While the rural infrastructure, services, and standard of living were dramatically transformed in the first four decades of the Cuban revolution, Cuban agriculture had not lost its taste for producing, milling, and exporting sugar. The Cuban model—characterized by large state farms, mono-cropping, heavy use of mechanization and chemical inputs, centralized planning, and dependence on imported agricultural supplies and imported foodstuffs—was sustained only through highly generous terms of trade of Cuban sugar for Soviet oil. By not producing food for domestic consumption and by not addressing its high input and low productivity problems, Cuban agriculture became very vulnerable to a rupture with its Soviet and eastern bloc trading partners.

Even before the economic crisis of the 1990s, Cuban agriculture showed decline. For years assessments pointed to slipping productivity and increasing investment costs. In 1985 the Ministry of Agriculture promoted a new Programa Alimentario which proposed to diversify agriculture and to produce more food for domestic consumption. Vested interests in the old model, however, stalled the program before it was even implemented. It took the collapse of the Soviet Union and the eastern bloc for Cuban planners to radically rethink agricultural development. “Luckily—and I choose my words carefully—luckily the roof caved in for us in 1989,” said Mavis Alvarez, a leader in the Cuban farmers movement. “It made us pay attention to more rational methods.” (Sullivan, 2000).

Now ten years later, the economy is slowly reemerging. The GNP has grown every year since 1995, reaching 6.2% for 1999 and an estimated 4.6% for 2000. Employment is up, productivity is up, and exports are up. In agriculture, certain sectors, including production of fruits, vegetables, and tubers for domestic consumption, have turned around completely. Caloric intake rebounded to 2,473 and 51.6 grams per person—not great compared to the 1980s, but still a 33% increase compared to 1994.

Neither the World Bank nor the International Monetary Fund nor other international lenders came to Cuba’s aid. The recovery in agriculture came from internal reorganization—new policies, new actors, new systems. The goal, according to Cuban Vice Minister of Agriculture Alfredo Gutiérrez, is that “Cuban agriculture has to stand on its own two feet. We need to overcome the myth that agriculture must be subsidized.” (Gutiérrez interview, May 2001) The overhaul entailed major structural changes, such as:

- **decentralization** Cuban style, through the conversion of large state farms into thousands of smaller farmers cooperatives and leasing land in usufruct to thousands of private farmers;

- **urban gardening and ecological agriculture**, which altered the topography of rural Cuba, introducing greater diversity and organic practices and greening the cities with thousands of micro farms;

- **reforming distribution** through introduction of markets, price incentives, and profitability.

III. Reforming Cuban Agriculture

Luckily—and I choose my words carefully—luckily the roof caved in for us in 1989,” said Mavis Alvarez, a leader in the Cuban farmers movement.
These measures, taken as a whole, make up Cuba’s “third agrarian reform,” every bit as profound as the major land expropriations and redistributions of the first two reforms of 1959 and 1963.

**Decentralization of Production**

**Conversion of State Farms into Cooperatives**

In September 1993, the Cuban government unveiled a major reorganization in agriculture: restructuring state farms as private cooperatives. As President Fidel Castro explained in the Cuban newspaper *Granma* (12/29/93), “The state has not had success in large farm business.” Decree 142 affected most of the state holdings—a total of 41.2% of the arable land in Cuba—and created 2,007 new cooperatives whose membership totaled 122,000 people. Called Basic Units of Cooperative Production (UBPC), the cooperatives now make up the largest sector in Cuban agriculture. The new policy was based on the fact that smaller farms would be more easily managed and better able to take on sustainable agriculture practices, which was now vital given the lack of agricultural inputs. This was seen as a new formula promoting decentralized decision-making about production but allowing a centralized planning so essential for planned biological diversity, pest control at a regional level, and water and other resource management. Government planners and farm leaders alike believed that cooperative members would be positive about the change and be motivated to work. This assumption was verified in an early study by a leading American researcher, Carmen Diana Deere.

Because they believe that they will be the beneficiaries, cooperative members are also working longer hours and putting in much greater effort. Moreover, it is apparent that as owners of the means of production, they take better care of their equipment and farm implements. The members also feel empowered to a certain degree, for they are now participating in production decisions for the first time and have elected their own management, sometimes in contested elections—something quite new in the Cuban political scene.

Unlike the large state farms, the UBPCs are smaller enterprises, member-owned and member-managed. The cooperative, not the state, owns the production, and the cooperative member earns based on his or her share of the cooperative’s income. The cooperatives also own the buildings and farm equipment purchased from the government at discounted prices with long-term, low-interest loans (4% interest). The greatest structural difference between the UBPCs and other cooperatives is that the state retains ownership of the land and leases the land on a long-term basis, rent-
free, to the UBPC cooperative. Deere has characterized the transformation as “... the gigantic state farm sector was, in reality, privatized,” although Deere and others recognize that the state reserves the right to “dissolve whatever UBPC ... on the basis of the social or economic interest as determined by the Government” (Gaceta Oficial, 9/21/93).

Many expected that replacing state farms with “socialized” private enterprise would unleash entrepreneurial energy and reverse the low productivity found on the state farms. And for some UBPCs, the reform did mean that. Ramon Pera, the president of the cattle UBPC Martires de Moncada in Ciego de Avila province, spoke positively about the conversion in a December 1999 interview (R. Pera, personal communication, December 15, 1999):

> With less resources than before, we are better small businesses than under the state farm system. There is a sense of ownership, the farms are smaller and easier to manage. We are more autonomous. We make our own production plans, and we are growing every year. We are producing better-quality milk and people earn more. As a state farm, the business lost 12 million pesos every year. In 1992, for example, 1,200 head of cattle died. Turning the farm into a cooperative was well thought-out. Last year, for example, only 200 head of cattle died between ours and a neighboring UBPC. With less than we had before, we are producing more than before.

Now eight years after the founding of the UBPCs, the track record of new cooperatives is not as strong as was hoped. While no one calls for a return to the state farm era, difficulties continue to stymie their development. The UBPCs inherited a highly mechanized high-input agricultural model at a time when inputs are scarce and costly (credit and extension services have also been reduced). The cooperatives were born not out of plenty, like the small farmers in the agrarian reform thirty years earlier, but out of scarcity, and they lack the means of production. In addition, UBPCs have shown difficulty in retaining their workforce due to inadequate living conditions, working conditions, and pay. And without a federation to unite the individual UBPCs, similar to the ANAP cooperatives federation, the UBPC movement has been unable to articulate its interests and bargain with the state as a sector (as opposed to as an individual cooperative).

Another issue concerns the new cooperatives’ independence from the state. Although the UBPCs are legally autonomous, the state continues to exercise considerable influence on the activities of many of the cooperatives. The government contracts with the UBPCs on what
crops and how much land the cooperative should cultivate and on that basis sells agricultural inputs to the UBPCs. UBPCs produce predominantly sugar. More than three-quarters of all the UBPCs, for example, are given quotas for sugar production, which severely limits any other crops they might produce and sell in the agricultural markets, thereby restricting their options and their income. An April 2000 visit by the authors to six UBPC cooperatives in Ciego de Avila revealed different perspectives between the UBPCs and local officials with the Ministry of Agriculture. The officials tended to relate to the UBPCs as if the co-ops were still state farms, while several UBPC leaders listed the need for relative autonomy in decision-making as a key factor inhibiting their progress.

Given the state influence, some researchers have called the UBPCs “state cooperatives” or private-state hybrids. Regardless of the name, the state influence on the cooperatives affects “their consciousness as new cooperativists, who are owners and therefore social actors in an economic context. . . . The minimal necessary conditions for the development of self-management still has not been created and a culture of cooperativism has not been extended” (Perez, 2000, p. 86).

Creating a consciousness of ownership among former agricultural laborers cannot happen overnight, unlike the passing of the decree that created the UBPCs, but at the same time will require a more intentional hands-off approach by local ministry officials who still view UBPCs as part of their domain. Trends clearly point towards greater autonomy for the cooperatives. Interviews on the ground and with agricultural specialists confirm that local cooperative leaders are demanding greater decision-making authority and local officials with relatively few resources are increasingly ceding authority. Non-sugar UBPCs have won more of the battle. One cooperative leader at the UBPC Ricardo Reyes, a Ciego de Avila cooperative which raises cattle and receives training from Oxfam, said, “No one decides for us. Before we had to do what the state farm director wanted. Now we have more support to make local decisions. It’s more dynamic” (R. Reyes, personal communication, December 15, 1999).

**Linking Workers to the Land**

Within the UBPC cooperatives and the agricultural cooperatives (CPAs), a new practice of tying an individual’s salary to his or her productivity may be one of the most vital, yet unheralded, reforms. Traditionally members of cooperatives get paid based on the number of days they work (through an advance and an end-of-year share of the earnings). This practice pays everyone equally, no matter how hard, how long, or how productively one works in the day.

By linking workers to a specific plot of land on the cooperative, the cooperative compensates members based on their productivity, not their timesheet. Members who clear more land in a day get paid more; individuals who produce more on their area get paid more. This represents a move towards decentralization and greater incentives within the cooperative, but still allows for the larger economies of scale, mechanization, and collectivist spirit which cooperatives offer.

**Leasing Land to Private Farmers**

The breakup of the large state farms has freed enormous acreage for other types of land use and the government has turned over land to Reynaldo García, a farmer in Ciego de Avila, received half of his land from the state on a long-term, rent-free lease. The micro-dam, built with Oxfam funding, gives him a year-round source of irrigation for vegetable production.
farmers—nearly 170,000 hectares since 1989 (ECLAC, 1999). The government retains title to the land, but private farmers and agricultural cooperatives (CPAs) can farm the land rent-free for an indefinite time period. The only qualification for farmers such as coffee farmers in the east, vegetable growers in the central provinces, and tobacco farmers in the west is that nearby land be available and that the farmers show the potential to expand their production. Given the food crisis of the mid-1990s and the current income-earning potential, many Cubans now view farming as an occupation very differently than they did in the 1980s. Thousands of families have left the cities and towns to claim a farming stake and make their livelihood from the land. ANAP claims that its membership has increased by 35,000 over the past three years and characterizes the new farmers as young families, many of whom are college-educated; people who opted for early retirement; or workers who originally came from a farming background.

**Strengthening Cooperatives**

The credit and service cooperatives (CCSs), made up of small, independent farmers living on their farms, have recently gained attention and a greater share of resources. The CCS cooperatives traditionally have been loosely organized, often providing little credit and few services to their membership. Despite that, the small farmers have been the most productive sector in Cuban agriculture, outperforming the agricultural cooperatives (CPAs), UBPC cooperatives, and state farms. Recognizing that CCS farmers produce more with less, the National Association of Small Producers (ANAP) began a program in 1998 to strengthen the business side of the CCS co-ops. Regulations governing co-ops were amended to allow CCS cooperatives to open bank accounts, to hire administrators and market representatives, and to negotiate credit and to “plan” collectively on behalf of its membership. After training and restructuring, the cooperatives can be qualified as “strengthened.” A “strengthened” cooperative gained ownership of machinery (often through subsidized sale of used equipment from the state) which the co-op leases to its membership. A “strengthened” cooperative can also collectively market the goods of its members, earning income for the co-op and greater profits for the members by cutting out the transport intermediaries. As of April 2000, approximately 991 of 2,556 CCS cooperatives were considered “strengthened” which meant among other things that those co-ops could tap new resources from the state.

Finances, obviously, play an important part in the health of a cooperative. According to ANAP officials, 87% of the CPA cooperatives are profitmaking, though many just barely. However, among 149 coffee cooperatives, a much higher percentage are losing money. Lack of fertilizers has affected coffee production particularly heavily, leading to higher debt loads, greater difficulty in obtaining further credit, and problems in retaining membership because of the low pay. In response, ANAP approved a debt-reduction plan for 63 cooperatives, which progressively forgives their debt over three years (up to 50% of total debt) if the cooperative turns a profit during each of those years. Initial signs point to success of the offer, and ANAP officials say that the key has been the focus on cooperatives capable of becoming profitable.
Urban Agriculture

Spurred by extreme food shortages and sheer ingenuity, Cuba has begun an impressive experiment with urban agriculture. What began as an _ad hoc_ localized response to crisis has evolved into a highly developed and widespread experiment in urban farming. Today half of the fresh produce consumed by two million Havana residents is grown by “nontraditional urban producers” in abandoned lots and green spaces wedged into the crowded topography of the city.

In 1992 in the city of Holguín, unemployed state workers began a gardening plot as a survival response. About the same time a neighborhood group in Santa Fé, a community on the western outskirts of Havana, started planting in their backyards and in abandoned lots. Neither group counted on resources, tools, or specialized knowledge. Since fertilizers and chemical inputs were unavailable, by default the growers turned to organic methods: composting, weeding, and manual defense against insects. The movement quickly spread through Havana and to the other provincial capitals.

Soon the Santa Fé neighborhood council, with help from Cuban and international non-governmental organizations (NGOs), began to provide tools, seeds, and advice to other gardening groups. Though individual backyard plots (as well as chickens and an occasional pig) were part of the movement, what really flourished were semi-organized horticultural groups based on shared values: a self-help approach; sharing produce among the members and with vulnerable groups in schools, clinics, and seniors centers; and selling excess produce in the neighborhood.

In less than a decade, Cuban urban agriculture arose from abandoned lots to become the largest urban agriculture movement in the Americas. This year Cuba may reach its goal of urban agriculture supplying every woman, man, and child in the cities with the FAO-recommended 300 grams of vegetables per day.

Recognizing the potential of urban agriculture, in 1994 the government created an urban department of the Ministry of Agriculture. Instead of imposing its authority on this nascent, diverse, and admittedly chaotic movement, the Urban Agriculture department wisely has looked to promote, support, and “regularize” the practices, for example, by formalizing the growers’ claim to community lots and legalizing the growers’ right to sell their produce.

Thus far the state has been able to bring some order to the movement without stifling local initiative. State resolutions require that all urban agriculture must be organic (in order to protect the neighborhood residents) and that livestock (the principal problem was pigs) cannot be raised in urban areas. Through Resolution 527/97 urban dwellers can receive up to one-third of an acre for a personal lot in the periphery of the major cities. Through December 1999 more than 190,000 persons had received small lots. Through a series of urban agricultural stores, the state supplies organic inputs (principally organic compost) and extension services.

**Diverse Forms of Urban Agriculture**

Urban agriculture in Cuba is a collective term for a number of different ways food production is organized in cities and towns. The most common, _organopónicos_, use raised beds of organic material. They generally combat pests using biological methods and utilize organic fertilizer, for example, soil that has been processed using worm cultures. The more advanced _organopónicos_ will have micro-jet irrigation and mesh shading. Yields are quite high—from 6 kilograms of produce per square meter up to 30 kilograms (the garden *La Construcción* in Havana province).
Some organoponicos are actually small businesses with hired workers, and managed by government institutions affiliated with the Ministry of Agriculture and, in a few cases, the Ministry of Armed Forces. Increasingly, organoponicos are being formed as small, self-managed cooperatives, such as La Victoria in San Miguel del Padrón, an Oxfam America sponsored project. Other urban agriculture is based more on a small farm model implemented by either individual farmers or agricultural cooperatives on the outskirts of the city.

Much of urban agriculture is quite modest. For example, horticulture clubs are often made up of retired people, some former farmers, who farm land in usufruct patchworked all over cities. Horticulture club members use the food to augment their own diet, give food to family members and neighbors, or trade it for other foodstuffs as well as sell it. As part of the agreement granting the club access to land, the club donates up to 10% of their produce to nearby schools, old people’s homes, or maternity clinics. Community gardens are organized by a community group, a workplace, a school, or cultural center. A share of the produce goes to the community entity, and the rest is shared by those who work in the garden. Thousands of people also have individual gardens, either in their private yards or as separate gardens in a larger, community-based parcel.

Impact of Urban Agriculture on Food Security

The production from urban agriculture is nothing short of phenomenal. As the accompanying chart indicates, production levels of vegetables have doubled or tripled every year since 1994. Urban gardens produce about 60% of all the vegetables consumed in Cuba (though 50% for Havana; Pérez, 2000, p. 97). Without including figures for the small gardens and individual farms, urban agriculture alone provided 215 grams of vegetables per day per person throughout Cuba—more than 70% of the grams recommended by the UN FAO. The plan for year 2000 calls for urban agriculture to reach 100% of the FAO recommendation.

Though some have disparaged urban agriculture—seen as running counter to modernization and urban progress—in truth, urban agriculture has had an extraordinarily high social impact. People have been able to partially resolve one of their most pressing problems through their own efforts. “We don’t have to wait for a paternalistic state to do things for us. We can do it for ourselves,” said a retired schoolteacher in the urban garden in Havana.

Amado Fernández, 82, buys lettuce for 2 pesos at an urban garden in Havana. With a pension of less than 100 pesos per month Amado finds shopping at the farmer’s market proves too expensive.
Alamar. More than 28,000 retired people, nearly 20,000 women and 20,000 young people are involved in productive, healthy, and remunerative activities. The Oxfam-sponsored organopónico in Diezmero, San Miguel del Padrón converted a garbage dump into a center for community activity, an experience that has been replicated throughout Cuba as neighbors work side by side in the gardens.

Urban gardening is good news for the consumer as well as the producer. At the end of 1999, 505 vegetable stands were functioning with prices generally at 30 to 50% of the level of farmers market prices. Oxfam’s 1997 survey of buyers in several organopónicos and agricultural clubs found that the majority of buyers were elderly and that nearly half (45%) spent one peso or less while 30% spent less than two pesos, which shows how guardedly the elderly spent their few pesos. These are the people who cannot afford the agricultural market prices. Most urban producers come from families who average a 250-peso-per-month salary per member. The average state salary is 206 pesos a month. The share of earnings from the urban agriculture production provides both food and a substantial increase in pesos to these household economies. For people on a limited income, these additional funds are crucial (Murphy, 1999).

Without the food crisis of the mid-1990s, urban agriculture in Cuba most likely never would have occurred. With local initiative and judicious state support, possibly no other effort has had as much impact socially, economically, and ecologically. In the past, nearly all the food consumed in the capital and the large cities was produced in the rural areas of the surrounding provinces. The story of urban agriculture in Cuba holds great promise for other metropolitan areas in developed and developing countries alike that are seeking ways to lower the scale of cities, extend the green areas, and tighten the social fabric of populated areas.

Ecological Practices and Sustainable Agriculture

Cuba initiated ecological agriculture on a large scale out of necessity—the country simply lacked fuel for machines, chemical fertilizers, herbicides, and pesticides. Ecological agriculture is more than just an absence of chemicals in farming; it involves bio-diversity, spatial controls, soil and water management, green fertilizers and pest controls—altogether an active, diverse and integrated approach to farming. Organic agriculture is a central piece of ecological agriculture and Cuba may be the largest organic experiment in the hemisphere. “I don’t

Training Farmers, Not Creating Dependence

As a response to the food crisis, in 1994 Oxfam International provided free fertilizer to Cuban farmers in Guantánamo province. The result? Agricultural production spiked up for three months—and then collapsed again in the next harvest without the subsidy.

Instead of donating fertilizer during short term cycles, Oxfam now looks to provide long term investment, which means support for the training program of the National Association of Small Producers (ANAP). Over the last decade ANAP’s school has educated farmers on ecological agriculture, pesticide control and cooperative organization. In the provincial and municipal offices, ANAP works closely with farmers to change high-input agriculture into alternative practices.

The strategy is working. An ANAP cooperative president remembers that just before the economic crisis hit in 1991, his cooperative used roughly one tractor for every four cooperative members. When the economic crisis hit full force and there was no gasoline, the tractors were literally stalled in the field. ANAP sought out older farmers who remembered how to work oxen, set them up in the training school, castrated thousands of bulls as oxen, and began sending cooperative members through the school in relays to learn animal traction from the old peasants. In little more than a year, most cooperatives had members trained in the use of animal traction. Cooperatives used scarce gasoline to run the tractors to do the initial plowing, following up with animal traction. Only a strong organization with access to their membership, equipped with a training structure and resources and with a membership familiar with training, could act with such agility to turn farming techniques around so quickly.
believe many people know how big organic farming in Cuba really is,” declared Juan José León Vega, director of international relations at the Ministry of Agriculture. He estimated 1.5 million hectares of non-sugar farmland are organic (Sullivan, 2000). With Cuba presently importing one-sixth of the fertilizers they consumed in the pre-1989 Soviet era, and even fewer chemical herbicides and pesticides, the limited quantities are largely destined to high-priority crops, principally sugar and other exports. In Cienfuegos, a province held up as a national model for food self-sufficiency, the use of mineral fertilizer in 1996 was 12.3% of its 1989 level, while pesticide use barely reached 24%, the majority of which was in potato cultivation. While low-input agriculture can be found in isolated pockets in the United States and among peasant farmers in many developing countries, the mass conversion of Cuban agriculture seems to be unparalleled.

The ecological movement began in certain research centers such as the Institute for Pest Control and the Institute for Biological Control in Citrus in the 1980s. The first national ecology conference occurred in 1981, and certain practices, such as use of disease-resistant seedlings, fungi for potassium, and nitrogen fixing, were widely used before the special period. When the crisis hit, the centralized nature of Cuban research and extension provided for quick dissemination of information to farmers. Certainly without regional research institutes, training centers, and widespread extension services, the experiment would have been localized and possibly short-lived.

Cubans use two main techniques to control insect pests, one based upon the release of entomophagous insects, commonly known as “beneficials,” which parasitize the eggs of the pest species. Aggressive ants also help control pests of sweet potato and plantain. The second technique takes advantage of natural bacteria and entomopathogens of certain pest species. Between these two strategies, Cuban scientists have developed techniques to combat pests of almost all their major crops, including sugarcane, rice, yucca, sweet potato, plantain, cabbage, tomato, pepper, tobacco, coffee, cucumber, and citrus. The techniques are extended throughout Cuba’s rural area by 222 Centers for the Reproduction of Entomophages and (CREEs), many located on farms and cooperatives.ii

Soil Management

Although Cuba has a high ratio of arable land to population, with 30,260 square kilometers of the total area of the island, the arable land is not necessarily of the highest quality. A soil survey completed by the Ministry of Agriculture categorized 8% of the soils as highly productive and 26.2% as productive, with the rest falling under the low and very low productivity headings. In addition, much of the soil experienced heavy abuse under the previous highly mechanized chemical intensive production system, leaving 3,681 hectares affected by erosion, 1,133 with high acidity, and 3,000 with little organic matter. A 1996 survey classified 60% of the soils as eroded and 25% of them falling into the categories of severely and very severely eroded, a quantity that appears to be growing despite increased efforts to reclaim them (Duran, 1998).

The Cubans have used an impressive variety of techniques in soil management. Organic amendments and biofertilizers, along with green manures, have been applied on state farms on a massive scale in an attempt to recover exhausted soils and improve soils with low fertility. Reduced tillage using oxen instead of tractors cuts down on soil erosion and aids in weed control. Converting farm tractors to

ii The practice has been so successful that Oxfam America has brought specialists from Cuba to train Salvadoran agronomists in biological pest control and to oversee an experimental CREE station to benefit small farmers and cooperatives in El Salvador.
farm animals was a crowning moment for retired farmers who were the only ones with experience in animal traction. Finally, the production of worm humus as a fertilizer has skyrocketed from less than 10,000 metric tons in 1987 to over 90,000 in 1992. As the head agronomist at one successful CPA told one of the authors, “If you don’t take care of your soil, you’ll end up with nothing.”

A key question concerning the organic transformation in Cuban agriculture is, as the Cuban economy recovers and their ability to import chemical inputs expands, will Cuba stay organic? Cuban specialists say yes. “Even if Cuba could get an unlimited supply of cheap chemicals, we would still go ahead with biological agriculture,” said Juan José León Vega of the Ministry of Agriculture. ANAP, too, is deeply committed to ecological agriculture. But many farmers, who already tend to mix organic with inorganic methods, may wait and respond if a higher-end market for organic goods develops.

**Diversification**

Cuban markets, land tenure, and producers are more decentralized, smaller in scale, and diversified. According to Roberto Caballeros, an agricultural specialist with the Institute Dimitrova, there has been a convergence between the economic necessities to reduce the scale of agriculture and the environmental suitability of smaller-scale, diversified agriculture. “The tropical climate of an island like Cuba,” he said, “is inherently unstable, and on a large-scale model, the farmer cannot react in time to changes in climate.”

The high variation in soil, the intensity of insects and disease, and the fact that small farms tend to be more diversified are other factors that make small farms more productive than large farms. Intercropping of corn and cassava, plantains and cassava, coffee and taro, and soybean and sugarcane, among other crops, is a common practice. By planting multiple crops, rotating the crops, integrating animals and agriculture, many farmers have adapted to the new circumstances. They are more responsive to the market, are less susceptible to major losses, make better use of their resources and engage in more environmentally sound practices.

Although before the economic crisis, most cooperatives and state farms were dedicated exclusively to the production of a single crop, today nearly all farms produce food alongside their cash crop. Producing food for their membership and earning a greater income through diversification in production have been persuasive incentives for the leaders of cooperatives and state enterprises. It is not unusual for a cooperative, like El Vaquerito in Moron, Ciego de Avila, to earn more from its sideline of “auto-consumo” than from its principal production of coffee or sugar or cattle. Jorge Luis Hernández, the president of El Vaquerito, believes in agricultural diversification, mainly because his cooperative used to be 100% dedicated to sugar.

“Whoever holds onto monoculture will sink,” Hernández said in an interview. “The key is diversification.” Without the agricultural inputs, the sugar yields are half of what the yields used to be in the 1980s, yet the cooperative continues to make a profit and hold onto its members because of diversification (J. L. Hernández, personal communication, December 2000). In addition to sugarcane, the cooperative plants 26 hectares of crops, integrating animals and agriculture, many farmers have adapted to the new circumstances. They are more responsive to the market, are less susceptible to major losses, make better use of their resources and engage in more environmentally sound practices.

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ecologist Richard Levins, who has worked with Cuban scientists for 35 years, said, “Small units of production tend to create mosaic patterns of production, which create natural barriers against disease and infestation. [Juan Carlos González López, World Food Program]"
of fruits and vegetables and tubers, tends 5,000 coffee trees and 1,000 cacao trees, and raises 400 head of cattle and 150 pigs. They make their own animal feed out of their honey, grains, their cultivated fish, and waste products of the sugar. “We’ve been able to keep the boat afloat,” remarked Hernández after seven years at the helm of the cooperative. Profits, last year, were 200,000 pesos among the 121 members (including 22 retired members).

Reforming food distribution

Agricultural Markets

On October 1, 1994, the government opened 121 agricultural markets throughout the country. For the first time in four decades (except for a period from 1980 to 1986) producers could sell in an open market directly to consumers without the state serving as an intermediary. Immediately the black market for basic foodstuffs practically disappeared. Consumer prices in the new open markets were much lower than the former black markets (pork sold for 25 pesos per pound instead of 75 pesos per pound in the black market and a pound of squash for 2 pesos instead of 15 pesos, for example). Predictions that free markets would increase production as well as spur higher quality and greater diversity of produce have borne out. According to a 2000 study by the Lexington Institute, “By 1999 the sales volume [of the markets] exceeded three times the 1995 level, and the agros were generating more than 5 million pesos in tax revenue” (Peters, p. 5).

Cubans reacted positively to the opening of markets because they increased access to food. “People love going to the agros,” said one shopper. “The government would fall if they tried to close these down again.” (The government indeed did close the farmers markets back in 1986 after experimenting with markets for several years.)

However, Cubans resent the high prices in the agricultural markets resulting from supply-and-demand pricing. Compared to people’s earnings today, goods are out of reach for many. According to an Interpress report, food purchases can take up to 66% of the average Cuban salary.

. . . food purchases can take up to 66% of the average Cuban salary.

(Grogg, 2000). A consumer may pay as much as ten times the price for the same good sold through the ration card. The rations, however, frequently last no more than ten to fourteen days of the month for basic items (rice, legumes, some protein, coffee, bread, sugar and root crops). Vegetable oil, meats and meat products, cheese, fruits, and vegetables are seldom available through the ration card and then in small quantities. The only fruit available through the ration card might be cheap oranges, while in the markets there are pineapples, watermelons, bananas, and tangerines, all for those who can pay. Many in Cuba project that the libreta will never regain its earlier prominence and may disappear.

Some attribute the high prices of the agricultural markets to underproduction: more supply will drive down the price, it has been said. That may be part of the problem—since their inception in 1995 the ag markets have been handling three times the volume and prices have dropped.
by one-third. Others place the blame on farmers for charging high wholesale prices. While farmers unquestionably have gained because of the markets, “the market prices are inflated because of the intermediaries,” according to Juan Valdés Paz, a noted rural sociologist (J. Valdés Paz, personal communication, September 29, 2000).

The problem stems from transportation shortages, which allow the relatively few individuals who own trucks to collude, paying producers little and charging high prices to vendors and consumers. A Ministry of Agriculture official suggested that these shippers may collar as much as 75% of the profit of a product sold. To combat the high prices, the Ministry of Agriculture is turning over used trucks to private cooperatives to encourage farmers to ship their own goods or use their own marketing representative. In addition, new government policy has state farms selling more of their produce at low prices in state agricultural markets in an attempt to drive down prices (Vásquez, 2000). As well, a number of other types of alternative markets with lower prices have emerged (see box p. 30).

While the opening of agricultural markets has helped ameliorate the food crisis, tricky problems persist. Consumers have choice and availability but only those who can afford the high prices. By opening private markets, the government recognizes that less state operationality can be beneficial, but more government control against price gouging and price collusion is needed. Markets too, so far, have offered little consolation for the vulnerable population unable to pay the high prices; while the ration card and lower-priced state markets may be part of the solution, a more comprehensive solution is needed.

Marketing Food Through Urban Gardens and Horticulture Clubs

Although agricultural markets are more heralded as a reform, the urban garden market-stands are far more numerous, and their lower prices—about half of what is charged in the agricultural markets—make them far more accessible to many Cubans. Agricultural clubs have even lower prices. Currently, the agricultural markets handle only a relatively low 10% of the food distributed in Cuba. Cubans purchase much more food—approximately 50% of the fruits and vegetables—through the nontraditional producers such as urban gardens, organoponicos, agricultural clubs, and food fairs. Cubans at the lower end of the income scale buy much more of their food through these systems than through the agricultural markets. While a head of lettuce in the agricultural market is 4 or 5 pesos, it is only 2 pesos in an urban garden and only 1 peso in an agricultural club. The disadvantage of both the urban gardens and agricultural clubs is that supplies and variety are limited and, depending on the size of the urban garden, sporadic.

Free Market Food: Who Can Afford It?

A 2000 Lexington Institute study, “The Farmers Market: Crossroads of Cuba’s New Economy,” calculated how many days of earnings different types of workers would have to devote in order to buy some goods of a food basket: one pound each of pork chops, rice, and black beans; two pounds of tomatoes; three limes; and one head of garlic.

While the ration card was the only means of obtaining food, Cubans suffered the food shortages in a more or less equal manner. Now that food has become more accessible through distribution systems other than the ration card, people’s access to food has become sharply differentiated depending on their income.

<table>
<thead>
<tr>
<th>Category</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retiree with pension</td>
<td>7.2</td>
</tr>
<tr>
<td>Day care worker</td>
<td>5.8</td>
</tr>
<tr>
<td>Cuban earning average national salary</td>
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</tr>
<tr>
<td>Teacher</td>
<td>2.7</td>
</tr>
<tr>
<td>Deputy director, state enterprise</td>
<td>1.9</td>
</tr>
<tr>
<td>Emergency room doctor</td>
<td>1.9</td>
</tr>
<tr>
<td>Nickel worker in joint venture</td>
<td>1.1</td>
</tr>
<tr>
<td>Cigar factory custodian</td>
<td>hours</td>
</tr>
<tr>
<td>Farmers market meat vendor</td>
<td>6</td>
</tr>
<tr>
<td>Private taxi in Havana</td>
<td>3.5</td>
</tr>
</tbody>
</table>

[Calculations based on March 2000 prices in Havana farmers markets and salary levels recorded during the past two years.] (Peters, p9)
A Guide to Food Shopping in Cuba

Before 1995 the government was in charge of nearly 100% of the food distribution, principally through the *libreta* or ration card and meals at the workplace. Highly subsidized and plentiful food through the *libreta* was one of the revolution’s chief social achievements. Since the onset of the economic crisis, the monthly rations have been reduced and now no longer last more than ten days to two weeks. In response to the crippling of the *libreta*, the agricultural markets and the following other venues for buying food have emerged.

**La Libre:** “Free” markets are government stands, often outside of the ration stores, which sell very cheaply overstocks and produce not included in the *libreta* ration cards.

**Urban Gardens:** Vegetable stands that market the fresh produce from a nearby urban agriculture plot. The upside is that produce is usually organic, high quality and fresh daily, and prices are 40% to 50% of the agricultural markets. The downside is that variety is limited to what the garden happens to produce.

**Ferias:** State farms ship in fruits, vegetables, and small livestock for wholesale in state-sponsored fairs. Prices are deeply discounted (about 25% of the agricultural markets), but the fairs are infrequent (only monthly) and held in only a few points in the city, making access difficult for most shoppers.

**Topped Markets:** Open markets favored by state producers, where the prices fluctuate with supply and demand but have a limit. Prices are generally less than in the agricultural markets and the quality is not as good.

**Dollar Stores:** Originally for diplomats and foreigners, dollar stores cater to Cubans and non-Cubans with imported and domestic canned goods, drinks, packaged meats, vegetable oil, cheeses, etc. Prices are high, sometimes double the cost of agricultural markets.

**Peso Stores:** Opened in 1998 to parallel the dollar stores, the stores carry the Cuban-manufactured version of the imports. Prices are in pesos, often at 75% the equivalent of the dollar value in dollar stores.

More food is distributed through other channels than through the *libreta* rationing system. Here the manager of a state food store in Playa neighborhood in Havana reviews her accounts. [Steve Gagen]
Price Incentives and Profits

All farmers continue to sell a percentage of their produce to the state marketing board known as ACOPIO. While ACOPIO provides a guaranteed market and a floor price, which the farmers favor, ACOPIO’s service has suffered from inflexibility and unreliability. When ACOPIO was the only legal buyer, farmers had little option but resignation. Not only have the agricultural markets offered an alternative buyer, but also the Ministry of Agriculture recently has introduced a tiered and more flexible pricing regime of ACOPIO in an attempt to increase production.

 Farmers who contract a plan with the government are now motivated to produce “in excess” of their plan. They can sell any food produced over their quota in the agricultural markets or at “differentiated prices,” often twice the contracted price, to the government. Under this impetus, almost all farmers, it seems, have been able to produce “in excess,” and, in most cases, double their plan, which triples or quadruples their income. Historically, one of the biggest problems in stimulating productivity has been that the government sets prices very low, and farmers, under obligation to sell to the state, feel little incentive to produce to capacity.

Farmers do respond to price changes. “I’ll give you an example,” said Orlando Lugo Fontes, president of the National Association of Small Producers (ANAP): “Malanga [a tuber similar to a potato] nearly disappeared from the fields, but when prices were raised, there was greater interest in cultivating and production has climbed” (Carrobello & Jiménez, 2000). In 1999 government-set prices for the plan in cassava, for example, increased from 7 pesos per 100 lbs. to 20 pesos and other tubers from 8.50 to 20 pesos. Prices paid for sugar have doubled over the past seven years, including a 50% hike in 1999. Prices paid for coffee in 2000 doubled over the previous year, from 8.90 pesos per 25 lbs. of beans to 16 pesos, if the farmers complete their plan. As a result, production has increased.

Export-oriented crops, e.g., sugar, coffee, and tobacco, have seen the greatest increases in prices paid, in part because the state wants to encourage production and in part because foreign investment and loans can be tapped. In addition to the higher prices paid in pesos, farmers in sugar, coffee, and tobacco receive production incentives called estímulos, paid in dollars for meeting production quotas. A tobacco farmer earns $4 to $5 per 100 lbs. of tobacco produced, which makes for a considerable sum in rural Cuba. A sugar-producing cooperative receives $4.60 per 100 arrobas (25 lbs.) of sugar sold. The estímulos are paid in cash, in the case of individual tobacco farmers, or in credit at a local “dollar” store for coffee producers and members of cooperatives. The result has been impressive production increases in tobacco and coffee, though perhaps less so in sugar, as many factors other than prices affect the production level of sugarcane.

With the state looking to reduce its import bill of $235 million for the tourist industry, a new government measure now allows co-ops to market high-quality produce to tourist facilities, granted that two state agencies (FINATUR and FRUTASELECTA) serve as intermediaries. The co-ops are paid with credit in dollars that can be redeemed at certain...
The Years of the Fat Cows

Price incentives are only part of a broader effort to create “business efficiency” or profitability. During the golden years of the 1980s, called “the years of the fat cows,” farmers were compensated on the basis of how much they produced—not how much it cost to produce. Subsidies from the Soviet Union were passed along to government ministries and then to the farmers. State farms regularly operated at a loss, and their produce often was underutilized or wasted. A state-run cattle operation in Ciego de Avila is one such case. “We didn’t worry about the cost of anything—we just produced milk no matter what the cost,” said the director of the state farm. Heavily subsidized, the farm had high yields—13 million liters of milk per year; in fact, so much milk that “we had to open the valves of the tanks to empty out the milk onto the ground—because more milk was coming in,” the director added. “But we were paid for it all.”

The subsidy ended with the coming of the special period. Said one farmer, “We got skinny—just like the cows.” In 1994 the state farm was turned into three smaller farmer-cooperatives. The cooperatives have become much more profit-motivated. According to the president of one of the co-ops, the UBPC Simon Reyes, they produce significantly less than before but are more efficient (for example, 13 administrative positions have been reduced to three). Last year, for the first time in the farm’s history, by lowering costs they turned a profit, distributing 2,000 pesos at year’s end in dividends to each member.

Production levels, though, are around 50% of levels before the economic crisis. [Steve Cagan]

stores. In a year 2000 pilot project, two dozen ANAP cooperatives were authorized to market their goods directly to hotels, and the farmers were paid directly in dollars from hotel operators. Part of the deal required these cooperatives to give up state subsidies in agricultural inputs and become entirely self-reliant. The Ministry of Agriculture is gradually unrolling these experiments in dollarization and with high success: the cooperatives produce more and become more self-sufficient, the tourist industry gains access to fresh, local produce, and the state saves on foreign currency.