

Soil degradation at Paso Alto caused by cattle ranching

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In José Cueva's article in the last *Rainforest Review* one of the achievements he wrote about was the development of agroforestry systems.

However, of these achievements, the development of agroforestry systems is the most tenuous because of the complexities of creating sustainable economic alternatives. There is a deep-rooted cultural model based on deforestation and monoculture; we cannot expect to consolidate a radical alternative in only a few years. In order to plan for the future, we needed to evaluate the agroforestry project to date. University students Evan Barrientos and Isabel Rodríguez-Vega conducted an evaluation of the Paso Alto and Quinde agroforestry projects based on personal interviews while living in the communities. The following text is adapted from Evan's preliminary findings¹.

Limitations

While coffee has the potential to produce enough profit to meet the financial needs of a typical family here on 2-3 hectares of land (12% of the land needed for cattle farming), only

one person surveyed in Paso Alto and Quinde mentioned coffee as a main source of income. The shade coffee plots were intended to support families by producing coffee as a cash crop, whilst working as a farming system on which a variety of staple crops and timber could be grown. Unfortunately, very few people harvest products other than plantain and only two producers have a significant number of timber trees growing with their coffee. Shade coffee is also supposed to support more biodiversity than conventional agriculture, but only four out of fifteen coffee plots in one community have a closed tree canopy while the rest are almost exclusively shaded by plantains.

The shortcomings of the shade grown coffee project were caused by a number of factors. The project provided the Colombian caturra variety of coffee, which produces greater harvests but is susceptible to disease. It relies on chemical fertilisers and pesticides in this climate. Since AACRI's organic standards prohibit the use of chemicals, the coffee became diseased, greatly lowering initial yields

and discouraging farmers. Farmers did not understand how to grow coffee productively. Their cash crop, sugarcane, which is embedded in local culture, does not require fertilisers and is not susceptible to disease. As a result, only two coffee producers in the three communities make and apply organic fertilisers, though this is critical to success. In addition, farmers do not seem to understand the biodiverse design nor believe it feasible. Nearly all decided to grow coffee because it sounded profitable, not because it represented an alternative form of agriculture.

However, the greatest limiting factor in agroforestry, or any alternative agriculture here, is the lack of motivation to change. People do not perceive major problems with their current form of agriculture. No one talked of its ecological effects and they're relatively content with their economic status. Although very poor, they are not starving. They work hard to feed themselves and pay for school expenses, but when asked about problems or improvements they would like, mostly they would like a nicer road and less dependence on intermediaries. Perhaps for communities that received electricity, plumbing, and a dirt road for the first time seven years ago, their satisfaction is understandable. However, our concern is with the side effects of their livelihoods.

Successes

Despite the limitations, there have been encouraging results for the shade-grown coffee project. It must be recognised that this initiative is in its infancy: the agroforestry project was introduced 7 years ago. Coffee takes three years to start producing, so there have only been three seasons to sell coffee.

One of the first challenges the project faced was encouraging people to plant a new cash crop. Since the coffee and shade trees were provided free by AACRI, nearly everyone planted, although with little sense of commitment. However, once planted, the next step was getting farmers to take care of the plants. This was one of the main weaknesses of the project, but some farmers stuck it out. Take Jorge Dávila: his coffee did not start producing for five years. While many farmers gave up after two, he kept waiting, even though over half his coffee became diseased and died. Finally, his coffee started producing at an exceptional level. With a loan from AACRI, he hopes to plant more coffee because the work is less physically demanding than that of sugarcane.

Anival Dávila is the only person in Paso Alto and Quinde whose principal dedication is coffee. He started with 300 plants; now he has 1300 and would like to plant 4000 more. The main reason he prefers coffee to cattle is because cattle requires a lot of land. Dedicating himself to coffee, he can make as much money without buying more land.

Possibly the greatest challenge is helping people realise that shade coffee is not just another cash crop like sugarcane; it represents a different form of agriculture, one that produces a diversity of crops on less land while preserving the soil and without using expensive and damaging chemicals. Whether AACRI explain this concept when they were introducing coffee is unclear, but no one interviewed talked of this as a reason for, or benefit of, planting coffee; except Marcos Sánchez and Gerardo Ayala.

Marcos Sánchez lives in Santa Rosa, a tiny community in Quinde. Here, seven households planted coffee seven years ago, and all but Marcos have abandoned it. Marcos's isolated coffee plot was the most impressive we saw, not because of its size but because of



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Shade grown coffee.

its design. Marcos' plantation is the only one that incorporates a significant mix of trees, fruits and coffee. His reason for planting coffee was not just to make more money, but to diversify his income. He told us that growing a variety of crops is his way of being. He has planted trees in every available space because of their importance to the soil and for their aesthetic value. He has edible crops, a fish pond, and a half-hectare of sugarcane for home consumption. His farm is not a vast monoculture; it is a diverse farm for feeding the family while producing income. His coffee is growing well and he is content.

Gerardo Ayala has brought coffee to where it has never been before: cattle pasture. He has mixed coffee, plantains, trees and cattle. No taught him to do it, he simply wanted to experiment. With cattle pasture being the principal driver of deforestation here, learning how to make it more sustainable would be highly significant. And how has this unorthodox combination turned out? "It's growing well... I have everything in one place," Gerardo says.

Recommendations

The main factors limiting the success of agroforestry are culturally embedded. However, these success stories show how to overcome limitations so that an alternative form of agriculture may prosper in the communities of Paso Alto and Quinde.

Based on our observations, we hypothesise that those with lots of land and making money from cattle

and sugarcane will be less likely to dedicate themselves to alternative agriculture. Those who are poor and/or do not have enough land and money for cattle or sugarcane to be profitable have an interest in trying something different. To these people, coffee and agroforestry is appealing because more can be done on less land.

It is important that farmers are educated about the negative impacts of sugarcane and cattle on the land and on biodiversity. People here need to value the cloud forest for more than wood and water; to learn to appreciate its beauty, uniqueness and wildlife. Realistically, this can probably only be achieved by starting with children, which means that working to stop deforestation is a long-term project.

But what about the short term? How do we inspire farmers to modify their embedded forms of agriculture? We believe that viable demonstration polyculture farms near the communities may be the only way to prove to people that alternative ways of farming are possible and preferable. Finally, given the dominance of cattle ranching in the area, the prospect of silvopasture must be investigated. This form of agroforestry may be more attractive than coffee, since residents are already familiar with cattle ranching and are beginning to value trees in their pastures. Given that the majority of remaining cloud forest is at an elevation where where only cattle ranching threatens it, silvopasture would be a wise activity to pursue in the future.