Fila Marucha farm, Costa Rica

Turning cattle grassland into a forest garden

Nowadays Central American Costa Rica is known for its lush forests, and sensible protection measures, luring a multitude of eco-sensitive tourists. That was quite different, not more than thirty years ago. Farmers like Milo Bekins-Faries restore former cattle grounds into forest gardens. Using analog forestry his Fila Marucha farm also turns a healthy profit.

Between 1940 and 1983 Costa Rica lost half of its original forest. The country had one of the worst deforestation rates of Central America. Fortunately this has changed. Today over one quarter of the total Costa Rican soil is protected in forest reserves for the protection of biodiversity hotspots. But still, huge parts of the country have been severely degraded due to cattle farming and plantations for banana, pineapple and palm oil and other commercial export crops. There are farmers who take action to restore these degraded lands and bring back biodiversity and living soils, also outside of the protected parks.

Milo Bekins-Faries is one such farmer. Mr Bekins-Faries, a naturalized Costa Rican citizen, has been a forest farmer for many years. The family farm, called Fila Marucha, is located four kilometres from the small town of Londres, near the Manuel Antonio Natural Park. It has as its principle objective the production of Carbon biomass, but it also produces spices, medicinal plants, fruits and food stuffs. The farm also serves as an analog forestry demonstration and training site.

Milo Bekins came to Costa Rica in 1974, where together with his wife he bought a piece of land in Londres. His wife had grown up on a self-sufficient farm in Costa Rica so they decided to look for sustainable methods of working the land. They learned how to farm without the use of chemicals, practices they later perfected to the point that no external inputs are needed to be bought except for machines and tools. Their composting methods have since attracted the attention of agricultural researchers in Costa Rica. After producing organic spices and medicinal herbs for the tourist markets on small plots of land, they bought a new farm plot.

Their *finca* is now 94 hectares in size, of which 47 hectares primary forest, 35 hectares secondary forest, and the remaining 12 hectares had been cleared for cattle grazing. Mr. Bekins converted the farmland into forests over time, which he designed to become analog forests. He aims to replicate the ‘architectonic structure’ of the original forest as

it was before man. It is 'analog' because the exotic crops he introduced are analogous to what was there originally.

Even before they dedicated themselves to analog forestry – reading for example the works of analog forest 'founder' Ranil Senanayake – Milo Bekins and his wife implemented designs that were in tune with the environment, diversifying crop species. But they did not think of it in terms of imitating the structure of the original forest. The analog forestry concept is different from simple reforestation. According to Bekins-Faries many efforts to reforest end up doing industrial reforestation: planting single crops like teak, gmelina (a fast growing deciduous tree) and eucalyptus. This does little to improve biodiversity.
Through studying the original forest Milo Bekins learned how to identify the keystone species that make everything work. They range from strangling fig trees to mammals such as bats, birds and animals. Actually only 1 to 3 percent of the biodiversity of a tropical rainforest are trees, yet they provide 70% of the biomass. All the forms of life and complexities of that forest are working together to restore biodiversity – spheres of influence intertwining like the olympic rings. The components of the leaves on the ground provide the balance and health of the forest. The Bekins farm, as all tropical soils, has fungi, bacteria, microrhyiza (symbiotic association between a fungus and the roots of a vascular plant), and other organisms that are the drivers of soil fertility, and in a forest they are under control and balanced out by the variety of leaf litter.

Analog forestry has the advantage that in the implementation of the landscape design the wide variety of native species and exotics mimics the structure of the original ecosystem. Besides restoring biodiversity and conservation, anolog forestry provides a farmer the option of making the land productive. The Fila Marucha farm grows many different fruits, nuts and spices, including cinnamon, mangosteen, nutmeg, cardamom, citronella, ginger and turmeric, none of which are native to the region. Also, mr and mrs Bekins-Faries produce and sell steam distilled essential oils made of citronella, lemongrass, ylang ylang, patchouli, and many more aromatherapy oils. Such diversity of crops allow a farmer a leverage against low prices.

The Bekins forest garden has been so successful, that it serves as an example for many farmers in Latin America. For several years now *finca* Fila Marucha manages its own training centre, the *Centro de Capacitación de Bosques Análogos*, an accredited International Analog Forestry Network (IAFN) centre. Together with other international trainers Milo Bekins gives trainings on the concept and practice of analog forestry. Civil Society Organizations from Mesoamerica, the Caribbean, and South America come to the centre for basic training for farmers or for training of trainers. Mr Bekins also travels as a senior IAFN trainer to other countries to give on-the-ground trainings or to organize follow-up instruction and help out with local challenges.

Not only Milo Bekins and his wife have profited from their efforts. Forests are beneficial to society as a whole. Half of every piece of wood is pure carbon and half of that is sequestered into the soil, thus diminishing CO_2 emission. Starting in 1995 Costa Rica was the first country in the world to pay forest owners for the conservation of its forests through its Payment for Environmental Services (PES) Program.

This policy allows a farmer to keep and work the land, leaving most of it for conservation, while still allowing a few hectares for analog farming and earning income for that protection. The government-led PES program, rewards forest owners for four bundled environmental services their forests provide: watershed protection, carbon sequestration, landscape beauty and biodiversity protection. While the scheme relies heavily on state funds derived from a fuel tax, it has evolved significantly and keeps trying new ways to engage the private sector (mostly Hydroelectric Power producers). The *Fondo Nacional de Financiamiento Forestal* (FONAFIFO*),* a financial mechanism for the recuperation and conservation of forest cover, and local NGOs play important intermediary roles.

For the past ten years, Mr. Bekins and his family have received from the Costa Rican government 64 US$ per hectare per year for the conservation of his forests. This strict PES system does not allow even fallen wood to be cut or trails for eco-tourism to be established. A commission is paid to a forest engineer for a master plan to be worked out with the farmer defending the parcels he wishes to work. Satellite imagery is used to confirm the amount of forest that he wishes to protect. On the basis of these data the FONAFIFO gives the final approval.

Protecting the Titi

One of the tourist attractions in and around the Manuel Antonio National Park are the squirrel monkeys (Saimiri oerstedii), or *Titi* in local language. This red-backed monkey is the most endangered species of monkey in Central America; there are only 2,000 individuals left. Fortunately, tourist businesses like hotels and local travel agencies have acknowledged the importance of conserving and restoring the natural habitat of these monkeys. For this a corridor was created – with the use of the analog forestry method – so that the habitat of the monkeys would remain large enough for them to prosper.

The Titi Conservation Alliance was started in 2001 by a group of business owners within the tourist industry based around Manuel Antonio National Park. After recognizing the need for conservation of their natural environment to maintain prosperity for their businesses, this group of entrepreneurs began the Alliance with the mission to promote sustainable development and to conserve the biodiversity of Costa Rica's Central Pacific Region. Starting from Mr. Bekins' farm, where the largest troop of Titi monkeys are found (a group of 86 individuals), down the Rio Naranjo watershed to the National Park, more than 38,000 trees and other species have been planted along the 22 kilometer long Biological Corridor Mono Titi to provide habitat for the monkeys. This biological corridor is a part of the Costa Rican National Program of Biological Corridors, a program that links 39 biological corridor watersheds to protected areas of the country. Today 26% of Costa Rica is protected in National Parks, forest reserves for the protection of biodiversity hotspots.

Products from the Fila Marucha farm

Produce	Annual income (in US$)

Timber, various types	6,000
Fuel wood, various types	Used for on-farm drying
Bamboo	400
Teak	Used for on-farm construction
Basket material	120
Honey	20
Flowers	1,300
Lemongrass	300
Mint	400
Lippia alba	44
Lippia graveolans	400
Allspice leaves	200
Ginger (fresh)	200
Smilax regelii	80
Nursery plants	600
Essential oils, various types	4,495
Cinnamon bark	1,200
Allspice berries	600
Nutmeg	480
Mace	40
Chile (dried) cayenne	320
Ginger dried	400
Turmeric	200
Vanilla	2,250
Green pepper	400
White pepper	200
Black pepper	3,000
Cardamom	280
Curry	2,400
Chile powder	1,600
Potpourri	240
Sachet	200
Ylang Ylang flowers	160

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Sources: BIJ ANDERE ARTIKELEN VOEGEN WE ALLEEN CONCRETE BRONNEN EN LITERATUURSUGGESTIES TOE.

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FONAFIFO
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Titi Conservation Alliance
http://monotiti.org/who_we_are.html

Interviews with Milo Bekins-Faries

Foto bijschrift: Apart from farmers, the participants in the analog forestry trainings are a mix of forest technicians, farmers, and local community leaders with a wealth of farming experience.

Photo: www.monkeyworlds.com
Endangered squirrel monkey