

The Greening of Yap: The Transformative Reemergence of Subsistence Agriculture and Its Impact on Rural Community Development in Yap, FSM

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Abstract

In the state of Yap, in the Federated States of Micronesia (FSM), subsistence agricultural, foraging and fishing activities have been practiced historically and they continue to play an important role in local people's economic activities. In the last decade there has been growing interest and activity in raising crops that were historically grown for subsistence purposes for local consumption and sales. While traditional crops historically were grown only for subsistence and tribute gifts there is increasing demand and interest in growing them for income generation. Previous work conducted by Ames and Ames in 2007 on Yap, indicated that while many Yapese continue to grow crops for subsistence activities, many are now growing and selling them to augment family incomes.

There is, however, a lack of research in Yap, which links the importance of small-scale agricultural and agro-forestry resources to traditional sustainable economic activities and rural community development. This paper combines sociological and economic impact assessments and extensive stakeholder inputs with a cultural geographic analyses of these small-scale agricultural and agro-forestry resources, and addresses how they reemerged as critical subsistence activities in Yap while they have simultaneously been transformed into wage generating activities and their role in sustaining small informal community economies

Keywords: Yap and The Federated States of Micronesia, sociology, cultural geography, subsistence activities, sustainable economies, rural development

On the islands of Yap state, in the Federated States of Micronesia (FSM), in the Western Pacific, subsistence agricultural activities have been practiced since the pre-contact period and they continue to remain an important subsistence activity today. Current estimates place about 80 percent of the FSM's people as reliant on subsistence and semi-subsistence livelihoods (ADB 2005; 98). Recently there has been a growing movement to use what were once solely traditional subsistence activities as income generating activities as well. Small-scale agricultural activities are useful in assessing change in business economic structures, such as those in Yap state (Ames and Ames 2004; 2007), which are creating a strong bond between formal and informal business activities. Previous research by Manner, Ames, and Ames in Yap State (2007-2010) indicated that while many Yapese still relied extensively on subsistence activities (initial analyses indicates a figure possibly as high as 60% for some family consumption rates, out of overall food sources consumed), increasingly many Yapese are also using small-scale agricultural and agro-forestry production to augment family incomes as formal employment is severely limited on the island. Simultaneously, due to current economic conditions between 1990 and 2000, families dependent on subsistence activities in the FSM have increased from 10 to 17 percent of (ADB 2005; 99).

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This particular paper combines sociological and economic impact assessments and extensive stakeholder inputs with cultural geographic analyses of the data from that research. This paper then attempts to address the research questions of how these small-scale agricultural and agro-forestry activities have been transformed into wage generating activities and their role in sustaining small informal community economies while they have simultaneously reemerged as critical subsistence activities in Yap.

THE SETTING

Yap is a state within the Federated States of Micronesia (the FSM), which also includes the states of Chuuk, Kosrae and Pohnpei. The FSM had originally been part of the TTPI (or Trust Territory of the Pacific Islands). The TTPI was the United Nations trusteeship that had been awarded to the United States following Japan's defeat in World War II. In 1978, the people of the FSM voted for approval of a constitution. This cleared the path for the signing of the Compact of Free Association in 1982 between the United States and the FSM. The Compact was finally implemented in 1986 (Ogden, 2009; 1). "The Compact of Free Association granted the Micronesian nations full authority over their own internal and external affairs. in return they conceded responsibility for their defense and security" (to the United States) (Hezel 1995; 365). The Compact also allowed the United States exclusive military rights to the areas of the FSM, which included Yap Stateⁱ.

Yap State lies in the Western Pacific and is part of the Caroline Island chain and runs from about 138 degrees to about 165 degrees of longitude and between 5 and 10 degrees latitude. Yap State has an overall land area (including all of the outer islands) of 45.6 square miles. The population estimation is 11,241ⁱⁱ (FSM 2008; 2, 6). Yap state is made up of multiple islands, there are four close together that make up Yap proper where the capital of Colonia is located, and hundreds of atolls and islets (including Falalop and Fais) stretching east towards Chuuk state. Yap makes up 10.5 percent of the population of the FSM, while Chuuk state by comparison has almost 50 percent of the population. The population density per square mile in Yap state is 244 (Ibid.; 6). Out of the 11,241 people residing in Yap state, 4,964 are economically active (e.g. employed) (Ibid.; 31), this is 44 percent of the population, which is quite high in comparison to other states in the FSM. Comparatively only 30 percent of the population are economically active in Pohnpei State, 24 percent in Kosrae State and a mere 22 percent in Chuuk State (Ibid., 31). While part of this difference can be attributed to rapid population growth in places like Chuuk (and hence a disproportionately young and non-working population), Kosrae State has the lowest population growth and is the next least economically active (FSM 2006; 4). It has been noted in previous work (by this author) that at least in the case of Chuuk State that due to lack of economic opportunities and poor infrastructure the Chuukese population has been one of the most economically marginalized in the FSM (Ames 2011; 196-197) Therefore not only do the Yapese make up a sizable portion of all economically active peoples in their state, they are the most economically active of any state in the FSM.

While some states like Chuuk have had a phenomenal population growth since WWII, Yap itself has also seen substantial growth, doubling in size since the 1950s (FSM 2006; 4). With growth comes large-scale migrations, both internally to the main island of Yap proper as well as out migration to Guam, Hawaii and the U.S. mainland. The right to travel to, maintain habitual residence in and work without a visa for residents of the FSM, are all activities agreed to under the Compact agreement. One very common situation that was related by informants to this

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author multiple times is that many older adults in Yap have stated that out of 5-7 adult children they may have, all but one have emigrated to a variety of areas to live, such as the United States mainland, Hawaii, Guam as well as other countries. Current estimates place upwards of 30,000 citizens of the FSM living and working in the United States and its territories (Hezel and Samuel 2006; 2). Based on work the author had done in the 1980s and 1990s on migrant populations, it is well established that the longer economic migrants remain in their host destinations, the less likely they will ever permanently return home (Ames 1992). Once the migrants have children in host destinations, the likelihood is greatly diminished. If they return it is usually just for short visits. What the Yapese migrants are doing (it was reported to this author by informants) are bringing or sending home remittances, consumer goods and non-local foods, all of which are seen as status symbols.

Wages and salaries were the major source of household income in all of the FSM. The highest proportion is in Pohnpei where 55 percent of its total household income came from wages and salaries. All the states also derived a significant amount of their income from subsistence activities, accounting for 29 percent in Yap (FSM 1998; 9), down from 40.7 percent in Yap since 1998 (FSM 2007;5). All other states in the FSM had similar drops in subsistence activities, but have seen accompanying growths in other areas of economic activities. As shifts to wage labor have occurred, people that we interviewed reported that they no longer have time to produce their own food. This has resulted in increased demands in both store bought foods and demands for locally produced foods. It is worth noting that this is a society that until WWII was almost completely involved in subsistence activities and was self-sufficient and sustainable. In the context of this paper subsistence foods are those items that people either grow or catch for themselves, their families or neighbors. Store bought foods are any foods bought and paid for from a store, most notably processed, canned and frozen foods.

Yap in traditional times (prior to WWII), was self-supporting, relying on subsistence activities such as horticulture and fishing. The only known trade was for locally rare shells and the quarried stone slabs from Palau referred to as *rai* or stone money. Internally there were tribute payments of *lava lavas* (a woven cloth worn as a skirt), sennit rope, taro and yams from the outer islands to the high chiefs on Yap proper (based on interviews with several informants).

When one considers the household expenditures on food in Yap, food accounted for the largest percentage of the total expenditure in all the income classes (FSM 2007; 11). However, households with income below \$10,000 have a much higher share, more than 40 percent of the total expenditure (Ibid.;11). Comparison of the expenditure pattern by state showed that Chuuk has the highest food expenditure share at about 47 percent followed by Yap with 46 percent, and Kosrae at 39 percent. Pohnpei had the lowest share, at 32 percent (Ibid.;11). Normally when one sees household levels of expenditures for food in excess of 20-25 percent it is an indication of poverty. One would equate Yap's 46 percent expenditure with that of dire poverty. However, there is something else going on in Yap's case (and for the rest of the FSM too). Yap and the FSM, have extremely high shipping costs as most food is shipped from the west coast of the United States (Los Angeles to Hawaii is 2400 miles and it is an additional 3900 miles from Hawaii to Guam, with Yap proper being a further 500 miles to the southwest *based on author's estimates). Each time food is re-shipped the price goes up as a result of additional shipping and handling charges by middlemen. The author has noted that a 50 pound bag of Calrose Rice (produced in California) costs about \$25 on Guam, \$35 on Yap Proper and \$50 on the outer islands of Yap. This accounts for the high percentages of household income being spent on food in the FSM and Yap specifically.

Yap state is unique in the FSM in that its highest proportion of food expenditures are on fruits and vegetables at 29 percent (tied with fish and seafood), while other states of the FSM, people spend only 22 percent or less (Ibid.;12). This is really an indicator of the dependency on store bought foods as fruits, vegetables, fish and seafood are also the main subsistence foods. Despite what had traditionally been a reliance on these food items as locally produced subsistence foods, many Yapese now prefer store bought foods over locally produced varieties, both for status and as an acquired taste. Many older Yapese lamented to us that when their adult children came to visit, they refused to eat what they termed “old folks food”, which referred to local fish, taro, breadfruit and yams. Instead the adult children wanted store bought canned fish, tinned and frozen meat and white rice. This has fueled the demand and reliance on expensive store bought foods.

Because of these high costs for food expenditures, four years ago the governors of the FSM declared local food production a strategic issue. This is where our project became involved, both Yap state officials and the U.S.D.A were interested in how much food was being produced at the local level, how much was consumed by producers, versus how much was sold, as well as what issues were hindering production and local marketing. The key emphasis for the local government and our project was for Yapese to become less reliant on imported foodstuffs, through rural community agricultural development.

THE METHODOLOGY

This ongoing project is being conducted by a team made up of myself, Dr. Harley Manner and Dr. Ann Ames. Our work has focused on small-scale agricultural production and marketing and the effects these practices have on family incomes and community development. The methods that were employed in this work were several-fold. Extensive formal interviews were conducted with local producers in Yap proper and on the outer islands of Fais and Falalop. Over the four-year period, between 12 and 35 local producers were interviewed each year. In some cases the same producers were interviewed every year, or two or three times in four years. Formal interviews asked questions about what crops were grown, what amounts were grown, what amounts were sold and for how much, what amounts were kept, how much was consumed or given away, how crops were sold, what difficulties producers had in growing crops, how producers transported crops to market and how and where they were marketed. Further questions addressed financial issues of whether or not producers borrowed money, if so from whom, how much debt did they have and were they re-paying it. Interviews were conducted both at The People’s Market (a cooperative market in Yap proper), and at respondent’s homes and gardens. Other informants included key agricultural officers, various government employees, agricultural extension officers and staff of several locally based NGOs, such as the Yap Women’s Association, the Farmer’s Co-op, and The People’s Market. A number of key informants were interviewed multiple times over a four-year span. A series of stakeholder workshops utilizing discussion groups to identify problems of production and marketing, focus groups to explore ways to resolve problems in production and marketing, and structured surveys of individual producers were conducted. Then stakeholders participated in follow-up problem solving workshops to collectively address the issues that were identified and the solutions that were suggested to address them. The workshops normally ran for four to five hours each. Workshop participants numbered between 28 and 42.

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Also conducted were informal interviews, observations, and measurement of backyard gardens and medium-sized agricultural plots, plus participant observation in daily activities that link traditional subsistence and small-scale production activities with island economies. In the first year, two weeks were spent in the field. In years two, three and four between five and six weeks were spent in the field each year. Case studies of producers' gardens were utilized to provide in-depth coverage of small and medium sites, varying types of crops, levels of crop production, and assessed values of crops.

Also utilized extensively were official documents of the central government of the FSM and the state government of Yap in the form of census and economic data, and technical reports from businesses and NGOs, such as the Micronesian Seminar, Asian Development Bank and the Bank of Hawaii.

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RURAL COMMUNITY DEVELOPMENT

Traditional cultivation on Yap employs a slash and burn technique, followed by a fallow period of several years or more (See Figure 1). Today in Yap with all land owned, people employ slash and burn gardening on their own property or a relative's or neighbor's land. While this is often viewed in the West as a technique destructive of natural habitat, due to poor tropical soils on Yap it is necessary to move garden plots every one to two years and to allow garden areas to lie fallow for up to seven years in between. This is a method that has been successfully employed on Yap for probably several thousand years.



Figure 1. Traditional Slash and Burn Gardening
Photo by: T. Ames

Traditional cropping employs mixed agro-forestry, with a variety of crops ranging from pineapple, papaya, yams, sweet potato, banana, taro, cassava, breadfruit and other tree and ground crops (See Figure 2). Traditional cropping is still used today, and was evident in the community development case studies, increasing local producer's opportunities to market and sell traditional crops as demands for produce (as previously noted), continue to grow.



Figure 2. Traditional Mixed Agro-Forestry
Photo by: T. Ames

With local opportunities expanding for produce sales, the local agricultural extension office based at the College of Micronesia (COM) has launched a number of demonstration projects spearheaded by the very dynamic and energetic Dr. Murukesan V. Krishnapillai. These have included such activities as growing (what are normally imported produce) cucumbers, tomatoes, cabbage, sweet peppers, as well as a variety of citrus fruits. When we first began our work in Yap in 2007, it was unusual to see local producers growing crops other than traditional crops of taro, yams, and bread fruit. Eating vegetables (other than taro and yams) we were told was not something that was done traditionally. One informant remarked to us that “vegetables were pig food, not people food”. Adding to the local demand for produce has been a government program in the last three years to encourage consumption of local foods for health reasons. There have been several posters that have been distributed and public information health campaigns to encourage people to buy and consume local foods, noting they will help reduce hypertension, diabetes and cancer. By 2010, many farmers were now including them in their family gardens and locally grown introduced (non-traditional) produce was increasingly being offered for sale in the local markets. As one farmer relayed to us, “growing vegetables are a good thing as they are

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good for my children’s health.” Modern techniques have also been demonstrated by the Agricultural Extension Office using greenhouses, sheltered seedbeds, raised plant beds, composting and irrigation systems. Many of these techniques were necessary to successfully cultivate some of the introduced crops, as they would not grow without greenhouses or in raised seedbeds in the local conditions (See Figure 3).



Figure 3. Locally Constructed Greenhouses
Photo by: T. Ames

One of the main outlets for local farmers’ produce is at a farmer’s co-op market (The People’s Market). The Small Business Development Center of Yap (SBDC) sponsors The People’s Market, a bi-monthly market. At The People’s Market farmers bring their produce to sell to local community members (See Figure 4). When interviewing the participants the range of income for one day of sales ran from \$30 to \$200 (this was based on the 2008 interviews where 12 informants were interviewed). This works out to a yearly income contribution to the participating families from produce sales of between \$700 to \$4800, a substantial contribution considering that a senior civil servant makes between \$16,000 and \$18,000 a year (according to a Historical Preservation Officer). The income for most participants (over three-quarters), was at the higher end of the range. Other outlets included four hotel restaurants, at least five of the local grocery stores and private buyers who would place their orders with the various producers.



Figure 4. The People's Market
Photo by: A. Ames

The two main purchasers of produce were those who worked primarily with the state government and other wage earners, and those who did not own land. It is worth noting on Yap proper that all local Yapese own land or have access to land through family ownership (except the outer islanders as noted below). And subsequently local Yapese have the ability to grow subsistence produce. However, it was mentioned dozens of times to our team that as this person was working full time they just did not have the time to work on their own taro field or garden plot after work.

The second group of purchasers were Yapese from the outer islands of Yap, who have traditionally not owned land on Yap proper. Instead when they migrated to Yap proper they have either squatted on land, or were assigned land to build houses on by the Chief's Council of Tamol (the chief's council which oversees outer islander's affairs). In 2009 and 2010, all of the outer islanders who had been living on Yap proper for several years and been assigned land (they were small plots) were cultivating small gardens. All ten homes visited reported that they only grew food for themselves, not for resale, and all of the land was too dry to grow taro successfully. Because the garden sizes were so small they could not supply enough for all of their needs. Also, new outer islanders were arriving all the time with some squatting, and some now living in town or even apartments. So most outer islanders still bought some produce at local markets or the People's Marketⁱⁱⁱ.

In either case as more people switch to wage labor positions and more outer islanders migrate to Yap proper, and with greater public awareness of the health benefits of eating locally produced produce, the expectation is that demand for agricultural produce on Yap proper will continue to grow.

LOCAL TRANSFORMATIONS AND CHALLENGES TO COMMUNITY DEVELOPMENT

It is worth noting that while some transformations have been successful—such as shifts to a market economy, adoption of new crops and new techniques, others have been less effective. While many of the inputs, such as the green house pictured in Figure 3 were designed to have minimal external inputs, such as the plastic sheeting, it is still a cost. One solution that stakeholders had come up with, was to use palm fronds for partial shade, in place of plastic sheeting, which was both free and biodegradable.

On the outer islands, water for irrigation is even more problematic. On Fais, all water for irrigation has to be carried from the central well, which can be up to half a mile away from the garden plots. For others, even the inexpensive concrete blocks used in the raised seedbeds were prohibitively expensive. At the stakeholders' meetings a commonly raised problem was the high costs of using commercial fertilizer to raise introduced crops and as a means to raise crop outputs in general. A number of stakeholders also noted they could not afford transportation for their crops.

There have been several outside funded projects to stimulate local food production and economic growth. One such project was the U.N. funding of a pig development project. Traditional pig rearing consists of tying a pig by one foot with a length of rope under a tree. Breadfruit, coconut meat and other available foods such as bananas, papayas and left over foods are fed to the pig. The U.N. funded pig rearing project included the building of a local slaughterhouse and the encouragement of local farmers to raise pigs for local marketing using “western style techniques.” These included penning the pigs up and feeding them imported “pig-chow” shipped from Los Angeles. As one of our informants recounted, “the pig-chow cost more than what we could sell the pigs for later.” However, this same farmer and other local farmers recently began raising pigs on their own, allowing them once again to forage under a tree which they are tethered to and feeding the pigs coconut and other local foods such as breadfruit.

Subsequently pig raising has once again become profitable, successful and sustainable. I had purchased a 200 pound local pig on Fais that was raised using these traditional methods. The purchase price was \$300. It was also related to me that a similar project had been started to raise chickens, again using “western style techniques.” This also consisted of penning up the chickens and feeding them commercial chicken mash. Similarly, this was also not profitable. As one informant told me, “Now we just let the chickens run around loose, they find their own food, and they even eat the pests out of the garden.”

CONCLUSION

Changes in economic activities have resulted in a reemergence of the importance of producing what were once subsistence foods and growing newly introduced crops as well. This has resulted in an increasing shift from growing agricultural produce solely for subsistence and family consumption, to growing agricultural produce for local markets and cash revenues. These local sales are providing produce at a price far lower than imported produce for buyers and are also enhancing the local family economies via the incomes of the sellers. While demands for traditional foods remain the highest, newly introduced crops, such as tomatoes, cucumbers, herbs and fruits are gaining in demand as well. This has resulted in the requirement to adopt new production techniques. In some cases the new techniques are feasible, in other cases they are

either too expensive or non-sustainable. Due to the geographical logistics of small island states like Yap, there are times when traditional methods remain the only viable and sustainable alternative.

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Notes

ⁱ Compact One expired in 2000, Compact Two was signed in 2003 and will be in force until 2023 (FSM: JCCEN 2004; 23).

ⁱⁱ Preliminary census data for 2010 indicates this number may have risen by 135 people.

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ⁱⁱⁱ For an in-depth description analysis of the People's Market, see A. Ames (2012) "Micro-Traders: A Case Study of Micro-Finance on Yap Proper, Federated States of Micronesia," in *Pacific Asia Inquiry*, Volume 3, Number 1, Fall 2012, University of Guam.