



Cuba's Organic Revolution

Cuba's political and economic isolation have weaned the island nation from chemical-intensive agriculture.

BY HUGH WARWICK

The Cuban revolution of 1959, which brought Fidel Castro to power, is considered to be the seminal moment in the modern history of the island. But the revolution begun in 1989, with the collapse of the Soviet Bloc, is an equally significant, if much quieter, event.

During the early 1960s, as the United States tried unsuccessfully to crush the new, revolutionary spirit of Cuba with the most far-reaching trade embargo in history, Castro's Cuba had to forge powerful links with the Soviet bloc to survive. And for some 30 years, the support Cuba received from the Union of Soviet Socialist Republics (USSR) helped to create the most well-developed island in the Caribbean. By 1989, Cuba ranked 11th in the world in the Overseas Development Council's Physical Quality of Life In-

dex—which includes infant mortality, literacy, and life expectancy—while the United States ranked 15th.¹

The help Cuba received came in many forms—the Soviets bought Cuban sugar, for example, at over five times the market rate and sold it discounted oil that was then re-exported. For 30 years, from 1959 to 1989, 85 percent of Cuba's trade was with the Soviet bloc.

The Soviet Collapse

But in 1989, the Soviet system began to unravel. Imports dropped overall by 75 percent and oil imports by 53 percent. Known officially by the Castro regime as the "Special Period in Time of Peace," this moment in Cuba's history saw it slide close to the edge of collapse, as all aspects of life were affected by the crumbling of its international market.

The most significant impact was on food. Some 57 percent of Cuba's caloric intake was imported, and it was estimated that the population relied on other countries for over 80 percent of all their protein and fats.² The Soviet collapse also led directly to an 80 percent reduction in fertilizer and pesticide imports. Prior to 1989, most of Cuba's intensive agriculture depended on these imports—their disappearance was thus a disaster for its agricultural system.³

America's Grip Tightens

The situation was exacerbated by the implementation in 1992 of the United States' punitive Cuba Democracy Act, which tightened its existing trade embargo, and further in 1996 with the signing of the satirically titled Cuba Liberty and Democratic Solidarity Act—the Helms-Burton Act. On top of an embargo that prevents any American or American-friendly industries from selling food or medicine to Cuba, upon pain of sanctions or legal action, the Helms-Burton Act is a deliberate attempt to stifle the re-growth of the Cuban economy, by deterring foreign investment. U.S. Senator Jesse Helms, one of the creators of the act, is remarkably honest about its overall aim—replacing Castro's government by one favored by the United States. "Let this be the year Cubans say farewell to Fidel," he said as the act was passed in the Senate. "I don't care whether Fidel leaves vertically or horizontally, but he's leaving."

For a less resourceful and determined nation than Cuba, such action by the world's only superpower could have spelled disaster. But rather than roll over and die, Cuba began to foment a new revolution. The nation responded to the crisis with a restructuring of agriculture. It began a transformation from con-

ventional, high-input, monocrop intensive agriculture, to smaller organic and semi-organic farms.

Urban Agriculture

As oil imports crashed, Cubans looked for ways to reduce their dependency on it. In agriculture, this meant reducing transportation, refrigeration, and storage costs by relocating agricultural production closer to the cities. Havana has some 20 percent of Cuba's population and, at 2.5 million people, is the largest city in the Caribbean. Feeding its population was obviously a priority. Urban agriculture was one of the solutions.

Urban agriculture played an important role in feeding urban populations around the world up until the industrial revolution of the 18th century, when nearly all food began to be imported from the countryside.⁴ Fertile areas inside and surrounding cities were lost to development. But since the 1970s, there has been evidence of a global reversal of this trend. It is estimated that some 14 percent of the world's food is now produced in urban areas.⁵

Prior to 1989, though, urban agriculture was virtually unheard of in Havana. Thanks to state provision, there was adequate food for all and little need to grow any privately. The post-Soviet crisis incited a massive popular response, initially in the form of gardening in and around the home by Havana's people. This was soon given a boost by the Cuban Ministry of Agriculture, which created an Urban Agriculture Department, with the aim of putting all of the city's open land into production.

By 1998, as a direct result of this policy, there were over 8,000 officially recognized gardens in Havana, cultivated by more than 30,000 people and covering some 30 percent of the available land.⁶ And ur-

ban agriculture continues to expand, with many urban areas providing up to 50 percent of their caloric needs. The goal is to grow all of the horticultural products consumed within the city in urban gardens.⁷

These farms and gardens have been organized into five main categories.

■ **Huertos populares** (popular gardens): gardens privately cultivated by urban residents in small areas throughout Havana.

■ **Huertos intensivos** (intensive gardens): gardens cultivated in raised beds with a high ratio of compost to soil and run either through a state institution or by private individuals.

■ **Autoconsumos**: gardens and small farms belonging to and producing food for workers, usually supplying cafeterias of particular workplaces.

■ **Campesinos particulares**: individual small plots cultivated by farmers, largely working in the greenbelt around the city.

■ **Empresas estatales**: large farms run as state enterprises, many with increasing decentralization, autonomy, and degrees of profit sharing with workers.⁸

The most urban of these are the popular gardens, which range in size from a few square meters to three hectares (7.4 acres). The larger plots of land are often subdivided into smaller individual gardens. Usually the gardens are sited in vacant or abandoned plots in the same neighborhood, if not next door to the gardeners' household. The local government allocates land, which is handed over at no cost as long as it is used for cultivation.⁹

Cuba Goes Organic

The crash in agricultural imports has also led to a general diversification within farming on the island.

The state encourages farmers to breed oxen to replace tractors and to substitute integrated pest management for pesticides no longer available. The state also promotes better cooperation among farmers both within and between communities and is encouraging people to remain in rural areas to reverse the rural exodus of previous decades.¹⁰

But the most significant aspect of the post-Soviet agricultural revolution has been the response to the removal of the chemical crutch, as imports of pesticides, herbicides, and other imported agricultural inputs collapsed. Fortunately for Cuba, the country was well positioned to respond. For example, while Cuba has only 2 percent of the Caribbean region's population, it has some 11 percent of its scientists.¹¹ And many of them, influenced by the ecology movement, had already developed a critique of Cuba's intensive agriculture system—to the displeasure of some in the establishment. These scientists had also begun to develop alternatives to chemical dependency, which have since come into their own.¹²

Cuba is practically the only country in the world to begin implementing on a national scale a biological pest-control program based largely on parasitoids—parasitic insects and other biological agents that prey on pests that can damage crops. For example, wasps in the genus *Trichogramma* have been used to manage lepidopteran pests of tobacco and tomatoes.

While this in itself is innovative, the effort has been reinforced by the establishment of Centers for the Reproduction of Entomophages and Entomopathogens. Over 200 centers have been set up to provide decentralized, small-scale, cooperative production of biocontrol agents, which farmers can use instead of

pesticides to protect their crops.¹³

As a result of such necessary innovations, the Cuban landscape, once dominated by chemical inputs, is changing rapidly. And many of the new control methods are proving more efficient than pesticides. For example, the use of cut banana stems baited with honey to attract ants, which are then placed in sweet potato fields, has led to the complete control of the sweet potato borer—a major pest—by the predatory ants. In addition, there are 173 established vermicompost centers across Cuba, which produce 93,000 tons of natural compost a year using worms to turn table scraps and other organic refuse into fertilizer. Finally, crop rotation, green manuring (planting cover crops on fallow land to enrich the soil), intercropping (planting other crops between the principle crop), and soil conservation are all common today.

But Cuba has yet to make a complete commitment to an organic future. In fact, it is taking a very pragmatic stance. While there is an ideal of an organic system, Kristina Canizares from Food First, a nonprofit organization that seeks to find grassroots solutions to hunger and poverty worldwide, found on her recent visit that most Cubans she talked to want to switch from chemicals to sustainable technologies as much as possible. “Some farms in Cuba use no agrochemicals whatsoever, but there are others that use them, but only in times of crisis—for example, during severe pest outbreaks.”¹⁴

In addition, since organic farming is generally more labor-intensive than chemical farming, planners have also sought to encourage urbanites to move to the countryside, as labor demands for alternative agriculture are now a constraint on its growth. Programs are now

aiming to create more attractive housing in the countryside, supplemented with services, and to encourage urban people to work on farms for periods of two weeks to two years.¹⁵

Confounding the Experts

The move toward organic farming has highlighted the much-neglected benefits to be found from small farms. In the last 50 years, all over the world, small farmers have been driven from the land. The experts have long followed the dictum of the economists, that small farms are unproductive or inefficient. But this ignores the reality.

On closer analysis, the data reveal that smaller farms actually produce far more per unit area than larger farms. So why does the establishment continue to attack the small farmer? Because the measure of productivity is flawed. When economists measure the productivity of the land, they are actually measuring the yield. They measure the amount of a single crop produced from a unit area. To achieve the highest yield, it is often best to plant a monoculture. But this is not productivity. Productivity should include the total output of a farm, including the value of intercropping—a practice that has the added advantage of reducing weed problems—and rotating between livestock and crops. As Peter Rosset, codirector of the Institute for Food and Development Policy, explains, “Though the yield per unit area of one crop—corn, for example—may be lower, the total output per unit area, often composed of more than a dozen crops and various animal products, can be far higher.”¹⁶

Rosset is not the only person to have identified the importance of small scale and sustainable production. Jules Pretty and Rachel Hine

from the Centre for the Environment and Society at the University of Essex, United Kingdom, have analyzed a massive range of sustainable agriculture initiatives. The 208 case studies, spread across 52 countries, incorporated nearly 9 million farmers and more than 29 million hectares of land. In 45 nonchemical agricultural initiatives spread across 17 African countries, Pretty showed that in 95 percent of the projects, where yield increases were the aim, cereal yields have improved by 50 to 100 percent.¹⁷

These projects show how sustainable agriculture can deliver increases in food production at relatively low cost. And if they were adopted more widely, they would have a significant effect on rural people’s livelihoods, as well as on local and regional food security.¹⁸

The Cuban experience has done much to confirm the benefits of small scale, sustainable agriculture. Conventional wisdom leads people to expect a fall in output following the compulsory move to more sustainable agriculture. This did happen in some areas. For example, the intensive state sector, controlling the vast majority of the land, suffered a fall in yields, but small-scale farmers were able in some instances to increase their productivity. Rosset writes that, in many cases, peasant farmers had remembered old methods and reapplied them.

In almost every case, they said they had done two things: remembered the old techniques—like intercropping and manuring—that their parents and grandparents had used before the advent of modern chemicals, simultaneously substituting biopesticides and biofertilizers for chemical and fertilizers and pesticides in their production practices. Incidentally, many of them commented on the noticeable drop in

acute pesticide poisoning incidents on their co-ops since 1989.

It is still hoped that the successes with the peasant and urban farmers can be recreated with the former state farms. Many of the problems with the large farms have been ascribed to a dislocation of people with the land, so the government has set up a program called “linking people with the land.” Whether it will work remains to be seen.

And while the large farms have not yet generated the successes that had been hoped for—which may well be due to their unmanageable size—the immediate crisis in Cuba has passed. By mid-1995, food shortages precipitated by the Soviet collapse had been overcome, and in the 1996-97 growing season, the harvest produced its highest-ever production of 10 basic food items. Small farmers have primarily achieved these increases.¹⁹

The international community has recognized these achievements.

In December 1999, the Right Livelihood Award—the “Alternative Nobel Prize”—was awarded to the Grupo de Agricultural Organic (GAO), the Cuban organic farming association.

GAO has been at the forefront of the country’s transition from industrial to organic agriculture. Its President, Fernando Funes-Aguilar, said of the award, “We hope that our efforts will demonstrate to other countries that conventional chemically dependent agriculture is not the only way to feed a country.”

Clouds on the Horizon

Cuba has taken enormous strides towards agricultural self-reliance without using chemical inputs, and without large-scale corporate or state control. This island nation has shown that international food aid is not the only alternative to food shortages. But this is not an Arcadian idyll. While Cuba could be a model to the rest of the world,

there is the risk of what Pretty describes as “The Empire Striking Back.” Not all of Castro’s old guard is converted to this green future.²⁰ And already, as the pressures lessen, so the use of agrochemicals increases.²¹

Cuba is also involved in the development of biotechnology, which is already being used on the local level, with the work on parasitoids. But while there has been plenty of research on genetically engineered crops in the laboratory, there have been no studies in the field. Cubans are invoking the precautionary principle by saying that there is no pressing need for these crops and that they have yet to be proved safe to humans or the environment.²²

Ironically, Cubans worry about what would happen if the U.S. embargo were to be lifted. In the event of a trade free-for-all, Cuba’s tentative steps towards environmental sustainability could be trampled under the feet of the Cuban exiles

B R I G H T F U T U R E

While the move towards more sustainable agricultural systems was induced by crisis, it is being turned to an advantage. In January 2001, Cuba exported its first batch of organically certified sugar cane to Europe. Cuba is very interested in exporting organic sugar, coffee, citrus, tobacco, and other products. The primary focus of food production remains that of domestic food security, and most of Cuban food production is still for domestic consumption. The country, however, is working to increase production and export the surplus.

Peter Rosset, executive director of Food First and author of *Small is Bountiful*, highlights six key explanations for the greater productivity of small farms, all factors that have helped avert disaster in Cuba.

■ **Multiple cropping.** Small farmers are more likely to plant multiple crops on the same field. Farmers may also plant multiple times during the year. And farmers can integrate production of crops, livestock, and even aquaculture. This makes more intensive use of space and time.

■ **Output composition.** Large farms are orientated toward land-extensive enterprises, like cattle grazing or extensive grain monocultures, while small farmers emphasize labor and resource-intensive use of land.

■ **Irrigation.** Small farmers may make more efficient use of irrigation.

■ **Labor quality.** While small farms generally use family labor—which is personally committed to the success of the farm—large farms use relatively alienated hired labor. Small farms often apply more labor per unit area.

■ **Input use.** The mix on small farms favors nonpurchased inputs like manure and compost, while large farms tend to use purchased inputs like agrochemicals.

■ **Resource use.** Large farms are less committed to managing other resources—such as forest and aquatic resources—which combine with the land to produce a greater quantity and better quality of production. ■ HW

returning to claim the land and homes that were once theirs and of U.S. corporations flooding the island with their goods.■

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NOTES

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