taro was featured and required in all customs. Taro features prominently in Palau's legends, stories, songs, chants and proverbs. Taro was the central element defining Palau's culture.

## PRODUCTION SYSTEMS

There have been observed at least eight identifiable taro production systems.

I. The foremost was the *mesei*, a wetland taro production system. The taro is grown in a paddy-like system with channels and dikes for water control. Various useful plants are grown on the dikes, mainly for food, green manure, medicine, and ceremonies.

The wetlands traditionally would be divided into functional sections, which would determine or indicate the ultimate use of the taro grown. According to some growers, the divisions also serve to isolate plots from diseases, as a rotation pattern, and for continuous production.

The "typical" taro patch is elusive to define since differences exist between villages and individuals. The following description outlines the methods used in one patch in Ngerbeched. First the planting material is prepared and placed in a channel or another cool spot. Next, the patch is weeded and the weeds placed in a pile. The top 15 cm of the soil are turned over and placed in a pile. The second (15 cm) layer of soil is turned over and placed in a different pile. The weeds are then placed in the hole followed by bundles of green manure, according to the dictum, "the more the better". Dry or dead leaves are used only when green manures are not available. Some growers believe green manures contain the 'essence' of life and dry/dead materials do not. Next, the top 15 cm inches of soil are thrown back in the hole, with the roots on the bottom. Then the second 15 cm layer of soil is placed upside down. Everything is then smoothed out. This is considered very important for proper growth. The *klaeb*, the path for water between the different sections of a patch, is redone. The prepared plants are set out and then the mulch, usually consisting of dry banana leaves, is put in place. Intercrops commonly found in the taro patch are kangkong, *Linnophila aromatica*, and two types of low growing grass.

Palau's taro patch system, in my opinion, is physically the most demanding food production system in Palau; it is also a unique agroforestry system. Although the system differs from village to village and individual to individual, all the patches I have seen utilize trees/shrubs. Trees and bananas are planted or allowed to grow on the perimeter and the dikes. These trees and other plants are used for healing, food, ceremonies, building, firewood, to tell cycles, and magic.

II. Another taro plot system observed is the *dechel*. It is similar to *mesei* in that the soil is damp or wet, however, there is much less water. Usually, some dikes and channels are made, but these are not as extensive as in *mesei*. The land is usually cleared of weeds first. Generally, a long narrow shovel, stick, crow bar, or a specially made metal bar is used to make a hole. The planting material is placed inside the hole, and then the surrounding loose soil is stepped on. Mulch and organic matter are usually not used. Some growers believe *dechel* will initially produce bigger tubers than *mesei*. However, most women state that taro grown in the *mesei* is preferable to that grown in the *dechel*. *Mesei* grown taro taste better and weights more than *dechel* grown taro.

III. *Sers* is loosely translated as garden or farm. This third system of taro production is on higher and dryer ground than the other two systems described above. Sometimes the land is simply slashed and burned, and the taro is planted in holes made with a pick-ax or three-prong cultivator. Some growers make mounds and others form rows. If mounds or rows are to be made, organic matter is added at the time they are prepared. Artificial fertilizer is used more in this system and so is mixed cropping. Some growers will plant on top of the rows while others plant between the rows with or without an intercrop. Most growers considered *sers* grown taro inferior in taste and quality to both *mesei* and *dechel* grown taro.

IV. A hybrid system is observed. A dike is built around a section of *dechel* land so that water collects within the diked area. Unlike *mesei*, it lacks channels. About six inches of soil is turned over and the soil is smoothed. A mulch of various leaves is placed on top.

V. There is a system of taro production on sloping land, utilizing step terracing and living fences. Trees are left at the top of the slope to retain the soil. Taro is planted on the step terraces. Within each step terrace, a furrow is made. Planting material is laid sideways in the furrow, towards the rising sun. The reason for placing taro sideways is "taro grows up, not down." Leaves are placed on the side of the taro in the furrow. After about two months, the furrow is covered lightly with soil. In another two months, more soil is mounded over the taro, "to take advantage of the increased nutrients in the upper layer of the soil." A mulch of cut weeds, as well as artificial fertilizer, is used. The living fence is also a source of plant food.

VI. The land that were formerly mangrove swamp or forest, are initially slashed and burned sometimes following a fallow. A knife, stick, or similar tool is used to make holes to plant *Colocasia* and *Cyrtosperma*, and the loose soil is stepped on. As the *Cyrtosperma* grows, the *Colocasia* is phased out.

VII. A fairly new and fast system has evolved due to an introduced tool the "post digger". It is used on both dry and wetland. A farmer uses the "post digger" to "punch" holes about 15 to 25 cm. deep. The hole is then filled with 7.5 cm of with dry leaves or weeds and a handful of ash. The planting material is placed in the hole. Next a handful of soil is placed over the planting material. As the taro grows up the remaining soil taken from making the initial hole is placed around the plant. This system was developed to save time and take advantage of "taro grows up, not down".

VIII. In the far past, apparently taro and other crops were grown on huge back sloping terrace systems, similar to Indonesia.

## **SOIL MANAGEMENT**

Practices to improve and/or maintain soil fertility, in order of prevalence are: the addition of plant matter (especially green manure), mulches, fallowing, ash, animal manure, fish gut "soup", lime and compost "teas". It is considered by some farmers, in order to have adequate fertility in the initial year of a taro patch (360 cm X 360 cm), it is necessary to add 28 bundles (about 23 kg each) of elephant grass. In succeeding years, only 7 bundles would be required for each crop cycle. It is believed by many farmers that adding organic matter to the soil improves the taste of the taro. Conversely, it is believed by many farmers that artificial fertilizers 'hurts' the soil, attract pests including diseases, worsens the taste of taro and "puffs" it up (like a puffed snack food).

## **PEST MANAGEMENT**

Intercropping is sometimes used to 'confuse' pests. It is believed high soil fertility, additions of large amounts of organic matter, additions of lime and ash, and the use of aromatic plants prevents and deters pests. In the taro patch, the good maintenance of the furrows between patches and the ditches around the patches ensures the proper flow of water to prevent and remove diseases. Also in the taro patch, sometimes the water level is raised to drown pests. Planting materials are sometimes dipped in a solution of derris or *Barringtonia* or chlorine for disease and insect treatment. In past severe insect infestations were countered by a smoking and yelling involving many community members.

Growers will grow 5 or more varieties of taro as insurance against insect, disease and other pest attacks. The women in the taro patches were very surprised and saddened to hear that the Samoan taro industry was based on a few 'super' varieties that were wiped out by only one ('minor' to Palauans) disease. All taro growers have their favorite varieties, but they make sure to plant other varieties 'just in case'.

The three major pests as identified by taro growers are in descending order of importance, are: diseases, taro plant hopper; and the *uek* (purple swamp hen). Taro growers considered the corm rot of *Colocasia*, known locally as *obei* the most serious of the diseases.

## VALUE ADDING

The taro's corm, stem and leaves are use in a variety of ways for food, ceremonies and for healing. Over the years Palauans have developed a variety of ways to preserve and add value to taro. Palauans have adapted and/or adopted many techniques for taro preservation and value adding from foreign administrators and other foreigners living in Palau. Several of these traditional ways and adapted/adopted techniques will be described.

*Melid:* The taro root is scrape clean. It is sometimes then put in a bag, froze and sent overseas.

*Ongat:* The taro root is steamed. It is used to provide steam for the childbirth ceremony.

*Meliokl:* The taro root is boiled.

*Blsiich:* The taro root is boiled, pounded, and molded into a log. Sometimes coconut oil is added.

*Oumillum:* The taro root is boiled, pounded and/or grated, wrapped in banana, ti plant, the sheath of the betelnut leaf or coconut leaves and boiled to make *billum*.

*Blillum:* The *billum* is boiled again. It changes the taste.

*Mengat:* The *billum* is smoked. It last longer and changes the taste.

*Delul:* The taro root is boiled, pounded or grated, flattened, burnt slightly on both sides, grated (sometimes with sugar added) and then molded into balls or paddies.

*Cheluit:* The taro root is cooked, sliced, recooked with light coconut milk.

*Mengerdoched:* The taro root is sliced, fried, with sugar or caramelized sugar added sometimes. (chips)

*Mengeluomel:* The taro root is wrapped and baked. The taro root and sometimes the leaves are slow-cooked or steamed inside a chicken or pig.

*Mengum:* The taro root is bake in the ground.

*Telledou:* The taro root is boiled; pounded, grated coconut is added and then molded.

*Telumar:* The taro root is boiled, mashed, and then cooked with coconut milk in a large pot until it is a thick paste.

*Mengasureor:* The taro root is cooked, sliced, and then recooked with coconut syrup.

*Titimel:* The taro root is cooked, mashed, molded in small balls, then coconut cream or caramelized sugar is added.

*Chemlol:* The taro root is cooked, placed with rainwater in a large loosely covered clay jar and fermented. Once fermented, drinks are made by taking small amounts from the jar and then adding water and coconut syrup.

*Telooch:* The taro root is boiled, and pre-chewed, usually for babies and elderly.

*Chelbaki:* The taro root is boiled, mashed or grated with caramelized sugar or coconut syrup, then wrapped.

*Curried/Stew:* The taro root is cooked with curry or stew.

Salad: Cooked taro root replaces potato in potato salad.

Taro roll: The taro root is cooked, mashed, flattened, rolled with thickened coconut cream and sliced.

Pandan-taro: The taro root is grated; wrap with pandan leaves to form squares and then boiled. The pandan leaves impart a slight taste.

Sandwiches: Cooked and sliced taro is used in place of bread in sandwiches.

*Chelang:* Boiled taro stems with coconut milk and sugar. Similar to rhubarb sauce.

*Demok:* Boiled taro leaves with coconut milk. Similar to cream of spinach soup.

*Ngesur:* Furled taro leaves tied together and cooked with pig.

*Chesul:* The taro leaves are formed into circles and the cooked with heavy/thick coconut milk.

## **TRAINING AND TECHNICAL ASSISTANCE REQUESTS**

Several recent participatory trainings in Palau by the Bureau of Agriculture – Food and Agriculture Organization joint project entitled “Capacity Building in Farm Management, Marketing and Value Adding for Sustainable Livelihoods” has indicated Palauans are keen to try out new (to them) techniques for adding value to taro. Recent missions of FAO and ESCAP consultants verified these indications in interviews. Palauans what like training and technical assistance in the following areas: packaging that can withstand boiling; a “taro” cooker similar to rice cookers; taro ice cream and other taro based frozen desserts; taro wine; taro fudge; taro gelatin product similar to ‘jelly ace’; taro filled araban/amban/shoban; taro bread, and instant taro powder (not poi).

## **SOURCES OF INFORMATION**

- Interviews of taro growers and personal experience.
- “A Report on the Rapid Rural Appraisal of *Colocasia* Taro Agriculture in Palau” by M.Ngiralmau and R.Bishop in “Rapid Rural Appraisal of Taro Production Systems in Micronesia, American Samoa and Hawaii”, 1989, editors: A.Vargo and L.Ferentinos, LISA Project.
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- "The Meanings of Work in Contemporary Palau: Policy Implications of Globalization in the Pacific, Fall 2000, The Contemporary Pacific 12(2) 319-48.

## **A STORY ON HOW PALAUANS INVENTED THE SANDWICH**

Long ago in the misty past, long before the Earl of Sandwich was born, taro was the staff of life. One day a group of “poor” fishermen were returning from their fishing expedition. Their village was far inland. They were very hungry, so they stopped at the nearest house. They found in the house a very elderly lady cooking taro. They asked the lady to cook some fish for them. She agreed. The fishermen upon seeing that the lady was ‘poor’ for she had no meat in her household gave her some fish for herself. The lady upon seeing the fishermen were ‘poor’ for they had no taro, decided to give them some cooked taro. Once she finished cooking the fish for the men, she sliced several taros in half. She then put the cooked fish in the middle of the taro and tied the taro together and places them in a basket. She called the men over and gave them the basket. The men thanked the lady and continued on their way until they found a shady cool spot. They sat down to eat and opened the basket. Seeing the taro inside the basket, one man grumbled that “We gave the lady some fish and she took the ones for us also”. Another man scolded: “ Let’s not assume the worse. Look! The taro is tied let’s untied them.” Upon untying them, they were very happy to see their fish inside the taro and proceeded to eat them with relish. Some morals of the story: If you help others, they will help you. The outside or the package does not necessarily indicate its content. Similar to the modern proverb: Do not judge a book by its cover.

