Facing Global Hunger: Cuba, Food Security, and the Transformation of Agriculture

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Introduction

Food scarcity and food insecurity continues to be a global plague despite billions of dollars and thousands of projects to improve the availability of food to millions of low income people. There is no one accepted definition of hunger but the Food and Agriculture Organization considers chronic hunger at less than 1800 kilocalories a day, while the World Food Program places hunger below 2100 kCal per day. The promise of the green revolution and transnational agricultural companies notwithstanding, the goal of a world without hunger is elusive. Along with actual hunger, the number of people who suffer from various forms of malnutrition may be even greater. The Food and Agriculture Organization of the United Nations has commented recently on global hunger stating,"In today's world of unprecedented technical and economic opportunities, we find it entirely unacceptable that more than 100 million children under the age of five are underweight, and are therefore unable to realize their full socio-economic and human potential" (2009). In 2008, the price of food increased by more than 40 percent over 2007 raising concern about low income people’s ability to secure adequate nutrition (von Braun 2008). The United States is no exception to this problem (see Coleman-Jensen, et al. 2012).

Many countries and organizations such as the World Food Program (WFP) have many interesting and at time effective programs to address food availability and hunger. These programs tend to localized in focus and content. One country, however, has operationalized a solution to the problem of food and hunger on a national basis. Cuba offers a three part model of how a relatively poor country can successfully develop a program of food security, food sovereignty, and at the same time protect its environment. This paper will examine how Cuba, which experienced an economic catastrophe and a drastic decline in food production and per capita nutrition intake in 1990, transformed its agricultural regime and over time met its national food requirements.
World hunger and the promise of plenty

Global hunger continues to be a significant factor in the lives of millions of people. The World Food Program estimates there are an estimated 870 million people who are food insecure, and that hunger and malnutrition "are in fact the number one risk to the health worldwide — greater than AIDS, malaria and tuberculosis combined" (2012). This number, of course, fluctuates according to global economic conditions and environmental occurrences, but hunger and certainly malnutrition for millions seemingly are always with us. In the United States, the Economic Research Service of the Department of Agriculture estimates that almost 15% (18 million) of the U.S. population "were food insecure at least some time during the year, including 5.7 percent (7 million) with very low food security—meaning that the food intake of one or more household members was reduced and their eating patterns were disrupted at times during the year because the household lacked money and other resources for food" (2012).

The Food and Agricultural Organization estimates the depth of hunger as a daily deficit of kilocalories of 100 to 400 kilocalories per day. The lower the number the better fed the population and conversely, the higher the number the greater the depth of hunger in that country. Table 1 indicates the depth of hunger for selected countries. The table suggests that the more affluent a country such as Canada or the U.S. the more the

Table 1: Depth of Hunger for Selected Countries (kilocalories per person per day)*

<table>
<thead>
<tr>
<th>Country</th>
<th>2008-2012</th>
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<tbody>
<tr>
<td>Costa Rica</td>
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<tr>
<td>Dominica Rep.</td>
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<td>100</td>
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<tr>
<td>Brazil</td>
<td>220</td>
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*The depth of hunger is low when it is less than 200 kilocalories per person per day, and high when it is higher than 300 kilocalories per person per day.

population is well nourished. Notice that there appears to be a correlation between income and nourishment, such as the difference between the United States and Dominican Republic. Notice also that for the Latin American countries Costa Rica has a number low relative to Honduras. Honduras, one of the poorest countries in Latin America, has a poverty rate estimated by the World Bank at over 60% in 2010 (World Bank 2012). The Bank also finds that approximately 1.5 million Hondurans face hunger and 48 percent of the rural population face chronic malnutrition. More than half of the deaths of children under five years of age, the Bank adds, is due directly or indirectly to malnutrition. However, even though Cuba is a low income country as well, it has a very low depth of hunger index. Cuba is exceptional among low income countries. The reason this is the case will be discussed below.

The promise to eradicate hunger gained currency when Norman Borlaug's 1943 research on high yielding wheat and maize varieties in Mexico produced favorable results. Faced with chronic hunger and famine, India, for example invited Borlaug in 1961 to evaluate its agricultural regime. Borlaug suggested planting a new rice variety, named IR8, recently developed in the Philippines at the International Rice Research Institute (IRRI). Utilizing modern inorganic chemical inputs of fertilizer, herbicides, and pesticides, including irrigation, yields increased by the end of the 1960s from two tons per hectare to around six tons per hectare by the 1990s. Such production dropped the price of rice considerably (Barta 2007). By 2006, India was a major rice exporter of several million tons.

The success of the introduction of IR8 led to the development of other high-yielding varieties (HYVs) such as millet, maize, sorghum, and beans. What all these HYV varieties shared in common was heavy application of inorganic inputs and carefully regulated irrigation systems. Clearly, that this "green revolution" delivered millions of people from potential or actual starvation and undernourishment. The International Food Policy Research Institute concludes,

"The absolute number of poor people fell from 1.15 billion in 1975 to 825 million in 1995 despite a 60 percent increase in population. In India, the percentage of the rural population living below the poverty line fluctuated between 50 and 65 percent before the mid-1960s but then declined steadily to about one-third of the rural population by 1993. Research studies show that much of this steady decline in poverty is attributable to agricultural growth and associated declines in food prices" (2002).

As seen in the following graph, all world regions enjoyed an increase in production when high-yielding varieties are introduced. Whereas South and Southeast Asia have
realized the largest increase in production Africa’s performance has been marginal at best. Recent studies by Ray, et al., however, suggest that yields for certain crops, primarily rice and wheat, have now either plateaued or declining across 24 to 39 percent of harvested areas. Ray and colleagues ask, “How can we meet the growing needs of feeding people in the future if one-third of our cropland areas, in our most important crops, are not improving in yield any more?” (Ray, et al. 2012).

![Figure 1: Cereal yield crop by region (Kg/Ha)](source: FAO. 2000. The State of Food and Agriculture: Special Chapter, lessons from the past 50 years.)

While successful in raising production, the green revolution did not benefit everyone equally. The new technologies and production regimes associated with the revolution displaced many agricultural workers. Research on the introduction of HYV rice in Indonesia in the 1980s found that literally hundreds of thousands of landless agricultural workers were released from rice production on Java, leading to an influx of poor rural migrants into Java's major cities (Thornburg 1990). Although rice production increased radically the first few decades, they have since peaked. According to the World Food Programme rice production has stabilized, yet the price of rice, already one the highest in Southeast Asia, is trending upward (WFP 2012). The implications of this trend for low income people is problematic at best.

HYV varieties may have increased production but also demanded increased investments in infrastructure which led to land dispossession among small farmers and land concentration among larger farmers (for an alternative perspective see Pinstrup-
Andersen and Hazell 1985). Furthermore, this form of industrial agriculture requires considerable input of energy in the form of fertilizers, insecticides, herbicides, and mechanized equipment. It is estimated that the use of these high yielding varieties require up to seven times more petroleum (and its by-products) than similar crops grown in the 1950s.

Over the past few decades a new green revolution has developed. The original revolution instituted by Borlaug involved grafting plants to create new hybrid varieties. Derivative of Borlaug's impact on agriculture is a new revolution involves biotechnology methods of genetic engineering combined with mass production and heavy reliance on chemical inputs. Companies such as Monsanto, Novartis, AgrEvo, and DuPont are today major players in agriculture focused on high value grain monocrops. The proprietary genetic technology as well as the package of inputs provided by the agro-companies also links the farmer (corporate or otherwise) in a subservient role and encourages economies of scale as well as greater integration into the international agricultural market. Altieri comments that this development has resulted in farms that are "fewer, larger, more specialized and more capital intensive. At the regional level, increases in monoculture farming meant that the whole agricultural support infrastructure (i.e. research, extension, suppliers, storage, transport, markets, etc.) has become more specialized" (Altieri 2000).

Because industrialized agriculture is dependent on pricing and value, the emphasis will shift from food production to "cash" production. For example, with the need to increase the U.S. gasoline supply, many farm operations have turned to corn production for ethanol. A recent New York Times article cites Bruce Babcock’s research that concludes that corn prices in 2011 would have been 17 percent lower if not for US biofuel policies (Rosenthal 2013). Elisabeth Rosenthal’s Times article reports that the pressure to produce biofuels includes countries where hunger and malnutrition are problems. She relays that the U.S. Department of Agriculture noted, “Guatemala’s potential for biofuel production, saying that palm plantations tended to be on “underutilized” agricultural land …” with palm oil companies pressuring small farmers to lease their land (2013). As one farmer, Gilberto Galindo Morales stated, “I’m trying not to because I need that land to grow corn” (ibid). The end result, as Guatemala’s experience indicates, is a loss of land for food production but also an increase in the costs of corn as a food commodity. As Rosenthal’s article concludes, “Recent laws in the United States and Europe that mandate the increasing use of biofuel in cars have had far-flung ripple effects,
economists say, as land once devoted to growing food for humans is now sometimes more profitably used for churning out vehicle fuel" (ibid).

The article also illustrates that as biofuels become attractive financially, production shifts among large landowners and agribusinesses to crops for export as biofuels. Figure 2 illustrates how government policy and market pricing has shifted more than 30% of U.S. production from food to fuel additive. Forecasts are for ethanol demand to stabilize but the USDA concludes that, “production in the United States is expected to remain an important source of agricultural demand over the next decade, accounting for more than a third of total U.S. corn use” (Westcott and Trestle 2012).

Unless there is a substantial increase in corn production that is not captured by the ethanol market, the price of corn will increase and possibly beyond the capacity for poor income earners to afford. Vulnerability to the increased cost of food is due in large measure to the internationalization of domestic food regimes in which free trade in agriculture can weaken domestic production. Massive imports from high production countries such as the United States can lead to food dependency in many countries.

Neoliberal market programs, at the behest of agribusiness's, push a "food security" model that suggests a country with adequate marginal income should import the food it needs and focus on its "comparative advantage" (2011). This could mean a focus on fruits and winter vegetables for foreign markets at the expense of basic food production for local consumption. For many countries the neoliberal program has been
promulgated by the structural adjustment policies of the International Monetary Fund and World Bank. Mexico’s comparative advantage is not in the inefficient production of corn, which the United States produces efficiently and abundantly, but in commodities such as winter season fruits and vegetables that are in demand by the U.S. market. One consequence of this comparative advantage shift is that a significant proportion of Mexican winter season produce is captured by transnational agribusiness companies rather than small Mexican farmers.

Figure 3 illustrates the rising international cost of corn. The volatility of basic grain prices has led Mexico’s president Felipe Calderon to note the danger to stable and affordable food due to the internationalization of the grain market and the demise of national food sovereignty.¹ “I don’t want to use the word speculation but the point is four years ago, more than 90 percent of the purchases of grains and food came from companies related to production or distribution of grains,” Calderon said. “Today, less than 60 percent are coming from those enterprises. More than 40 percent are operations related to financial institutions” (CNBC News Online 2012). Calderon further suggested that financial markets such as hedge funds and institutional investors are now deeply involved in determining agriculture markets. With corn production diverted

![Figure: 3: International Corn (Maize) prices](image)

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¹According to the International Planning Committee on Food Sovereignty, food sovereignty is defined as, “The right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems.” By definition, sovereignty is community centered rather than determined by the demands of corporations or the market. See also Ross, 2012, p. 32.
to ethanol and the remaining supplies under increased demand by other food processors and consumer demand, it is an attractive commodity for speculators.

Figure 4: Increased Price for Mexican Tortillas

However, with the increased demand for corn ethanol followed by recent drought, the import costs of corn, a basic grain in the Mexican diet, has been substantial, as exemplified in Figure 4. The price of tortillas increased to the point that, according to The Guardian newspaper, 75,000 took to the streets in Mexico City to demonstrate against rising tortilla prices, a staple of the Mexican diet (Guardian Online). Research conducted by Timothy Wise of Tufts University’s Global Development and Environment Institute concludes that the “direct impacts of U.S. ethanol expansion on Mexican corn import costs... about $1.5 billion” to possibly more than $3 billion in costs (2012, pp. 2, 7). According to his research, between 2005 and 2011 the price of tortillas increased 69 percent. This increase is significant given that Mexico’s poverty rate for 2010 is estimated at 51 percent (World Bank 2012).

Wise states that Mexico’s food dependency has grown under the 1994 NAFTA agreement from 7 percent before ratification to more than 34 percent since (2012, p. 6). Under a volatile food commodities market influenced by ethanol and drought conditions in the U.S. corn belt, Mexico’s import dependency offers the potential for increased tortilla and other basic grain price increases and a possible second round of food riots. Consequently, Reuters News reports that Mexico has purchased its largest one-day consignment of corn in over two decades (Reuters 2012). This could set off a buying competition from other corn importing countries further driving up prices. In a recent opinion piece in the New York Times, George Mason University’s Tyler Cowen reminds
us that the recent drought has witnessed the third major jump in food prices on the international market in five years (Cowen 2012). The challenge for low income people is how to account for the marginal increase in food prices on budgets that are already stretched to the limit. Recent performance of the Mexican economy illustrates the relationship between income, employment, and food affordability. According to Weisbrot and Ray, the 2008-2009 recession hit Mexico hard leading to a loss of over 9 percent of GDP and real wages declining by 3.5 percent since 2006 (2012). Their analysis also finds Mexico’s poverty rate increased from 42 percent in 2006 to 51 percent in 2010 (ibid p.7).

Figure 5: Mexico’s Food Import Dependency

It is clear that great strides have been made by organizations such as the World Food Programme as well as various research and activist groups such as Bread for the World, the Institute for Food and Development Policy and many others. The problem, however, remains one of food sovereignty, food and price stability, large agribusiness power, and national policy. It is problematic that price incentives for food production, the modernization of agriculture, or general economic growth will be enough to meet the food needs of hundreds of millions of low income people. Recognizing that the number of malnourished people has declined from 19 percent to around 13 percent of the world’s population, is this process sustainable in the context of food availability and price volatility? What is clear is that economic growth is important but by itself is not sufficient to substantively reduce hunger and malnutrition. This is because of the
difficulty the poor have in participating or accessing the benefits of growth (FAO 2012). However, the slower the growth, the greater the negative affect on fighting hunger.

In a recent paper, Northwestern University economist Robert Gordon offered a provocative case for a long-term slow down in economic growth. Economic growth and its associated growth in employment and income are assumed to be a principle cause of the decline in global hunger (2012). Gordon suggests that the current information-technology revolution (his IR3 [the third industrial revolution]) will include much slower and smaller growth than previous economic revolutions (2012, p. 4). His conclusion is, “Whatever the future of innovation, the US economy ...will limit future potential growth and hold it below the pace which innovation would otherwise make possible (ibid, p. 9). If this is a valid assessment, what will happen to global economic growth on which the state of global hunger at least partially depends?

What is most significant is not growth itself but growth of a particular kind. The FAO outlines that agricultural growth is most effective in reducing hunger but such growth must also be "nutrition-sensitive." Additionally, the FAO believes that policy must include "social protection" through various programs to support smallholder farmers and human resource development (2012). In other words, the most effective program to combat hunger and malnutrition includes government commitment through national programs that emphasize nutritional needs, agriculture that promotes employment and high quality foods, provides outreach programs to farmers, and protections that ensure that all social members have access to an adequate diet. As the FAO reiterates, this inclusive package can only come about through "purposeful and decisive public action" by governmental policy and agencies that recognize their responsibility to civil society (FAO, Executive Summary, 2012).

The state of the fight against global hunger is problematic due to the various issues discussed. Industrialized and corporate controlled agriculture relies on economies of scale and production that obtains the most value. Corporate agriculture’s primary focus is on profit first, feeding people second. Profit is determined by meeting market demands by those with the income to purchase what agribusiness produces. Additionally, such an agricultural regime is expensive in terms of technology, machines, petroleum, and chemical inputs. The technology of agriculture and the price of what it produces can preclude poor and low income people’s access to available food.
Considering the above, one effective solution to the question of food and global hunger is to consider Cuba as a model. Cuba has been able to accomplish the goal of adequately feeding its people through a number of programs similar to those outlined by the FAO. The most significant are government commitments to ensure food availability to the general population, research and agricultural extension, urban gardens (or *agricultura urbana*) and permaculture.

**Cuba and the Transformation of Agriculture**

Prior to the collapse of the Soviet Union in 1990/1991, Cuba followed an industrial agricultural model promoted by the Soviet Union emphasizing heavy farm machinery, inorganic fertilizers, chemical inputs and petroleum-based. The model followed in post-revolutionary Cuba was what Laura Enríquez has termed the "classic model of development" (2000). She writes that this model is an outgrowth, in part, from "the structure of agricultural production that already characterized the country in 1959, and in part from the pattern of agricultural development that had been set by the country that was its closest ally, the Soviet Union" (2000, p. 2). Cuba emphasized certain large-scale export crops such as sugar and tobacco in exchange for preferential trade and economic assistance from the USSR. These trade arrangements and assistance, according to James Ross, encouraged economic growth and an adequate

![Figure 6: Cuba Food Import dependency, 1980–1997](source: Altieri and Funes-Monazite. (2012) The Paradox of Cuban Agriculture. (based on data by José Alvarez, Extension Report FE483)
nutritional diet for all Cubans (2004). However, as Altieri and Funes-Monzote conclude, this also increased Cuba’s food dependency on foreign suppliers. According to their data shown in Figure 6, import food dependency was over 70 percent in 1980 and although declined to 60 percent around the collapse of the Soviet Union in 1991, this was still a large import bill for Cuba (2012). The classical model of agricultural development was energy and food dependent but it provided Cubans with an adequate caloric diet surpassing much of Latin America.

As the above graph in Figure 6 shows, the collapse of the Soviet Union drove down food importation because of the increased costs and scarcity of available food commodities as well as the lack of petroleum-based products to support local agricultural production. This was the beginning of the “Periódico Especial,” the Special Period in which per capita caloric intake fell 18 percent and malnutrition was pervasive (Ross, 2004, p. 115). From a food as well as economic point of view, Cuba was in a deep crisis. Ritter concludes that for the Special Period, “Output for key products such as cement, steel, shoes and clothing all declined in the 1990-1993 meltdown and did not recuperate in the years of general recovery... Cuba underwent a partial “deindustrialization...” (2011). Figures 7 and 8 illustrate the industrial collapse. The data represents a 60 percent decline in industrial output from 1989 to 1998, he adds. The rapid decline in the intensive use of inorganic fertilizers led to the decline in food production. Scare petroleum, rolling electrical blackouts, and economic depression set in.

![Figure 7: Industrial output, excluding sugar](image)

For many countries such an economic catastrophe would consign many citizens to considerable hardship expressed in widespread hunger, malnutrition, and possibly political turmoil. For the most part, Cuba was able to circumvent such a disastrous outcome. The most significant and crucial response was the ideological approach developed by the government in the early post-revolutionary period. David Barkin, in his discussion of the post-1959 period, illustrates this approach. The emphasis on the expansion of the productive capacity of development was "to redistribute consumption to the poor and to increase the importance of publicly provided social services..." while "the rationing system allowed a rapid rise in consumption for the poor..." (1972, p. 21). In other words, the commitment to (revolutionary) ethics by government and a national policy of satisfying the needs of the total population was and remains an essential focus of government policy.

This is a foundation that once the special period began the government moved to prioritize a major program of research and development to combat hunger and food availability. One of the lessons learned by Cuba for meeting the food needs of a country is the recognition, willingness and ability to engage in new agricultural regimes. That is, if the prevailing system of food production is unable to meet the food demands of the nation, the government needs to prove flexible to improve food availability. Cuba proves instructive in this regard.
Figure 9 illustrates the pattern of food production in Cuba and the struggle to regain levels reached before the Special Period. Enríquez points out that as Cuba experienced food deficits during the Special Period, orthodoxy gave way in part to experimentation in new methods of production. One policy change was to encourage the spread of a “autoconsumo” system of setting aside sections of state owned farms or cooperatives to grow food for the workforce of that farm (Enríquez 2000, p. 6). This led to establishing areas de autoconsumos that directly supplied cafeterias of particular workplaces (Warwick 2001). This policy also included a “provision for retired people, and for others who are able to demonstrate justifiable cause for not being incorporated into agricultural production in another form, to have usufruct rights for cultivating a small area of land...on state farms” (ibid: p. 7). As awareness of the limitations of large-scale collective farming grew, policy began to reflect the evidence that small-scale direct farmer-to-land-to market was more productive. Enríquez writes that, “Whether it was for moral and ideological reasons, or strictly political and economic ones, in September 1994 the Cuban government overcame the resistance held by some sectors within it and opened the way for the country’s farmers to engage in marketing their own produce” (ibid, p. 15). Ross mentions that by the year 2001, the non-state farm sector contributed more than 90 percent of agricultural output compared to only 20 percent at the beginning of the Special Period (2004, p. 117). Cuba’s experience exemplifies the need for flexibility if government is to successfully meet the challenges of food security.
An addition to Cuba’s pragmatic approach to food and agriculture is the recognition of the role organic production can play in contributing to the national food bank. Half way through the Special Period, Rosset wrote, Cuba began a “grand experiment in conversion from modern conventional agriculture to semi-organic farming on a large scale” (1997, p. 291). The necessary shift away from industrial agriculture was supported by the lack of revenue to buy increasingly expensive petroleum-based inputs.² Sinan Koont remarks that a major reason for success away from industrial toward a more ecological approach in agriculture is institutional and organizational (2008, p. 287; see also Febles-González, et al, 2011). The role of a centralized command state is a significant factor in overseeing this transition where the state provided, writes Koont, “strong, disciplined, coherent, central direction, guidance, and policy are combined with decentralized action in input provision, marketing, and production” (2008).

However, in operational terms credit must also be given to an educational system that produced a large cadre of highly trained and dedicated researchers in ecology, biology, and technology.³ Though organic type farming was relatively new and the population uninformed, the motto was “produce while learning, teach while producing, and learn while teaching” (Koont 2008). This perspective was supported by the population educated and working in solidarity.⁴ It was this cultural capital, a cadre of researchers, that developed new knowledge and technologies in bio-pesticides and fertilizers in conjunction with organic principles such as integrated pest management, vermiculture, and cover cropping and rotations, working with peasant farmers that proved effective.

²The idea of dependence on foreign petroleum products and the consequences of a cutoff of such imports was a concern prior to 1990. Koont notes that, “By the time the crisis made the shift of agricultural production to cities a necessity, at least some parts of the Cuban institutional structure were able to respond with technologies, policies, and practices that had been in precautionary development for a lengthy period preceding the crisis” (2008, p. 286; see also Enríquez 2000, p. 6). There was at various levels of the state policy development to counter any limitations to the petroleum-based agricultural regime.

³A major goal of the revolution was universal and free access to education, including advanced research degrees. According to UNESCO, Cuba spends 10 percent of its budget on education compared to the United States which spends 2 percent per annum. Cuba represents 2 percent of the Latin American population but has 11 percent of the scientists in the region. This investment in "cultural capital" was returned in the innovation and creativity of many individuals and specialists tackling, in this case, new methods of food production.

⁴The idea of solidarity was emphasized to me by a high ranking official in the Ministry of Agriculture during a visit to Cuba in 2001. Again and again, he pointed out that there were no riots or mass demonstrations and that the police or army was never mobilized for civil confrontation during the Special Period. Everyone, he said, tighten their belts and worked to support each other.
The most significant and innovative challenge replacing the Soviet era method of industrial agriculture is the creation of "organiponicos," or urban "raised-beds filled with organic matter" non-chemical gardening. Practically unknown before the Special Period and considered by some as a primitive or peasant holdover, these urban plots are now ubiquitous throughout urban centers in Cuba. Organiponicos mix organic gardening methods in small plots of urban land generally operated by a local community group. Urban gardening was a response to the costs of transportation, refrigeration, and storage and availability of conventionally grown farm food. With the establishment of the Urban Agriculture National Movement in 1997, the intent was to bring food production closer to the urban populations that needed fed (Koont 2009). Land was given in usufruct to parceleros, or individuals, and as huertos populares (popular gardens) or neighborhood cooperatives to produce for home consumption as well as supplying a portion to local schools and retirement homes.

It was thought that as the food crisis of the Special Period diminished there would be a concomitant decline in urban agriculture. However, by 2006 more than 87,000 acres of urban land was devoted to various agricultural pursuits employing over 44,000 workers (Koont 2008). The dual track program of coop-organiponicos and urban farming has proven to be both productive and efficient in use of natural resources and meeting consumer needs. Between 1993 and 2006, the consumption of nutrients in diets increased dramatically. Data in Table 19 in Febles-González, et al. outline the increase of kilocalories of 2276 in 1993 to 3279 by 2006 and the amount of grams of protein from 55.5 to 89.0, well above the basic requirement set by the Food and Agricultural Organization (2011; Koontz 2009). “This was such a successful turnaround that Cuba rebounded to show the best food production performance in Latin America and the Caribbean over the following period, a remarkable annual growth rate of 4.2 percent per capita from 1996 through 2005, a period in which the regional average was 0 percent” (Altieri and Funes-Monzote 2012, pg. 23). This increase, however, was also accompanied by considerable imports of food, especially from the United States, placing a heavy financial burden on the state budget. These imports constitute basic grains such as wheat, rice, and soybeans, crops that are not produced in sufficient quantities in Cuba.

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5I have visited on several occasions one of the most successful urban farm cooperatives, Organoponico Vireo Alamar, where 147 workers produce hundreds of tons of vegetables on about 25 acres. They sell directly to the local communities of Habana del Este as well as social contributions (about 10 percent) to local schools, hospitals and to the central municipal government.
Under new rules, farmers are now allowed to act as street vendors selling their produce in certain areas of cities.

The success of emphasizing family and community urban gardens is shown in Figure 9 where urban production increased dramatically from its inception in 1994 to 2006. The graph illustrates that given the circumstances and support in terms of inputs, land, and official sanction, communities and individuals are responsive to meeting their own food needs. Altieri and Funes-Monzote estimate that urban farms produce as much as 70
percent of all fresh vegetables in Havana and smaller cities such as Villa Clara (2012, p. 24). As Febles-González, et al., conclude, “This movement has set the basis for demonstrating how food can be produced sustainably in cities and has promoted an urban production culture” (2011). The Special Period forced the government to recognize that, “After the failure of large-scale monoculture practices and a need to increase basic food crop production, it was crucial to break farms into manageable units, where managers are intimately familiar with the land. Without chemical imports, a farmer must know every inch of soil, instead of just applying pesticides over a large tract of land” (King 2012, p. 6). The movement away from state farms and large acreage production reliant on inorganic inputs (although needed in some cases such as with rice production) and toward member managed cooperatives and private small farms as well as urban based community agriculture illustrates the productive power of decentralization. This lesson was obvious as early as 1994, writes Rosset, where peasants and cooperatives controlled only 20 percent of the land but produced 40 percent of food production (1997, p. 292).

Figure 9: Production of Urban Agriculture in Millions of Tons

![Figure 9: Production of Urban Agriculture in Millions of Tons](image)

Source: Data generated from Koont, 2008.

Diversity in the food distribution system is an important component of meeting the food needs of the population. About 60 percent of purchased food takes place at the site of production or its associated market stand, at private or cooperative urban food markets where prices meet demand (and are generally higher), and state markets with controlled
prices. The social responsibility (whether informal or formally mandated) of all producers to provide a portion of their harvest to hospitals, orphanages, retirement centers, and childcare facilities ensures that all have access to basic nutrition. The Libreta (ration card) has both supporters and detractors due to the card's limitations but it does offer subsidized basic commodities at only 12 percent of the market value of the commodities (at a cost of over one billion dollars to the government). Additionally, all children under one year of age receive an allotment of baby food and up to the age of seven one liter of milk per day for the equivalent of 10 US cents (Ravsberg 2012).

Table 1: Dietary Energy Consumption (kcal/person/day), by Country

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<td>Bolivia</td>
<td>2030</td>
<td>2100</td>
<td>2160</td>
<td>2100</td>
</tr>
<tr>
<td>Haiti</td>
<td>1730</td>
<td>1780</td>
<td>1900</td>
<td>1850</td>
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Today the number of urban farms is over 380,000, mostly organic, serving local communities. State farms have declined and many turned into worker-controlled cooperatives with many operating their own markets. Due to these efforts Cuba's food import dependency parallels developed countries such as Canada, importing only 16 percent of its food in 2007 (Altieri and Funes-Monzote 2012). Intake of kilocalories is on par with countries such as the United States, according to the FAO, at 3420 kCal per day (2009). As Table 1 illustrates, considering the economic hardships, deteriorating

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6 All Cubans are issued a ration card, Libreta de Abastecimiento, that provides at subsidized prices chicken, rice, cooking oil, coffee, grains, among other products. While the monthly ration is never enough for a family to meet basic needs more than two weeks, the ration card is unique in that very few countries, especially low-income countries, provide any sort of access to basic necessities however limited they may be. As will be discussed the continued existence of the ration card is now under discussion by the government.

7 Until recently all farm produce was distributed through the state agency Acopio. Farmers have been critical of Acopio's bureaucratic inefficiency for delayed pickup of harvests to the point that one cooperative sued the agency for a ruined harvest. Under new regulations farmers can now sell directly to consumers.
agricultural infrastructure, and mismanagement Cuba has faced over the decades it has been able to feed its population, comparatively, relatively well. The underlying support mechanism for Cuba’s food distribution system, it needs to be reiterated, is the Revolution’s commitment that one major function of government is to ensure an adequate diet for all. Ravsberg’s comment that, “Socialism’s foundation is based on egalitarian ideals for the benefit of its people, steering away from establishing an economic profit that would conflict with the liberty of well being” is key to this distribution system (2012). This commitment, nevertheless, may change soon as greater market-based thinking gains currency in a move to improve agriculture’s performance.

Storm Clouds on the Cuban Horizon

For all the success in overcoming the limitations of the Special Period, the prevailing food production and distribution system are now seen by some as problematic. Due to the nature of some crops such as rice, sugarcane, and soybeans on the one hand, and truck vegetables on the other, Cuba has two food-production systems: the traditional high inorganic-input, large-scale agriculture and one that emphasizes low-input organic farming. The success of agroecological farming cannot be denied. Altieri and Funes-Monzote add that Cuba is “the only country in the world that was able to recover its food production by adopting agroecological approaches under extreme economic difficulties…” (2012, p. 30).

By 2000, however, Cuba began to experience a decline in agricultural output. According to King, output dropped 22 percent between 2000-2005 and another 8 percent for the 2007-2008 year (2012, p. 7). At the same time food imports from the United States and Brazil increased dramatically to over one and a half billion dollars a year (Frank 2012). The reliance on imports is due in part to the decline in agricultural production of basic food commodities as illustrated in Figure 9. Additionally, Cuba experiences periodic hurricanes which can cause widespread damage to agriculture. Researchers at the University of Florida IFAS Extension agency, for example, reviewed

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8Research after Hurricane Ike devastated eastern Cuba in 2008 found that small farms with diverse crop production suffered fewer crop losses than neighboring farms growing monocrops. They also found that the rate of recovery of small farms was faster as well (Altieri and Funes-Monzote 2012, pg. 31).

9One factor in the pressure on Cuba’s food supply is the tourist industry. The U.S. Department of Agriculture offers that as tourism increases, the purchase of “high-value, consumer-oriented” food products for the tourist industry must likewise increase (USDA 2008, pg. 17). Furthermore, to offset such import costs, Cuba must divert an increasing amount of domestic production to the tourist sector.
the 2008 tropical storms and Hurricanes Gustav and Ike and declared that the “Sum
total of the damages caused by these storms to the Cuban economy, infrastructure, and
agriculture is nothing short of catastrophic” (Messina, et al, 2008). Although the 2000s
witnessed an increase in production on *huertos populares* and *organoponicos*, not only
has overall production declined but consumption has increased. This situation of a
relative decline in food sovereignty is something the government does not want nor can
afford and has begun to rethink policy. In particular, this situation illustrates that
government must remain proactive and in constant support of civil society’s involvement
in food production.

The response to the Special Period was successful in overcoming the food and
agricultural crisis. The transformation of agriculture presents a model that produces
food at a reasonable price with a sustainable and positive affect on the environment. As
the above illustrates, however, Cuba has yet to permanently or adequately maintain
food sovereignty or security. The worsening condition was expressed by economic
minister Marino Murillo who cited “low efficiency, decapitalization of productive capacity
and infrastructure, the aging of the Cuban population,” as well as centralized decision-
making, low salaries and “indiscipline” among segments of the rural workforce (Peters
2012). As the cost of importing food increases the government is pursuing a series of
policy measures. These measures include focus on the limitations to the further
productivity in the peasant and cooperative sector as well as an increasing emphasis on
biotechnologies and inorganic inputs.

After several years of decline, new policies were promulgated in 2008 in hopes of re-
energizing agricultural production. One major problem is idle land. It is estimated that
51 percent of Cuba’s arable land lies fallow or is inefficiently used. President Raul
Castro proposed land reform policies providing more land to efficient farmers and
cooperatives, decentralizing decision-making and increasing farm wages and higher
crop prices. Although granting usufruct rights to farmers began in 1993 it is recognized
that for continuity and sustainability of production greater usufruct rights had to be
offered. Formalized in a new law (Law-Decree 259) in 2008, by 2009 more than 45,500
land grants were parceled out (Frank 2009). The significance of usufruct is recognized
by the recent Sixth Congress held in April 2011. *Lineamientos* 189 (Guidelines 189)
states that, “The distribution of land in usufruct will render productive results comparable
to the current results obtained by the cooperatives and individual small farmers. The
growers will no longer be wage earners, but rather rely on their own incomes. Law-
Decree 259 shall be amended as required to secure continued and sustainable
operation of the land allocated in usufruct” (Sixth Party Congress 2011). Along with this
_lineamiento_ others related to increasing crop prices and measures to recruit more rural
agricultural labor (190, 197, 198). An additional step is to allow producers to sell directly
to more markets, including to the tourist industry.

It appears these nascent policies have had a positive impact on production from rice to
plantains (Peters 2012). Recent farm production for 2011 is up almost 9 percent,
reports Frank, indicating that the new reforms are beginning to take hold (2012). Of
concern, however, is that the increase in rice and beans has been through more
acreage devoted to production rather than through productivity gains (Peters 2012, p.
5). ANAP (_Asociación Nacional de Agricultores Pequeños_) small farmers had been at
the vanguard of increased production of root crops and vegetables although with mixed
results. The Sixth Congress and a follow up review of agriculture's performance by
Raul Castro points to concern to improve farm sector productivity, profitability, and
distribution through the above noted policies (ibid). The focus of this policy is twofold.
One is to increase the farm gate price of crops that farmers are contracted to deliver to
the state and associated institutions. The second is to allow more farmers to sell at fair
market prices. It is believed that commodity price increases will act as an incentive to
produce more and attract more labor into agriculture. The fear, however, is as prices
increase the market will act as a “gatekeeper” to determine who gains access to food.

A concern of government is that export crops and basic grains remain anemic resulting
in continuing heavy imports. A new emphasis on industrialized forms of agriculture,
therefore, is another strategy to improve agriculture. Cuba has enjoyed a dual
approach to agricultural production, employing an organ agroecological regime along
side an industrial production scheme. Unlike agroecological farming, however,
increasingly contemplated are new research and development interest in genetically
modified crops and greater use of biotechnology. For example, a new program called
_Bienvenida la Soya_ is being developed with Brazil employing pesticides and “large
tractors, direct seeding machines, and equipment for crop protection”—and
considerable infrastructure investments (Altieri and Funes-Monzote 2012). In addition,
Cuba has invested heavily in genetically modified (GM) crop varieties. The push toward
inorganic compounds along with greater mechanization and GM crops is not that this
regime is necessarily more productive but simplifies the production process. As Altieri
and Funes-Monzote put it, “...using these GM crops along with higher levels of
mechanization (especially larger tractors) have now made it possible for the size of a
family corn and soybean farm in the U.S. Midwest to increase from around 240 hectares
(600 acres) to around 800 hectares (2,000 acres)” (2012, pg. 29). So too is the thinking for Cuba. Such methods will increase productivity and substitution for expensive imports. As Carlos Borroto of the Genetic Engineering and Biotechnology Center in Havana recently commented, “A substantial increase in production and resistance to the corn seed maggot were noted” (Riera 2011), an incentive to move further in this direction. Many are concerned how the growth of such regimes will affect the environment and local traditional food production.

Finally, there remains a degree of intransigence amount some policy makers and bureaucrats that are not convinced of the move to decentralize government control over agriculture. For example, state control over the transportation and distribution of harvests is seen by many as inefficient and ineffective yet moves to privatize or cooperatize the transportation of harvest is slow to non-existent. Decentralization also entails changes in bureaucratic thinking. In a recent report to the 6th Congress of the Communist Party of Cuba, Raul Castro critized the slow pace of change stating that, “The problem we are facing has nothing to do with concepts, but rather with how to do it, when to do it, and at what pace.” He reiterated that the bureaucratic mentality of “excessively long meetings,” and “excessive formality” must change to meet the new reality of solving Cuba’s problems (Castro 2011). Additionally and possibly more troubling, there are conservatives in government that wish to return to the pre-Special Period of stricter government control and ownership.

Of concern to many is that the new policies, incentives, and prices appear to be the beginning of a nascent Cuban-style neoliberalism. The government plans to release tens of thousands of people from the government pay role hoping they will find non-state work. Another component of these new policies is the slow elimination of goods from the Lbreta. As the government turns more toward market solutions to increase production will wages keep in step with the new prices in the markets? To allay fears what these changes mean, in his address to the Congress Castro said the “Revolution will not leave any Cuban helpless. The social welfare system is being reorganized to ensure a rational and deferential support to those who really need it. Instead of massively subsidizing products as we do now, we shall gradually provide for those people lacking other support” (2011).
Lessons Learned

The evidence illustrates that the policies implemented during the Special Period greatly improved the production of food. For a low-income country under a severe economic blockade (by the United States) Cuba’s recovery is remarkable. The transformation of much of Cuban agriculture toward smaller farms and cooperatives, management and work incentives to the farmers, and allowing farmers greater latitude in selling surplus foods to farmer markets independent of the government have created greater efficiencies in production and distribution. Increased tenure security by formalizing and extending usufruct gives farmers more security on the land and thus acts as an incentive to innovate and invest in production. These on-going policies include land grants to those willing to engage in agricultural production. Since 2008, more than one million hectares (2.4 million acres) have been distributed to augment existing farms or to develop new ones (Peters 2012, p. 6), while in many countries arable farm land is increasingly concentrated in large scale industrial farms and plantations.

Cuba’s experience suggests several solutions to the problem of global hunger. The primary lesson is the perspective and approach of government. Although the collapse of the Soviet Union was an immediate catastrophe forcing Cuba to consider drastic policies and thus not necessarily the most applicable model for fighting hunger, it nevertheless offers broad suggestions for policy. Government policy must view hunger as a national security emergency or as a basic focal point of what government’s responsibility to civil society should be. Cuba was fortunate in this regard since a basic tenet of the 1959 revolution was the delivery of basic social services and resources to all of Cuban society regardless of social status. The point is that government must see food security as a basic and fundamental responsibility of the highest order.

Total food sovereignty is not possible for any country but improving agriculture’s performance to meet local food needs is important. Domestic food production can act as a buffer against price swings in international food markets. A healthy and dynamic domestic agriculture provides employment which supports local economies. A second major policy is land reform in which land and associated resources are put in the smallholder sector. In many food deficit countries landlessness or marginal lands in cultivation is a serious problem, one that limits that country’s agricultural potential. In many cases, too much quality land is monopolized by multinational agribusiness companies focused on growing export crops for the international market rather than meeting the consumption needs of local populations.
Cuba’s experience shows that with extension services and inputs, the smallholder sector (as cooperatives or private farmers) is as productive and more sustainable against environmental calamities than large industrialized farms. Cuba also realized that providing greater incentives to the smallholder sector in terms of assistance, pricing, and management decisions will pay off in terms of greater production and quality food at attractive prices.

The question of food availability is also a question of food affordability. This applies equally whether it is Honduras or Kenya as much as it is a question for the United States. Fighting global hunger requires a “package” strategy, as suggested. Not only a dynamic and vibrant domestic agriculture is needed but people must have adequate incomes to afford the food available. Wages need to be set where a family can afford to buy the quality and quantity of food they require or desire. No individual wants a handout, especially since handouts are unpredictable in availability or quantity, but a living wage standard compatible with the necessary foodbasket. Food aid is not reliable nor does it lend itself to solutions. In his book, *The White Man’s Burden*, William Easterly argued that aid does more harm than good because it prevents people from developing their own solutions using their creativity and initiative. Instead such aid creates a sense of dependency and helplessness. He adds that given the right incentives people are quite capable of taking care of their own problems. In this regard Cuba was lucky. During the Special Period of hunger and despair Cuba had only itself to rely on. The only resources available were dedication, solidarity, and the fortitude to find local solutions.

Fighting world hunger is not difficult in and of itself, but it is particularly difficult to reorient national and global political-economic systems to recognize that the major, social imperative of government and economy is to supply the basic human right to nutritious, quality food for everyone regardless of income, occupation, or location. The great struggle will not be found in technical details or world aid organizational structures but rather in moral recognition and obligation that the central challenge of our time is food security and independence for all people beyond the dictates of politics, class, and the market. The lesson of Cuba illustrates that successful implementation of such measures as discussed leads not only to a healthier population but to political legitimacy and stability as well.
Sources:


Additional Sources