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Cuban Agriculture: A Green and Red Revolution

By Lydia Zepeda

There is more to Cuba than fabulous cigars, 1950s cars, cheap rum, and music so infectious that even a Norwegian bachelor farmer will get up and dance to it. It also happens to be a showcase for policy transformation from industrialized agriculture to a greener, sustainable agriculture. Cuba has transformed its agriculture from a low productivity, highly subsidized, high input system to one that is more productive and greener, while removing subsidies. Urban agriculture, land reform, market reforms, and a complete reorientation of the university system all feature prominently in the policy reforms. Yet these green transformations are far from neo-liberalist; as one Cuban official told me, "We are, after all, Red."

Looking Back

To understand how these changes came about, one must know something about Cuba's history. From 1492 to 1898, it was a colony of Spain, whose rule was brutal even by Spanish standards. Both the native Taino people and the forest were annihilated to make way for large cattle and sugar farms in the hands of a few wealthy owners and worked by slaves. In 1895 Jose Marti, poet, journalist and beloved by Cubans as the father of their country, led an uprising against Spain. Although Marti was killed that same year, the uprising continued. In 1898, the United States entered into the Spanish-American war when the USS *Maine* mysteriously blew up in Havana harbor. Spain was easily defeated, and Cuba was under U.S. military rule from 1898 to 1902.

Over the next few decades, U.S. businesses and individuals acquired some of the best land, while the Platt Amendment permitted the U.S. military to intervene whenever U.S. interests were threatened, and U.S. marines were stationed in Cuba to protect U.S. interests. Sugar production continued to increase in importance at the expense of food production, which caused greater reliance on food imports. Wealth was concentrated in a few hands, and the vast majority of Cubans continued to live in poverty without access to land or incomes sufficient to feed their families.

On December 31, 1958, the Batista government was overthrown, and a socialist government took power. The expropriation of U.S. property in Cuba led to a U.S. policy of isolation. By 1960, the isolationist policies caused Fidel Castro to become "an accidental communist" and turn to the Soviet Bloc. By 1962, Cuba effectively was a Soviet satellite. Cuban agricultural policies followed the Soviet model—large monocultural state farms were highly mechanized and heavily reliant on chemical fertilizers and pesticides. Cuban agriculture used more fertilizer and nearly as many tractors per hectare as that of the United States. The Soviet Union subsi-

dized this industrial model by trading its oil, chemicals, and machinery for Cuban sugar at preferential rates.

Then, in 1989, the Berlin Wall fell. Almost overnight US$6 billion in Soviet subsidies to Cuba disappeared. At the same time, the U.S. trade embargo tightened, and Cuba was plunged into an economic crisis. Gross domestic product (GDP) shrank by 25% between 1989 and 1991. Cuba entered what is euphemistically called the "Special Period." Special, indeed: Oil imports (and consequently fuel) fell by 50%; the availability of fertilizers and pesticides fell by 70%; food and other imports fell by 50%; and most devastatingly, calorie intake fell by 30%. Further exacerbating the economic crisis, in 1992 the United States passed the "Cuban Democracy Act," which prohibited assistance to Cuba in the form of food, medicine, and medical supplies.

Recent Reforms

Faced with this crisis, Cuba radically changed the state sector in 1993; about 80% of the farmland was then held by the state and over half was turned over to workers in the form of cooperatives—UBPC (Basic Unit of Cooperative Production). Farmers lease state land *rent free* in perpetuity, in exchange for meeting production quotas. They may even bequeath the land, as long as it continues to be farmed. A 1994 reform permitted farmers to sell their excess production at farmers' markets.

The reforms emphasized five basic principles. Foremost of these was a focus on agroecological technology, supported by the state/university research, education, and extensions system. There had been researchers, outreach specialists, and faculty devoted to agroecology before the crisis. The crisis not only brought them to the forefront, but universities, research centers, and agricultural policies were reoriented to make agroecology the dominant paradigm. To begin to understand the magnitude of this reorientation, imagine for a moment that your local college of agriculture reoriented its entire curriculum, research, and extension programs to agroecology. Pick yourself up off the floor, and now image that all the universities as well as all national agricultural policies in your country were reoriented to agroecology.

A second principle of the reform was land reform; state farms were transformed to cooperatives or broken into smaller private units, and *anyone* wishing to farm could do so rent free. In effect, a right-to-farm policy was implemented. A third principle of the reform was fair prices to farmers: Farmers can sell their excess production at farmers' markets; average incomes of farmers are three times that of other workers in Cuba. A fourth principle of reform is an emphasis on local production in order to reduce transportation (and hence energy) costs. Urban agriculture, a key to this reform, produces nearly the recommended daily allowance of 300 grams per person of produce. The fifth principle of reform is farmer-to-farmer training as the backbone of the extension system.

Impact of the Reforms

What were the results of these reforms? Production of tubers and plantains tripled and vegetable production quadrupled between 1994 and 1999, while bean production increased by 60% and citrus by 110%. Potato production increased by 75%, and cereals increased by 83% between 1994 and 1998. Calorie intake rose to 2,580 per capita per day—just under the minimum recommended by the World Health Organization. This is despite Cuba being the second poorest country in the Americas.

The conversion of Cuba's agriculture to more sustainable practices has focused on urban agriculture and domestic crops. Indeed, these practices seem to free up scarce chemicals for the traditional

export crop, sugar. Sugar continues to be produced in monoculture, but increasing amounts of organic sugar are being produced, largely for export.

Urban agricultural production climbed from negligible in 1994 to more than 600,000 metric tons in 2000. There are more than 200,000 urban farm plots ranging in size from a few meters to a hectare in size. Production practices rely on organic matter, vermiculture, raised beds, crop rotation, companion cropping, and biopesticides. Yields are between 6 and 30 kilos per square meter and are predominantly roots, tubers, and vegetables. A proposed project called *Calle Parque* (street parks) will extend urban agriculture and provide much-needed urban cooling by converting some streets in central Havana to parks and gardens.

The reforms have not yielded dramatic results for sugar, meat, or dairy, nor for traditional import crops (rice and beans). Cuba continues to rely on food imports, as it has since it was colonized. In 2000, Cuba imported US$141 million in rice, US$65 million in beans, and US$60 million in milk products. Cuba also imports about one million metric tons of feed grains, nearly a half million metric tons of soybeans, 100,000 metric tons of chicken and pork, as well as substantial amounts of cooking oil, soybean meal, and malt. Because of the U.S. embargo, Cuba has to buy these products from distant countries, adding on average 30% to the cost of food imports over what they would pay for U.S. products. For example, Cuba buys rice from India and China, dairy products from the European Union, grains from South America and Eastern Europe, and meat from Canada and Brazil.

Meat production and dairy production were hit particularly hard by the loss of subsidized Soviet feed and petroleum. The loss of petroleum meant that animal traction became a strategy to reduce reliance on farm machinery. Animal traction is also better for soil management, particularly given the smaller farm size after land was redistributed. However, the conversion to animal traction was impeded by lack of oxen and expertise. The solution was to prohibit slaughter of cattle without government permission (in order to build up the herd) and to create "schools" to train the oxen (and presumably farmers). More than 150,000 oxen have been trained at these schools, and pairs of working oxen are ubiquitous throughout Cuba. This dramatic transformation did not come without a cost—the availability of beef plummeted, and anyone caught illegally slaughtering cattle could spend up to 20 years in jail.

Policy Themes

This kind of policy solution—trading personal liberty for social goals—is common in Cuba. Not only cattle are managed as a national resource—the dean of an agricultural university in Cuba declared that "soil is a strategic national resource." Intellectual property is also managed as a public resource. Cuban researchers are developing biotechnology applications for agriculture and medicine. However, the Cuban government prevents anyone from patenting discoveries funded by government research. Intellectual property developed with public funds is treated as a public resource.

Social equity is a clearly a higher priority for the Cuban government than personal liberty. Indeed, Cubans even share their poverty; living standards are uniformly low. Yet, despite being the second poorest country in the Americas, there is no widespread hunger; housing is generally free, if dilapidated and crowded; Cubans are one of the most educated populations in the world; and there is universal free health care. All Cubans have access to a basic (although minimal) diet through their ration card. Cubans supplement this with food they grow, barter for, or buy at farm stands, farmers' markets, or dollar stores. Cubans spend about two thirds of their income on food, but not everyone has the same buying power. A 2000 Lexington Institute study found that it took the average Cuban on a government salary four days to earn

enough money to buy a basket of food consisting of one pound each of pork, rice, and beans, two pounds of tomatoes, three limes, and a head of garlic. A retiree on a pension would need 7.2 days, and a private taxi driver in Havana would need 3.5 hours.

Citizen Responses

Cubans themselves have a range of responses to this situation. Some Cubans are dedicated to social equity and are pragmatic about the individual sacrifices required so that everyone has something to eat. Others are discontented, even resentful, feeling that they are underemployed given the level of (free) education that they have and could have a higher living standard under a capitalist system. No one says that the situation is easy, and the embargo (called a blockade in Cuba) is viewed by all as the primary barrier to improving the situation.

The Farm Bureau has made some headway with the State Department to allow some U.S. exports. Indeed, while in Havana, we bought Washington State Red Delicious apples (for 50 cents each!) at a dollar store. Cuba wants to buy U.S. farm products: rice, dairy products, feed grains, soybeans, meat, and poultry. However, it is unlikely they will be able to do so without some means of earning dollars, and their export products are sugar, citrus, tobacco, tropical fruits and vegetables, and seafood, which would compete with some U.S. producers.

The Future

What will the future bring? *Quien sabe*. Everyone expects political changes when Castro dies, but one must be mindful that there is an immense state communist system that permeates Cuban society. Many people benefit from this system, and Cubans are well aware of the example of the Soviet collapse and ensuing economic and social crisis in Russia. Regardless of what happens on the political level, it seems likely that Cuba will continue to promote agroecological practices and to expand urban agriculture simply because they are yielding results. The bad experiences with large agricultural operations, both before and after communism, make it unlikely that anyone could credibly promote a return to large, high-input operations as a matter of national policy.

The positive results that farmers, university researchers, and extension are getting from the transformation of Cuban agriculture will likely encourage them to continue to pursue sustainable practices whatever comes next. Cuban people are eating better and healthier than before, though things are far from perfect. However, the relevant comparison is to other Latin American countries; Cuba simply does not have the widespread hunger, destitution, and suffering that are commonplace in countries with much higher GDP per capita.

The extent of future success with sustainable agriculture will of course depend on what markets Cuban farmers will have access to and what types of competition they will face from imports. Although great strides have been made, Cuba will likely always be a food importer, and it will certainly be in Cuba's interest to buy its imported meat, rice, beans, oil, soy, and dairy products as cheaply as possible. If the United States wants to supply these imports, it will need to negotiate a means for Cuba to earn the money to buy them. Removing the travel ban and permitting U.S. tourists would certainly yield more unity among U.S. agricultural interests than allowing importation of Cuban sugar, citrus, and tobacco. Whatever the future brings, one thing is certain: Cuba will continue to make some of the finest cigars and music in the world.

For More Information

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