

THE CHRONICLE

of Higher Education

Learning to Save the Rain Forest, One Small Business at a Time

An unusual Costa Rican university teaches students to be earth-friendly entrepreneurs

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The Chronicle of Higher Education [2004-10-17]

From her dorm room at Earth University, Paloma Macchi, a 21-year-old agricultural student from Brazil, looks out at thousands of acres of pristine rain forest. Scarlet macaws flit among the towering ceiba trees. And yellow heliconias, with their oversized petals, bob under the weight of the early morning mist.

Few university campuses in the world compare in terms of sheer natural beauty. But for Ms. Macchi, the sight is also a troubling reminder that the world's richest ecosystem is in grave danger.

Like many of the 400 students at this jungle-shrouded university in northeastern Costa Rica, she comes from a poor farming region that survives off the rain forest. After four years of studying tropical agriculture, however, she no longer sees that reliance as a good thing.

"The people in my community don't have a clue about sustainable development or conservation," says Ms. Macchi, whose family runs a small poultry farm in the northern state of Pará in the Brazilian Amazon. "It's all slash-and-burn agriculture and chemicals."

For decades environmentalists have warned that destructive farming techniques and cattle ranching were destroying the world's rain forests. But it was not until the late 1980s that a group of entrepreneurs and officials in Costa Rica -- a country known for its progressive approach to conservation -- joined forces to create a new university to teach sustainable agriculture in the "humid tropics," the ecosystem that has an annual rainfall of more than 60 inches, straddles the Equator, and extends across Latin America, central Africa, and Asia.

The result was Earth University, which was founded in 1990 on a 8,200-acre former banana plantation, 60 miles northeast of San José, the Costa Rican capital. While other universities in the region teach eco-friendly farming, Earth University is unique in that it focuses exclusively on sustainable agriculture in the humid tropics, and in its emphasis on forming future leaders to help preserve one of the world's most endangered ecosystems.

The campus itself serves as the students' laboratory, with its 2,400 acres of jungle, some of it old-growth rain forest. The university also has a cattle farm, where students are developing new breeds more resistant to humid climates, as well as an organic-banana plantation, which exports fruit to the United States and Europe.

"There was huge concern over destruction of the rain forests," says José Zaglul, a Costa Rican agricultural engineer who has served as the university's president since it began. "The founders felt that there was a lack of well-trained people, not just with the technical skills but also with more practical, hands-on training." Their goal was to train agricultural entrepreneurs with a solid background in sustainable farming, who could then teach others to follow their lead.

Pragmatic Idealism

The program's strategy is a blend of idealism and common sense. It recruits students from poor, rural areas who are both academically strong and passionate about environmental and social causes. It then strengthens those qualities through a mix of a rigorous science-based curriculum, fieldwork, and community service.

Equally important, say administrators, the university trains students to become entrepreneurs, so that they can create jobs back home. Students take classes in management, create their own agribusinesses, and spend several months as interns learning about commercial agriculture throughout the region and in the United States.

"Agriculture in Latin America has been considered a subsistence activity, but we don't see it like that," says Marlon Brevé, the university's admissions director, who is Honduran. "We want them to be successful. We want them to get rich without forgetting about their community."

The institution, which is supported primarily by a \$103-million endowment from the U.S. Agency for International Development and other foreign donations, offers full scholarships to half of the students, in keeping with its commitment to the poor. An additional 30 percent receive partial aid, while the rest pay the full tuition of \$12,500 per year. The students come from 24 countries, most in Latin America, although the university recently expanded its reach to include students from Indonesia, Japan, Mozambique, and Uganda.

Of the more than 900 students who have graduated from Earth University, 75 percent are working in the for-profit private sector. Of those, a quarter own their own agribusinesses, says Mr. Brevé. The remaining 25 percent are working for nongovernmental organizations or in government, helping to shape environmental policy. They include a deputy agriculture minister in Colombia and a director of environmental development in Honduras.

But the impact of Earth University extends beyond its graduates.

Agricultural universities throughout Latin America have followed Earth's model in incorporating hands-on training and an emphasis on sustainable farming, say academics working in developmental agriculture. The model was first developed in Latin America by the Zamorano Pan-American School of Agriculture, in Honduras, which was founded in the 1940s by a group of American and Honduran agronomists. However, Zamorano was created to focus on the wet-and-dry tropics, an ecosystem characterized by alternating rainy and dry seasons, since few people at the time were attempting to farm the rain forests.

Several decades later, when Earth University was conceived in the mid-1980s, the rain forest was already disappearing at an alarming rate throughout the world.

"Earth is different; its very location tells us where we're at 40 years later, when issues in the humid tropics are huge," says Mickie E. Swisher, coordinator of international exchange programs at the University of Florida's College of Agriculture and Life Sciences. The university has played host to several student interns from Earth, whom professors say excelled both academically and in their dedication to their research projects.

Ms. Swisher, who worked at Zamorano in the 1980s helping set up its outreach program, says both Earth University and Zamorano are models for hands-on agricultural training. But she says Earth has gone a step further in emphasizing social and environmental values.

"I think Earth has probably done that more than any place I can think of," she says. "That's fundamental to the core curriculum. It's not an add-on. Earth's long-term impact on Latin American agriculture and society will be very, very great."

Rigorous Admissions

Few universities invest so heavily in selecting their student body. Earth's roughly 40 full-time professors spend several weeks each year interviewing potential candidates in the students' home countries. Applicants are put through a rigorous series of individual and group interviews, in which they are evaluated both for academic ability and their commitment to social and environmental causes.

The selection process is time consuming -- and costly. The university spends \$100,000 each year just promoting admissions. But the process gives professors a personal connection with their students, a relationship that is further strengthened by the program's heavy emphasis on teaching. The professors live on the campus and are available to help students at virtually all hours.

"This is not a career-building position," says Egbert Spaans, a Dutch professor who teaches soil sciences. "You do it because you identify yourself with the mission." He notes that salaries are poor when compared with those at other top universities in Latin America, ranging from \$24,000 for starting professors to about \$50,000 for top administrators.

"We really feel that we are contributing to society," he says, as he accompanies students to the nearby farming village of La Argentina, where they are getting experience helping local farmers. "It's this multiplying factor. We're not here to make money or to become well-known scientists."

In a few areas, however, the university is conducting groundbreaking research.

Bert Kohlmann, a Mexican professor of entomology, directs a team of 50 scientists in seven countries who are searching for a cure for Chagas' disease. The sickness, which is carried by a parasite found on several types of tropical beetles, kills more people in Latin America each year

than AIDS. The project took on a new urgency when an Earth University student from Honduras fell seriously ill with the disease last year, probably after having been infected in his home country. The disease attacks the heart and other vital organs, causing ruptures that are almost always fatal.

Mr. Kohlmann is working in conjunction with NASA, which is crystallizing the parasite's active enzymes in outer space. The reduced gravity in space allows the scientists to pinpoint the enzymes' structure, providing valuable information toward the search for a cure. His own research, however, typically requires simply stepping outside into the surrounding rain forest; any one of the thousands of tropical plants might contain a cure.

But he found the most promising candidate so far -- a sea sponge -- while on a research trip to the country's Caribbean coast. "It was a shot in the dark and we hit it," he says during a break from studying the molecular properties of a heliconia flower in the university's research lab.

The majority of the university's resources, however, are devoted to training students. That includes a new program geared to prepare students who come from poor regions that lack decent schools.

José Itzep, a first-year Mayan student from Guatemala's impoverished El Quiché state, received two months of intensive tutoring in mathematics and science before starting classes in January. He had to overcome two problems: the poor quality of his high-school education and a language barrier. Spanish is his fourth language; his first three are Mayan dialects. He is now learning a fifth, English, which is an integral part of Earth University's model for preparing students for the globalized world.

After struggling for a semester, Mr. Itzep has since caught up with his classmates. And he is already making plans to start an eco-friendly cattle business in his hometown of Chajul, where residents currently survive on subsistence farming of mainly corn and beans. "There is no development in rural Guatemala, because there is no vision," he says, chatting over a dinner of grilled fish in the university's open-air dining hall. "I want to create a business that serves as an example for other communities. It can have a huge impact."

Mr. Itzep is not alone in wanting to use his experience to benefit his native region, rather than seek more lucrative jobs in the United States or Europe. Eighty-five percent of Earth's graduates have returned to their home countries, and 95 percent have remained in Latin America, says Mr. Brevé. The university actively encourages that trend, in some cases offering loans to graduates who want to start agribusinesses back home.

Helping Neighbors

In an effort to instill community values, the university requires students to spend hundreds of hours working alongside local farmers. The experience is as grueling as it is rewarding.

"They do whatever the farmer does," says Mr. Spaans, the soils professor who directs community-outreach projects. "We tell them, 'you're not a field laborer; you're a *compañero* to the farm

family.' Our students might become ministers of agriculture, presidents, heads of farms. We want their decisions in daily life to be influenced by knowing the reality of the rural majority."

Some of the collaborations are more successful than others.

Eladio Chinchilla has little to show for the 14 years he has welcomed students to his scrubby farm in the village of La Argentina. His most recent project, growing medicinal herbs, collapsed after the local farmers' cooperative stopped buying the plants. But he is hoping that a new project breeding tilapia, a jungle fish popular in local cuisine, will find a more stable market.

"He has good intentions but has too many projects going at once," says Julius Mbuga, a student from Uganda, who is helping Mr. Chinchilla mend a leak in one of the fish ponds. It is hard going. Wet and slathered in jungle mud, he swats back a swarm of bloodthirsty mosquitoes, while keeping an eye out for poisonous snakes.

But other farms have been completely transformed through their partnership with Earth University. The most successful belongs to Ana Quiroz, whose freshly painted gate is about two miles down the road. An energetic woman, she has seized on the technical training offered by the students to create a model ecological pig farm.

"See that? It used to be a wood shack," she says, pointing to the cheerful turquoise-and-pink wooden house she has built from the proceeds of her pork business. As she talks, two students help her clean out a pair of natural filtration ponds filled with bacteria-eating water plants. Other innovations brought by the students include a biodigester, a plastic tank that collects pig dung and breaks it down into natural fertilizer and methane gas. Ms. Quiroz uses the gas for cooking, and even has enough left over to sell to a neighbor, while the fertilizer feeds her sugar cane. She even has plans to build wooden cabins for tourists, who can use her ecofarm as a base for bird-watching.

Such success stories are an inspiration for the students, many of whom are drawn to Earth University for its hands-on training in business administration.

During their first year, student teams are given \$3,000 loans to develop their own agribusinesses over the course of three years. The university has its own food-production lab, which students use to create products such as plantain chips and organic yogurt. Others start their own environmental-consulting businesses or develop ecotourism projects.

Mr. Mbuga, the Ugandan student, used his loan to make pineapple and ginger pulp, which his team sold at a profit of \$800 to the university's cafeteria. He hopes to use that experience to help his parents find an alternative to the family coffee business. Once a key source of income throughout the Third World, the industry has become a dead end since coffee prices plummeted in the late 1990s.

"Before I came to Costa Rica, I didn't know tourists from the United States would be interested in seeing a coffee farm," he says. "But based on what I've seen in Costa Rica, anything in Uganda can be a tourist attraction."

With its economy built around ecotourism, Costa Rica gives students a window into possible alternatives to the destructive farming practices common throughout the humid tropics. One-fourth of the country's territory is set aside as protected forest reserves, and the government provides tax incentives for eco-friendly businesses. Costa Rica, which has the largest middle class in Latin America, also ranks lower on indices of corruption than the other countries in the region.

"We live in countries with huge amounts of corruption and it is what destroys societies," says Marvin Weil, a chemistry professor from Nicaragua, a country plagued by both corruption and extreme poverty. "You can't generate obscene riches where there is obscene poverty. The goal is that our students will be businesspeople who will refuse to accept bribes."

He argues that Earth University's most important contribution is its emphasis on social responsibility. "If this culture starts permeating in small countries, in the long term we can get rid of these practices," he says. "If we sow the seed, it will spread."

<http://chronicle.com> Section: International Volume 51, Issue 4, Page A36

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