

2002 World Food Prize Summer Internship
Inter-American Institute for Cooperation on Agriculture
A Study on Organic Agriculture
By Alexis Harper

How I got involved:

During my senior year in high school I participated in the World Food Prize Youth Institute. It was there I heard about the Ruan Borlaug Internship. This immediately sparked my interest and I knew I had to go. I couldn't think of a better way to spend a summer than traveling to a foreign country and studying there for two months. I applied and was sent a letter informing me that while I was accepted into the program they did not have any where to send me. I was crushed, but luckily there was still hope. A few weeks later I received the best email I have ever gotten, it informed me that I had been chosen to go to Costa Rica.

Costa Rica:

Costa Rica is a small country in Central America. There is a population of about three and a half million, and it is roughly the size of West Virginia. They've had no army since 1949, and consequently the government is able to give most of its resources to health, education, and conservation. About a fourth of the country is protected in national parks, giving Costa Rica some of the world's best conservation. In this tiny country they have about five percent of the world's total biodiversity. Their leading industry is tourism but coffee and bananas are also important to the economy.

IICA:

It was there, I worked with organic agriculture at an institute called IICA. IICA stands for Inter-American Institute for Cooperation on Agriculture. IICA's

mission statement, “To support the member states in their pursuit of progress and prosperity in the hemisphere, through the modernization of the rural sector, the promotion of food security, and the development of a competitive agriculture sector, technologically prepared, environmentally managed, and socially fair for the people of the Americas” sums up what IICA is all about. There is a branch of IICA in almost every country in North or South America. During my internship I spent most of my time learning organic agriculture on an experimental organic farm.

Organic Agriculture:

Organic agriculture is one of several methods to sustainable agriculture. It is a holistic production management system which promotes and boosts agro-ecosystem health. This includes biodiversity, biological cycles, and soil biological activity. Organic agriculture emphasizes the use of management practices instead of the use of off-farm inputs. This is accomplished by using, where possible, agronomic, biological, and mechanical methods as opposed to using synthetic materials to fulfill any specific function within the system. Organic agriculture looks at the medium to long-term effects of agriculture interventions on the ecosystem. It tries to produce food while keeping an ecological balance. This farming method begins to consider potential environmental and social impacts by eliminating the use of synthetic inputs. Resolving problems before they arise is also another key component in organic agriculture. Soil building practices such as crop rotations, inter-cropping, symbiotic associations, cover crops, organic

fertilizers, and minimum tillage are also all important organic practices. These practices encourage overall soil health, increasing nutrient and energy cycling and the retentive capabilities of the soil for nutrients and water. These management techniques also play a key role in controlling soil erosion.

My Internship:

I spent most of my time working at Finca del Lago with Jack Perella. Finca del Lago is a small experimental, organic farm. There, I learned many organic farming techniques and how organic farming can help feed people. The world currently produces enough food to feed its entire population; the problem is access to the food for those who need it. Organic agriculture could be one possible alternative method by helping in local markets. The organic farmer can increase food production by managing local resources without having to rely on external inputs or distribution systems that they have little or no control over. A small organic farmer can produce food and get it to his local market with fairly little trouble. This not only creates an income plus a source of food for the farmer, but this also helps to feed the local population as well.

During my time on Finca del Lago I learned many important farming techniques. Arriving with no experience whatsoever made this a definite learning experience. I learned how to transplant plants when they were ready, work with a seed bank, sow seeds directly and into a planter (Figure 1A-1C), care for

seedlings, conduct germination tests, and apply organic insecticides. My main duties were to water seedlings, sow seeds and conduct germination tests.

Finca del Lago's seed bank had many old, non-viable seeds, my biggest job was to go through these seeds and perform germinations tests. The tests would show whether or not the seeds had a high enough germination rate to plant.

Germination tests are fairly simple to conduct. The first step is to take a brown paper towel and moisten it with distilled water. Then you put a significant amount of seeds on the moist paper towel. We used twenty seeds for each tests. The next step is to put the folded paper towels into a plastic baggie and then store the seeds in a cool, dark place for the recommended germination time. We also used a control each time to make sure that the seeds would sprout if they were viable. The control was seeds known to be viable. Typically I had a zero percent germination rate, whether the seeds were new or old. We concluded that this was because the seeds sold in Costa Rica were of very low quality, making another obstacle for would be organic growers.

While in Costa Rica I had the opportunity to visit several other organic farms. The first farm I visited was mainly a cheese production farm. The five cows were fed organically and then milked. The milk was then used to make cheese. I had the opportunity to watch the cheese making process (Figure 2A-2B), as well as see the cows milked. I was very impressed at how sanitary the whole process was. I also tried several different varieties of the cheese made there. They were delicious.

Hydroponics (Figure 2C) was also used on this farm. This is a method of farming in which there is no soil used. The plants are simply placed in gravel filled containers, and they are given a water solution that contains all the food they need in it. The advantage to this method being that there is no worry of disease or pests from the soil. In the hydroponics greenhouse I helped water the plants, and I also helped with an organic remedy for a fungus that was attacking the plants. I sprayed on a mixture of water and grapefruit seed oil. This farm also had a small organic garden that I did not have the opportunity to do more than walk through. They were also in the process of building a new green house.

The next farm I visited was mainly a chicken farm. There were about three hundred organically fed chickens. My first job at this farm was to gather the eggs. This was definitely a new experience for me, as I had never been this close to real chickens, let alone walking through three hundred to collect eggs. After I dutifully collected the eggs we sat down to breakfast, and I had the opportunity to taste a fresh egg. I think the flavor quality is definitely better.

Spraying the plants was another task I helped with. The bean plants at this farm were also suffering from the same mold as the cow farm; however, this time we sprayed a mixture of water and chili pepper extract. I also got my hands dirty and helped to get some of the beds ready and plant bean seeds in them. To get a bed ready the first step is to loose the dirt. You want to get rid of all of the big clumps and make the soil as fine as possible. Weeding is also a good idea. After the bed is prepped you can begin sowing seeds. We were planting beans so we just

made little holes with a stick and put two seeds in each hole, covering it when we were done.

At the last farm I visited, I attended a cheese making class. This class was totally in Spanish so I did have some difficulty understanding, but basically what they do is take the curds from the milk and compress it together. This makes a cheese that is known locally as simply queso blanco or white cheese. I sampled some and found that it has a very unique and somewhat indescribable flavor. I do believe it goes well with crackers though. I also helped to sow seeds at this farm as well. I planted a variety of things, everything from carrots to strawberries. I believe my favorite part of working on these farms was planting. I thoroughly enjoyed getting my hands dirty and working with the soil.

Organic agriculture could be a very important supplement to conventional agriculture. People with little or no income can start a small organic farm if they have a little land. They can start growing with very small start up costs, and then not only do they have an extra food source but can sell any extra produce for added income. There are no fertilizers or insecticides to buy so maintaining an organic farm has relatively low costs. Organically raised food also sells for a slightly higher price in most markets. While I do not believe organic agriculture can ever replace conventional, as it has lower yields, I do believe it can be a great supplement.

While in Costa Rica I also had the chance to do a little traveling and see many of the gorgeous natural wonders. I visited the rain forest on numerous

occasions and had the opportunity to hike through several different types of rain forest. I also saw two active volcanoes (Figure 3), at Arenal I could actually see lava come down the side. I also visited the hot springs at the base of Arenal. I definitely think that I need something like them close to my home. The family I stayed with, my Costa Rican family went to a beach on the Pacific side for a weekend. This beach was a gorgeous white sand beach with perfect weather. Wildlife was another thing I had the chance to see a lot of. I saw three different types of monkeys, a three toed sloth, several different varieties of poisonous frog, green sea turtles, and a lot of birds. One of my favorite parts of my trip was when I had the opportunity to see the green turtles lay eggs. I went with a tour to a beach at night and was able to witness a green turtle lay her eggs. It was completely amazing. I have never seen anything so magical.

My trip to Costa Rica has turned out to be an unforgettable learning experience and a source of personal growth. I feel that I have learned what I set out to and so much more. I now understand organic agriculture and have an idea of how it can help feed the world. I met many different people from different cultures and walks of life. I never would have had the chance to see life from a different point of view without this internship. It was an amazing experience, not only did I study an aspect of agriculture, but I learned about another culture, improved my Spanish, and made many life long friends.

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FIGURE 1A Freshly sown celery seeds.



FIGURE 1B Green house at Finca del Lago



FIGURE 1C Garden at Finca del Lago



FIGURE 2A Cheese making



FIGURE 2B Cheese Factory



FIGURE 2C Hydroponics



FIGURE 3 Volcano Arenal