



The *New* American Farmer

Beato Calvo

Rota Island, Northern Mariana Islands

Summary of Operation

- *Coffee, bananas, cassava (tapioca), hot peppers, mango and other fruit and vegetables on 7 acres farmed by his family for two generations.*
- *Agri-tourism, including a zoo featuring local species, and farm/zoo tours*

Problems Addressed

Weather disasters. On Rota, as on other islands of the South Pacific, tropical typhoons can take a devastating toll on agriculture. In 2002, three typhoons ripped across Rota, the southernmost island of the Marianas chain. Typhoon Chataan damaged Calvo's new coffee trees planted early in the year. Just days later, as he was nursing the young trees back to health, Typhoon Halong pummeled the weakened plants, killing many.

The final blow of 2002 fell in December when Super Typhoon Pongsona blasted Rota with 155-mile-per-hour winds and gusts approaching 190 mph. Pongsona ripped off rooftops and most of the 500 coffee trees Calvo had planted, along with a nursery he'd built for holding young coffee trees imported from Hawaii. Typhoons also pelt crops with sand and salt spray, weakening plants and impeding their growth.

In 2004, storm clouds brewed yet again, and on August 23, Super Typhoon Chaba, packing sustained winds of 145 mph and gusts of 175, tore through Calvo's coffee plantation. Undaunted, and imbued with a sustainable attitude, he's determined to replant – yet again.

Weed, slug and insect control. The biggest challenge on the Calvo farm is weed control. Calvo spends considerable time slashing and mulching weeds. In addition, the tropical climate is ideal for crop-damaging insects and slugs. Finding practical solutions to their control can be expensive and environmentally intrusive.

Limited income opportunities. Banana, cassava and hot peppers have served as excellent crops for Calvo's operation. For some time, however, he has wanted to test alternative crops to spread the price risk for his traditional crops and to provide a potential new income stream. At the same time, he hoped, new crops could add environmentally sound mitigation to erosion and pest problems.

Background

Calvo farms with two brothers on seven acres bequeathed from his father, Carlos, a former mayor of Rota who divided up his farmland among nine children. During the Japanese occupation of the islands in the Northern Mariana chain, the Japanese planted coffee and cocoa, which they shipped to Japan. The endeavor ended when the United States occupied the islands after World War II.

"I used to help my dad when he was planting citrus, and I saw a lot of coffee trees left over from the Japanese plantations," Calvo says. "I started thinking about starting my own coffee plantation."

Calvo's father was also an island pioneer in the business of agri-tourism. With that model, Calvo began in 1996 to collect indigenous species of animals and birds to open a zoo. The private zoo, created without government aid, now houses mostly local species and includes flying fox, deer, coconut crab, hermit crab, ducks, peacocks, four geese and one emu.

The zoo, along with Calvo's fruit and vegetable enterprises, provides a potential agri-tourism venue for the 600,000 tourists who visit Rota each year, two-thirds of whom come from Japan.

Focal Point of Operation – Coffee, fruit and vegetable production

Calvo launched his coffee plantation in 2002. And despite that year's powerful, destructive typhoons, he replanted the coffee trees to fulfill his dream of the Rota Coffee Company.

"Our interests have not been dampened by these setbacks," he said shortly after the triple typhoon whammy. "Even though we have been wounded, we have not been defeated."

Until Super Typhoon Chaba hit the island in August 2004, Calvo's replanted coffee trees – 300 in all including Kona, Red and Yellow hybrids – thrived in the Rota sunshine. To ensure their growth and add yet another income stream to his operation, he also planted two species of trees, one intercropped with his coffee trees, the other planted strategically in high-wind areas of the farm.

The intercropped tree is Indian Mulberry (*Morinda citrifolia*), known more popularly as noni. The fruit from this tropical tree was used throughout Polynesia as a medicinal plant. Calvo said early Polynesians even

bathed in the fruit's juices. It takes three to four years before coffee trees begin to bear fruit. Meanwhile, the faster-growing noni trees shade the coffee and begin to bear fruit in just two years.

The juice extracted from the noni fruit, which Calvo described as a bumpy, ugly pear, has become highly desired for its nutritional and medicinal values, providing a market outlet when his trees begin producing.

Calvo also planted the Beauty Leaf/Alexandria Laurel (*Callophyllum inophyllum*), known locally as tamanu or da'ok. Not only does this nut tree, which takes about five years to mature, provide income from the nut oil, but it also serves as a wind-break to protect the coffee trees and other crops against future typhoons.

"Farmers across Rota are cultivating these trees and intercropping them with other trees and root crops like taro," says Mark Bonin, a tropical horticulturist with Northern Mariana College and a technical adviser to the Calvo family farmers.

Calvo also raises as many as 13 different types of fruit in addition to his three main vegetables: chili peppers, taro and cassava. He sells his harvest at a farmers market and local retail stores, and plans to target tourist-frequented areas such as the airport. His offerings include value-added products created by his wife, Julie, who processes chilies, makes banana chips and pickles mangoes and papayas. Finally, Calvo uses papaya discards as animal food at his zoo.

Economics and Profitability

Calvo anticipates that adding the three trees — coffee, noni and da'ok — to his fruit and vegetable mix will help even out and add to

his income stream.

The main purpose of intercropping with trees, said Bonin, is to achieve economic sustainability. "If one crop fails, another can back it up," he says.

Calvo's goal of revitalizing the coffee industry in the Northern Mariana Islands was furthered by a SARE farmer/rancher grant in 2001. The grant enabled him to visit the Big Island of Hawaii early in 2004 to learn about its thriving coffee industry from University of Hawaii plant pathologist Scott Nelson. Nelson had visited Rota in May 2003 to teach Calvo and other interested farmers about coffee management, production and integrated pest control. Underpinning the strategy is to target already established niche markets for coffee in Japan.

"Even though the trees have yet to produce, several Japanese businessmen have expressed considerable interest for both the coffee and noni," says Calvo. Some had visited his project several times in its first two years.

Calvo anticipates that the noni and da'ok trees will provide an economic complement to his operation.

"In addition to its popularity with Hawaiians and other Polynesians, noni is being recognized in Japan for its medicinal and nutritional value," says Calvo. "We have a big Asian tourist trade on Rota, which offers a very good potential for our crop. It's already been market tested and we know that it has great potential."

As for the da'ok, the extracted oil is in high demand in the pharmaceuticals industry for use on skin ailments and to ease arthritis pain. Calvo said the pure oil has been fetch-



Phil Rasmussen

Beato Calvo's coffee plantation includes "noni" and "da'ok" trees that provide fruit and nuts.

Still, Calvo must contend with the prodigious weed, slug and insect populations that infest his crops. For now, he's using slug and snail bait, with integrated control measures in place for other pests and diseases. For example, he is trying to combat melon flies by installing fruit fly traps.

Community and Quality of Life Benefits

Calvo's project, despite the setbacks from typhoons, has captured the imagination of other farmers on the Island of Rota. The benefit of utilizing indigenous tree species as intercrops and windbreaks has become especially attractive when

ing as much as \$25 to \$30 an ounce.

Calvo's expanded integrated cropping approach, he says, will further bolster the agri-tourism element of his operation by giving visitors a wide array of options.

"They can enjoy a cup of Rota coffee and a plate of Rota fruit while they tour our farm and visit our zoo," he says.

Environmental Benefits

Calvo's use of crop-producing trees as windbreaks is an evolution on the island and a study in common sense. In addition to adding layers of protection from the cruel winds, the noni and da'ok trees help curb erosion. Moreover, the noni trees will provide shade for Calvo's coffee trees. The dense da'ok trees will go further to protect the main cash crop from a storm's pelting of salt and sand.

the economic potential is added to the mix. Several farmers are using these trees as intercrops and windbreaks not only in coffee and cocoa but also for citrus and other perennial crops.

Further, the Calvo family's pioneering efforts in agri-tourism benefit not only the Calvos but the community as a whole. To help educate local school kids and their teachers about agriculture, the Calvos conduct farm tours at no charge.

Transition Advice

For those attempting to grow coffee, Calvo advises them to learn their soils. "You need a lot of time and you need to know how to build a windbreak," he says.

Technical adviser Bonin underlines the importance of protecting against the strong winds of the South Pacific. "I would

encourage anyone who is trying the same thing to prepare your da'ok trees to protect your coffee trees," says Bonin. "Intercropping and strategically planting the trees can also protect other crops like taro."

To underscore the importance of planting such trees in the mercurial climate of Rota, Bonin reported that a majority of Calvo's windbreak trees survived the August 2004 typhoon, a testimony, he said, to good planning for sustainability.

The Future

Calvo plans to integrate weeder geese into his sustainable farming cycles once he can sort through import restrictions arising from the avian flu scare. He hopes the geese will tackle all of his pests — weeds, insects and slugs — leaving a layer of manure behind to fertilize the plants and trees, a cycle that will eliminate costly pesticides and synthetic fertilizers.

"On top of that," says Calvo, "the feeder geese make good watch dogs," frightening away crop-feeding deer and other intruders. In addition to the geese, Calvo's next venture is to intercrop vanilla with his coffee trees. He plans to market the vanilla through the same channels as his coffee.

■ Ron Daines

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