CULTIVATING A CRISIS
What We Can Learn from Urban Agriculture in Cuba
Cultivating a Crisis: What We Can Learn from Urban Agriculture in Cuba

All Wrongs Reversed

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Contact
H. No. 7, Lane no. 6, Block-A, Himgiri Enclave, Pepsi Road, Main Burari Road,
New Delhi-110084.
prc.india@yahoo.com | @prc_in | + 91 98682 00316

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The urban farming culture in Cuba arose from a deep crisis at the time of the collapse of the Soviet Union and its learnings bear more relevance than ever at the time when we are making our way through another global crisis precipitated by a virus. The collapse of the Soviet Union had created conditions which coerced the Cuban government to rethink their urbanization agenda and agricultural policy. Backed by confident government policies, people in Cuba led the transition from a machine- and petroleum-based agriculture and food transport system to a localized food system driven by traditional knowledge and powered by animal and manual labour.

We present here a short collection of two articles analysing the emergence and aspects of Cuba’s urban agriculture. The original article ‘Urban Agriculture in Havana’ by Sinan Koont and the review article by Christina Ergas were both originally published in the Monthly Review magazine in 2009 and 2013 respectively. We thank Martin Paddio and the editorial team of Monthly Review Press in New York for their quick response to our request to republish it for non-commercial purposes.

We are highly indebted to Ashish Kothari for generously accepting our invitation to write a foreword. Ashish is a founder-member of the environmental group Kalpavriksha and currently coordinates the Vikalp Sangam (Alternatives Confluence) process.

This publication is the result of the collective effort of many people but most importantly of Rajendra Ravi, Joe Athialy, and Madhuressh Kumar. We also express special gratitude to Joe for the page layout & elegant cover design.

This publication has grown out of our desire to disseminate the transformative learnings from Cuban experiments in urban agriculture, reorganization of their food system, and unorthodox planning of cities. To that end, we are also publishing a Hindi translation of the booklet. We thank Mohini for her contribution to the translation.

Nishant
People’s Resource Centre
Feeding cities: the promise of Havana

This succinct and clear account of the achievements of urban agriculture in Havana, Cuba’s capital, provides much food for thought. Beyond the dry statistics of the remarkable levels of agricultural production that have been reached, the essay goes into crucial social, organizational, technological, and psychological dimensions of the transformation. In doing so it provides lessons and inspiration for what could be achieved in other urban and semi-urban or urban areas around the world.

Cities in most of the world are parasitic on rural areas, grabbing their resources and dumping back waste; they are also severely iniquitous internally, with huge populations having poor access to basic needs including nutritious food and clean water. This is painfully evident in India. Yet governments in most countries have pursued strategies that only further accentuate the internal and external exploitation, based on a foundation of capitalist, statist and patriarchal (and in India’s case, castest) relations. Policies and programmes have favoured chemical-intensive, large-farmer oriented, heavily government or corporation-dependent production that also entails long-distance transportation of raw materials and food. Heavy environmental destruction, and distress amongst small farmers, are common results. The horrendous figures and stories of farmer suicides in India are for everyone to see. And ironically, our cities are also home to the phenomenon of the urban rich having access to healthy food through expensive organic outlets, whereas the urban poor have to make do with unhealthy food that a perverse industrial system has made cheap.

We are told there is no alternative to the model of the Green Revolution in India and elsewhere. Havana’s achievements show this as a lie. As the author describes in detail, its approach to meet food (and other agricultural output) demands has emphasized localized self-reliance (“production of the neighborhood, by the neighborhood”), organic or agro-ecological production in small plots, participatory research and development, social and economic innovation, the revival or sustenance of community dynamics, and decentralized training and education. Perhaps most remarkable, it has reinstated agriculture as an occupation of dignity; as the author says: “various “moral” incentives exist for urban agriculturalists. On an individual level, these incentives offer ample opportunities for further formal education and a healthy, supportive, and dignified work environment. On a societal level there is an effort to “dignify” urban agricultural work and workers. This work is increasingly seen as having high levels of scientific and technical content. The image of peasants as the most backward component of society no longer holds much sway.” This means that young people
are staying back in or taking up agriculture, such a crucial difference from the situation in India where they are moving out en masse because it has become a low status (and low income) livelihood.

I would have liked to see a bit more of a critical approach, for instance more on aspects like gender and class inequities and how the Havana model deals with these. But the positive points are undeniable. Of course, as the author states, one cannot simply replicate the Havana model elsewhere: “The basic ingredients of such success were already present in Cuba: an educated population; a socially concerned and committed, people-oriented central government giving support and organizational backbone to the effort; and ample stimulation of decentralized initiative and decision making by producers at the base, encouraging local solutions to local problems.” But in various permutations and combinations, such factors can be created if they do not already exist. To my mind the most important of these is the ability to act in a decentralized way, with policy support coming from governments (“We must decentralize only up to a point where control is not lost, and centralize only up to a point where initiative is not killed”), and the ability to make agriculture a dignified, sought-after livelihood with economic, social, health, psychological, spiritual benefits. There is no reason whatsoever this cannot have happened in India … or indeed cannot happen even now. Hundreds of alternative, sustainable farming (including pastoral) initiatives in rural India have shown that it can (see a sample at www.vikalpsangam.org) … they need to be tried out in the urban context too, as is beginning to happen with rooftop and backyard gardening in some cities like Bengaluru, or the farmer-consumer links in rurban/semi-urban areas in many other cities.

A revolution is needed in agriculture in India (as elsewhere on the planet), one that prioritises the small farmer, respects the earth and seeds and water and animals, holds knowledge (a hybrid of traditional and new) in the commons, localizes production and exchange, provides dignified livelihoods, and makes farming and pastoralism respectable again. Importantly, any such approaches must ensure healthy, affordable food for the urban poor; or beyond, the opportunity to many of them to participate in the production and exchange of such food.

Havana’s urban agriculture experiment offers valuable lessons for us to learn from, and I am happy this essay is being produced here … hopefully in multiple languages to enable widespread dissemination!

Ashish Kothari
Pune, January 2020
View from a balcony near the Capitol Building in Havana, Cuba. Photograph by Jason Gamble.
The Urban Agriculture of Havana

Sinan Koont

Urban Agriculture in Cuba

Over the last fifteen years, Cuba has developed one of the most successful examples of urban agriculture in the world. Havana, the capital of Cuba, with a population of over two million people, has played a prominent, if not dominant role, in the evolution and revolution of this type of agriculture. The phrase “urban agriculture in Cuba” has a somewhat different meaning, simultaneously more and less restrictive than might appear at a first glance. It is more inclusive, as it allows for large expanses, urban fringes, and suburban lands.

For example, the entire cultivated area of the Province of the City of Havana belongs to urban agriculture. This definition includes land that is much more rural than urban—some of the city’s municipalities (or boroughs) in the eastern and southwestern parts of the city have relatively low population densities, around 2,300 to 3,500 people per square mile versus around 50,000 to 100,000 per square mile in the densely populated parts. As a result, more than 35,000 hectares (over 87,000 acres) of land are being used in urban agriculture in Havana! The serious development of urban agriculture in Cuba began simultaneously with the disappearance of petrochemical inputs, such as fertilizers and pesticides, from Cuban markets. Consequently, urban production uses only biological fertilizers and biological and cultural pest control techniques. The limited quantities of petrochemicals available are employed for a few non-urban crops such as sugar, potatoes, and tobacco. In Cuba, the distinction between organic and urban is hardly worth making, as almost all urban agriculture follows organic practices.

The necessity for Cuba to turn to urban and organic agriculture in the early 1990s is both well known and understood. The collapse of the Soviet Union and the ending of trade with COMECON on rather favorable terms spelled the end of the Soviet-style, large-scale, industrial agriculture that Cuba had been practicing since at least the 1970s. Almost overnight, diesel fuel, gasoline, trucks, agricultural machinery, spare parts for trucks and machinery, as well as petrochemical-based fertilizers and pesticides, all became very scarce. In view of the severe crisis in food production, a shift to urban agriculture seemed an obvious and necessary solution: urban production minimized transportation costs and smaller-scale production minimized the need for machinery. Agro-ecological production (applying the

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1 However, only 10,000 hectares are used for cultivating crops. The rest is used for animal husbandry, forestry, and fruit production.
principles of ecology to agricultural practices), in part, necessitated production sites near the living areas of large concentrations of people, and at the same time avoided the use of toxic petrochemical fertilizers and pesticides, which were no longer available.

Less well known, but perhaps equally important, are the reasons of prudence and national security that had been pushing Cuba in this direction since the 1970s. Cuba had been, and still is, under a partial blockade by the United States. Even more threatening, and ever-present, is the possibility of a total blockade of the island. Early on, scientific institutions started researching the possibility of import substitution in production, including agricultural production, which would make the island less dependent on imported goods. At the same time, within the Ministry of Defense (and not the Ministry of Agriculture, which was committed to industrial, high-input agriculture) and institutions such as the National Institute of State Reserves (INRE), programs were started to study potential responses to a complete cut-off of petroleum imports. It was during a visit to the Armed Forces Horticultural Enterprise on December 27, 1987, that Raul Castro, as minister of defense, encouraged the introduction of a technology later widely employed in urban agriculture.

General Moises Sio Wong—head of INRE—recounted this visit to Raul Castro ten years later during another visit: a woman agricultural engineer, referred to by Sio Wong simply as “Ingeniera Anita,” had carried out some successful experiments growing vegetables without using petrochemicals. Castro had suggested the desirability of generalizing this method of cultivation. Thus, beginning December 1987, four years before the demise of the Soviet Union, the so-called organoponicos, rectangular-walled constructions—roughly thirty meters by one meter—containing raised beds of a mixture of soil and organic material such as compost, started being installed in armed forces facilities.

It was, however, not until the end of 1991, that the first “civilian” organoponico in Havana was put into operation in a two-acre, empty lot across the street from the INRE Headquarters in the Miramar district of Havana. Since then, the organoponico has become one of the mainstays of vegetable cultivation in Cuban urban agriculture.

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3 Raul Castro Ruz, Desatar los Nudos que atan el Desarrollo a las Fuerzas Productivas (Habana: ACTAF, 1997).
Thus, by the time the crisis made the shift of agricultural production to cities unavoidable, at least some parts of the Cuban institutional structure were able to respond with technologies, policies, and practices that had been developed for a lengthy period of time preceding the crisis.

By 1994, an organization was created to oversee the systematic introduction of organoponicos and intensive gardens into urban agriculture. In 1997 this was converted into the Urban Agriculture National Movement. Conditions of access to land underwent considerable change. Before the crisis, land was either privately held and worked by owners or it was state-owned and worked by employees. Now, in addition, land was distributed to individuals (as parcelos [plots], with the individuals being called parcereros) and cooperatives. New cooperative forms—with or without a collectively cultivated, jointly held area—came into being. A Credit and Services Cooperative (CCS) typically brought together plots and willing pre-existing private farms.5

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In addition, there are patios (privately owned home gardens producing primarily for family consumption), individual plots, state farms, and *areas de autoconsumo* (state enterprises producing food for the consumption of their own workers).

On the basis of this new institutional framework, the organoponico technology introduced in 1987 is now generalized in Havana, and the rest of Cuba, typically in units between one-half and several hectares in size. The so-called intensive gardens are identical to organoponicos except for the fact that the raised beds do not have walls, and the soil is typically good enough to be mixed directly with the additional organic material. On patios and plots, traditional gardening and farming practices predominate, with the partial introduction of some of the techniques used in organoponicos. Greenhouses are also used as are techniques to block the intensity of the sun so as to increase yields, improve quality, and make possible year-round production of vegetables.\(^6\)

This organized system of production came into existence in 1994 and assumed its more or less final form in 1997. With it, Cuba has achieved results that would have seemed quite implausible in 1991. Production has increased by leaps and bounds. Cuban diets have benefited from the introduction of locally produced, organic agricultural products. In Cuba’s cities, the environment has benefited both from the greening of the city due to the cultivation of crops (especially coupled with urban reforestation, to be discussed later), and from the fact that this is all done agro-ecologically. Plots that had become eyesores and informal garbage dumps have been transformed into productive land. The social and economic environment has enjoyed the creation of sizeable sources of urban employment and the incorporation of women and young workers under the age of thirty-five, important in terms of the long-term sustainability of urban agriculture, as well as retirees into the urban agricultural workforce, bringing income and health benefits to the latter. Finally, the community building and therapeutic side effects of urban agriculture are significant outcomes of these efforts.

While I focus on Havana here, there have been many important accomplishments in this area throughout Cuba. In the urban agriculture program there are twenty-eight subprograms: twelve in crops, seven in animal husbandry, and nine in support areas such as organic manures, seeds, irrigation and drainage, marketing, and technical education. Over 350,000 new, well-paying, and productive jobs have been created in these subprograms over the last twelve years.\(^7\) At the start of the Special Period, Cuba experienced a severe drop in GDP and employment. In 2005,

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the total workforce was about 4.8 million, so the jobs created in urban agriculture are a significant contribution to the country’s total employment. This job creation aspect of urban agriculture has to be viewed as a significant contribution to the well-being of not only the persons now gainfully employed, but also of the Cuban society as a whole. In the subprogram of vegetables and fresh herbs, one of the most successful subprograms, production jumped a thousand-fold from 1994 to 2005: from 4,000 tons to 4.2 million tons. This kind of increase obviously implies a large increase in cultivated area (reaching 70,000 hectares by 2006), but yields per square meter also went up impressively (in organoponcos, for example, from 1.5 kilograms per square meter in 1994 to 25.8 kilograms per square meter in 2001, which is a seventeen-fold increase).

The reasons for these spectacular results are the same in Havana as in the rest of the country, and thus can be discussed in the more general setting. The most important, overarching principle is probably organizational: where strong, disciplined, coherent, central direction, guidance, and policy are combined with decentralized action in input provision, marketing, and production. The ruling motto is “We must decentralize only up to a point where control is not lost, and centralize only up to a point where initiative is not killed.” The overall leadership of the National Urban Agriculture Group (GNAU) is complemented by corresponding provincial (14 in number) and municipal (169 in number) organizations. The tasks of the municipal and provincial groups are to set policy guidelines, mobilize the grassroots, give stimulus to all activity in urban agriculture, and supervise and control all local efforts. The administrative functions such as overseeing and participating in training, providing needed inputs, and marketing are undertaken by state “Urban Farm” enterprises (roughly one per municipality, with some big municipalities having more than one).

A key role in this decentralized structure is played by the Ministry of Agriculture’s urban agriculture representatives to each Popular Council (the administrative unit in the territorial organization of Cuba that is just under the municipality)—of which there are 1,452 in Cuba, i.e., an average of eight or nine such Council’s per municipality. Each urban agricultural representative’s tasks include discussing production plans with each producing unit, promoting new technologies, overseeing networks of providing inputs, gathering data, ensuring quality and...
veracity, marketing the food, and training people in urban agriculture techniques. In short, the representative is a very important “bottom man on the totem pole” of the central state whose function and role cannot be overestimated.\textsuperscript{13}

However, the framework outlined above is an empty shell. It needs to be populated with real policies and practices before it can be properly assessed in terms of its efficacy in promoting urban agriculture in Cuba. Below I will briefly discuss four crucial areas of such policies and practices, each of which could easily be the subject of a monograph:

1. Training and Education: At the beginning of the Special Period, Cuba had an urban population with a high-level of education, but scant knowledge regarding ecologically based agriculture. Nonetheless, the urban population was capable of learning quickly. At the same time, there were many scientists that had been doing research in this area, and there were many peasants who had traditional agro-

\textsuperscript{13} Ibid., 8.
ecological knowledge that could be shared. This, perhaps unique, combination of qualified teachers and teachable students allowed for the rapid spread of agro-ecological know-how when coupled with serious, organized, and concerted participatory extension efforts by research institutes, universities, and organizations. Urban agricultural training is more than mere transmission of technological packages. Its motto is: “produce while learning, teach while producing, and learn while teaching.”\textsuperscript{14} Formally educated agricultural technicians and scientists and engineers at universities also contribute to this effort. Finally, elementary and secondary schools are teaching and preparing the next generation of urban agriculturalists.

2. Research and Development: The efforts that began in the 1970s are continuing full-steam ahead in universities and in research institutes affiliated with ministries and other scientific centers. GNAU provides interdisciplinary and inter-institutional leadership for urban agricultural activities. Its membership includes representatives from thirteen research institutes. Several other institutes and universities also participate in GNAU’s work.\textsuperscript{15} By 2002 hundreds of projects in dozens of institutions were investigating aspects of sustainable, organic agriculture in three National Programs of Research: Food Production for the Population by Sustainable Methods has sixty-three projects in forty scientific institutions and universities, Production of Animal Feed by Biotechnological and Sustainable Means has thirty-five projects in ten institutions, and (though not applicable to urban agriculture) Sustainable Development in Mountainous Areas has sixty projects in thirty-eight institutions.\textsuperscript{16} There is an emphasis on participatory research and development with units at the base generating new knowledge through the very process of production.

3. Provision of Agro-Ecological Inputs: More than two hundred facilities provide needed inputs for urban agriculture—producing, providing, and/or selling seeds, organic fertilizers, biological pest control preparations, technical services, and advice. More than 7,000 Organic Material Centers produce organic fertilizers (compost and vermicompost, worm humus). Water for irrigation comes from piped municipal urban supplies, as well as from wells, rivers, and reservoirs. Water availability is maximized by improvements in the capture of rainwater, as well as by efficient irrigation techniques, especially in organoponicos and intensive gardens. To the extent some imports, e.g., pipes for irrigation systems, are still needed, the Ministry of Agriculture undertakes their purchase and allocation.

\textsuperscript{14} Nelso Companioni Concepción, “Particularidades del Movimiento Extensionista en la Agricultura Urbana,” \textit{Agricultura Orgánica} 12, no. 2 (2006), 32.

\textsuperscript{15} Rodríguez Nodals, “Síntesis Histórica del Movimiento Nacional de Agricultura Urbana de Cuba,” 27.

4. Material and Moral Incentives: Productive units are expected to be profitable. The market determines some prices, and the government sets others. An overwhelming majority of these units are profitable. Profits become the basis for incentive payments, which bring average incomes in urban agriculture well above nationwide averages for state employees. Also, various “moral” incentives exist for urban agriculturalists. On an individual level, these incentives offer ample opportunities for further formal education and a healthy, supportive, and dignified work environment. On a societal level there is an effort to “dignify” urban agricultural work and workers. This work is increasingly seen as having high levels of scientific and technical content. The image of peasants as the most backward component of society no longer holds much sway.\(^{17}\) The productive units themselves are honored with a number of designations (“with excellence” being the highest) according to strict criteria, which continue to be verified every three months during inspection visits. The inclusion of a unit in one of these categories is not only an honor, and thus a moral incentive (there are only eighty-two centers of excellence in the entire country), but also allows these outstanding performers to serve as focal points for the introduction and propagation of new technologies. In effect, they become extension agents and educators.\(^{18}\)

How can the above discussion be summarized? Well, a successful parcelero with a small plot in Vedado, Havana, growing medicinal plants, whom I interviewed, claimed that the three driving forces behind success for any action in life, even in difficult circumstances, are “necessity, possibility, and will.”\(^{19}\) If this assessment is accepted, one can say that in the early 1990s Cuba managed to assemble all three components of success in its response to the crisis it faced. And it made considerable progress, and would seem to have substantial room for further progress. Having said this, one should not underestimate the obstacles and bottlenecks Cuba faces in transportation and industrial processing of food, and in inputs of organic material, water, energy, and hard currency—the last necessitated by the ongoing need to import inputs for production.

**Urban Agriculture in Havana: General Discussion**

Havana has only 3 percent of all urban agricultural land and 0.4 percent of all agricultural land in Cuba, about 20 percent of the population of the island but only 0.67 percent of the total area of Cuba.\(^{20}\) Being the most densely urbanized province

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17 Author’s interviews with Salcines at UBPC Alamar and Companioni at INIFAT.
19 Interview with A. Falcon.
20 Author’s calculations based on: Companioni Concepción, La Agricultura Urbana: Un Sistema Alternativa de Produccion de Alimentos en Cuba, slide 6; Grupo Provincial de Agricultura Urbana en la Ciudad de la Habana, La
of Cuba, its agricultural land area is a smaller percentage of total agricultural land in Cuba than its land area is of the total land area in Cuba. But since all of its agricultural land is counted as urban, it does rather better in terms of percentage of all urban agricultural land. However, with the post 1990 emphasis on local production using local resources for local consumption (thus the urban agriculture motto: Production of the neighborhood, by the neighborhood, for the neighborhood), it has had to struggle, lagging behind other provinces.

For example, it has only recently achieved the Food and Agriculture Organization of the United Nations (FAO) guideline of 300 grams per capita per day of vegetable supply for its population. As late as 2001, its daily per capita production of vegetables was 171 grams, considerably below the FAO figure as well as below the level of the next lowest producer province, Santiago de Cuba, with 415. The reason is fairly obvious. Whereas Cuba as a whole has a little more than a tenth of a hectare of urban agricultural land per person, this figure drops to less than two-hundredths of a hectare in Havana. Land available for crop cultivation is still

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21 Author’s translation.

22 Rodríguez Castellón, “La Agricultura Urbana y la Producción de Alimentos: la Experiencia de Cuba,” 86.

more limited. Of the 33,000 hectares in agricultural use, only 10,500 are for *cultivos varios* (including root crops, grains, vegetables, and citrus and other fruit). Still, just as in the case of Cuba as a whole, Havana has managed to increase its production of vegetables at a very rapid pace. The figures in table 1 correspond to a 38 percent annual increase over the eight years covered in the table.

<table>
<thead>
<tr>
<th>Year</th>
<th>Thousands of metric tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>20.7</td>
</tr>
<tr>
<td>1998</td>
<td>49.9</td>
</tr>
<tr>
<td>1999</td>
<td>62.6</td>
</tr>
<tr>
<td>2000</td>
<td>120.1</td>
</tr>
<tr>
<td>2001</td>
<td>132.2</td>
</tr>
<tr>
<td>2002</td>
<td>188.6</td>
</tr>
<tr>
<td>2003</td>
<td>253.8</td>
</tr>
<tr>
<td>2004</td>
<td>264.9</td>
</tr>
<tr>
<td>2005</td>
<td>272.0</td>
</tr>
</tbody>
</table>

The result for 2005 corresponds to about 340 grams per capita per day for Havana’s inhabitants, somewhat below the amount achieved by other provinces, but significantly above the FAO recommendations.

The production of many other crops in Cuba has also increased a great deal. Table 2, which presents data from 1999 and 2001, reveals advances in other crop

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25 Ibid., slide 13.
production during the same time. Cuba’s vegetable program grew from 62.6 to 132.2 thousand metric tons of production.\textsuperscript{26}

These rapid increases were achieved both by extension of the area cultivated, and, perhaps more importantly, by accompanying technological and organizational changes toward smaller-scale, agro-ecological production. The growing work force employed in urban agriculture had become increasingly more qualified through learning-by-doing and expert instruction. Also, its productivity was stimulated through remuneration schemes that generated incomes for workers according to results in production achieved.

<table>
<thead>
<tr>
<th>Crop</th>
<th>2001 Thousands of metric tons</th>
<th>Annual growth 1999-2001 (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banana (cooking)</td>
<td>1.9</td>
<td>8.0</td>
</tr>
<tr>
<td>Banana (fruit)</td>
<td>0.8</td>
<td>13.2</td>
</tr>
<tr>
<td>Fruits</td>
<td>21.1</td>
<td>8.4</td>
</tr>
<tr>
<td>Root crops</td>
<td>21.0</td>
<td>10.2</td>
</tr>
<tr>
<td>Beans</td>
<td>2.4</td>
<td>29.9</td>
</tr>
<tr>
<td>Rice</td>
<td>0.6</td>
<td>21.9</td>
</tr>
</tbody>
</table>

The urban agricultural workforce in Havana has grown from 9,000 in 1999 to 23,000 in 2001 to more than 44,000 in 2006.\textsuperscript{27} Urban agriculture in Havana is more labor intensive than in the rest of the country. Although Havana has only 3 percent of urban agricultural land in Cuba, it employs about 12.5 percent of the country’s urban agricultural work force. About 25 percent of this work force is female, a percentage that rises to over 35 percent and 50 percent respectively, among technically qualified workers at the middle and high levels.\textsuperscript{28}

\textsuperscript{26} Based on Table 1 in Adela Cuba, Participacion en la Esfera de Sanidad Vegetalen el Movimiento Cooperativo de la Agricultura Urbana (Master’s Thesis, FLACSO, Universidad de la Habana, 2002), 62.

\textsuperscript{27} Cuba, Participacion en la Esfera de Sanidad Vegetalen el Movimiento Cooperativo de la Agricultura Urbana, 64; Raisa Pages, “Una Ciudad Agroecológica,” Agricultura Orgánica 12, no. 2 (2002), 17.

\textsuperscript{28} Pages, “Una Ciudad Agroecológica,” 18.
Havana works very hard on its agriculture. On 3 percent of the urban agriculture land, it produces about 6.5 percent of the urban agriculture vegetables. Food distribution takes place through direct sales at hundreds of sites of production and/or stands that belong to a unit of production at another location, as approved by local governments.

About 60 percent of production at the national level is distributed in this fashion. Another 11 percent is sold at two types of agricultural markets: those where prices fluctuate freely and state markets with lower prices. The local government controls the prices at state markets, setting them in accord with monthly price lists. Producing units, such as families and institutions, consume around 22 percent of the output. Special provisions are made for other social needs, such as those of the schools, hospitals, and universities. In this situation, producers and consumers make contracts for food at prices set by local government for three months at a time. These are typically the lowest prices going, and constitute a tax on producers.

The fulfillment of these social obligations are supervised and enforced strictly in terms of the quality, quantity, and timeliness of deliveries, which are the responsibility of the producer. This form of social consumption utilizes another 2 percent of the output at the national level. In Havana, given the institutional and population density, the amounts taken out by social and self-sufficiency consumption are bound to be greater. In fact, in 2006 the deliveries for these social needs amounted to 1,300 tons each month or almost 6 percent of output.

One program that is not a subprogram of urban agriculture must be mentioned here because of its close association with urban agriculture—the urban reforestation program. The aim in the urban context is to plant a tree, fruit bearing or not, in every suitable location not already being used for other agricultural purposes. Initiated in 1996, by 2004 it had already brought every municipality in Havana above twelve square meters of green space per inhabitant, and reached levels over thirty square meters in suburban municipalities. Besides obvious environmental benefits, this greening of the city also provides additional edible production as well as animal feed and leaves which can be converted into organic fertilizers.

One happy problem for Havana is that it is slowly running out of unutilized, cultivable land to rescue and put to use. Of the 35,890 hectares, all but 2,970 hectares were already in use as pastures, forests, and croplands as of November 15,

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29 Companioni Concepción, La Agricultura Urbana: Un Sistema Alternativa de Producción de Alimentos en Cuba, slide 37.
2006.\textsuperscript{31} The Misión al 2007 proposed to recover all these lands, polluted wastelands, and refuse dumps, and replant them with forest and fruit trees.\textsuperscript{32}

But, this also means that from now on, additional gains, say, in vegetable production will have to come from: (1) the reallocation of lands among the three competing uses (crops, animal raising, and forests); or (2) the better intermingling of the three; or (3) within the area dedicated to vegetable production, shifting more of that area to more intensive techniques, such as the organoponico and a recently introduced, Cuban-developed and mostly Cuban-sourced technology—semi-

protected cultivation in organoponicos and intensive gardens. Semi-protected means the installation over the cultivation beds of ceiling-screens supported by poles, permeable to rain, and without any wall structures. This increases yields and enables the production of certain vegetables that are sensitive to the intense rays of the sun during the summer season. In 2006, twenty-one new organoponicos covering fifteen hectares in Havana were constructed, although half of them were

\textsuperscript{32} Ibid., 15.
waiting, due to delays, for imported irrigation systems.\(^{33}\) Semi-protected cultivation has been made into a subprogram of urban agriculture, and will be increasingly stressed in the coming years.\(^{34}\)

The importance of this possibility of converting vegetable production in Cuba to semi-protected organoponicos is clear. The higher yields from this production system, if generalized for the entire nation, mean that only a fraction of the land in current use could supply all their needs. In this regard, Cuba seems to enjoy “infinite” possibilities.

**Urban Agriculture in Havana: Particular Experiences**

How are the points discussed in the first two sections reflected in the lives of particular units of production in Havana’s urban agriculture? Between January and May 2007, I visited a large number of various types and sizes of urban agriculture production sites in Havana.\(^ {35}\) Some of these visits were formal and hosted by the responsible leadership of the unit in question. Others were informal, some involved only picture-taking from outside of the unit, and some included informal chats with urban agriculturalists about their work and unit. The insights and information gained and observations made during these visits contribute to my understanding of how urban agriculture in Havana looks from the ground level.

At the extreme western end of the municipality of Habana del Este is the “dormitory” community of Alamar — where UBPC Organoponico Vivero Alamar, one of the most successful experiments in Havana’s urban agriculture, is located. It is somewhat misleadingly labeled an organoponico, since it is mostly *huerto intensivo* (intensive gardens). It was started in 1997 when Miguel Salcines, a mid-level Ministry of Agriculture agronomist, asked to use a 3.7 hectare plot of currently unutilized “waste land.” He joined forces with four others, including a carpenter and a chemist, to begin the process of founding a production unit. It is fair to say that what has happened since then has surpassed all reasonable expectations. Starting from humble beginnings, it has risen to be one of the eighty-two units in all of Cuba to achieve and maintain the classification of *excelencia*. Its workforce has grown from 5 to 147, the area it has use of has increased from 3.7 to 11.2 hectares, and its annual production jumped from 20 to 240 tons of vegetables.

The increase in the amount of land under cultivation did not come through land purchases, given that there is no land market in Cuba, but rather through two different types of acquisitions. First, an adjoining area of more than 6 hectares was absorbed into the production unit, as individuals who had been using those lands

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\(^{34}\) Ronal Suárez Ramos, “Aumentaran Cultivos Semiprotegidos,” *Granma* (Febrero 12, 2007), 2.

\(^{35}\) Unless otherwise cited, all information in this section is based on my observations and interviews with people during my visit
The workforce here is already highly qualified—albeit not in urban agriculture! Of the 147 workers, 50 either have engineering degrees or middle-level technical
training. Newly joining members go through an intensive training process during their three-month probationary period. This consists of both on-the-job training working along current members who know what they are doing as well as formal classroom instruction. The unit has a centrally located classroom which also serves as the dining hall for the daily lunches and snacks.

(2) The spirit of participatory research and development is alive and well at the unit. Experimentation and introduction of new technologies take place routinely. During my visit, liquid smoke, a bio-preparation made of mango, neem, and noni leaves and fruit was being tried as a pest control on various crops. Interplanting—the growing of two crops in the same bed in alternate rows in order to increase yields and improve pest management—is another focus of urban agriculture technology. In one of the new intensive gardens on newly acquired lands, an Israeli hybrid tomato was not doing well when sown experimentally in alternating rows with cabbage. This cabbage had previously worked well when interplanted with carrots and lettuce. In a nearby “control” bed, the tomato planted alone was having more success. Among other new technologies that have been or shortly will be introduced are the use of magnetized water in irrigation and direct rooting of fruit tree grafts. Also to be introduced this year is one hectare of semi-protected cultivation. While this last technology was developed in Cuba, it still requires some imports (irrigation systems) and thus hard currency. It will be installed on one
hundred and fifty hectares this year in all of Cuba. Havana will receive thirty hectares as its share, and the Alamar production unit will get one of these.

(3) The unit produces some of its own seeds and most of its own seedlings, with other inputs purchased. It has a contract for biopesticides, which are delivered to the unit. It produces all of its own compost for the beds in the organoponico and intensive gardens with organic residues of its own operations as well as purchases of manure from a nearby farm that raises animals. With the exception of the part of the unit that until recently was a state organoponico, there is no use of any water from the city utility pipelines for irrigation. It has constructed six wells that provide adequate amounts of water for the irrigation of crops in the unit’s contiguous original lands. The limiting and difficult factor here is the availability and transport of organic material to be used as raw material in the production of compost.

(4) A moral incentive to the unit as a whole is provided by its status as a center of excellence, awarded to a handful of units across Cuba. This status, once achieved, has to be maintained by undergoing successful scrutiny by visiting inspection teams every three months. At the unit itself, the underlying philosophy of atencion al hombre (a Cuban version of what would be called “human resources” in the United States) ensures that incentives, both moral and material and individual as well as collective, are sufficient to attract a qualified and stable membership. Dignified work conditions include a seven-hour workday (from 7 a.m. to 3 p.m. with a lunch break), adequate bathroom facilities, and a “free” wholesome lunch based mostly on the unit’s own produce. There are opportunities, on- and off-site, for members to further their formal education; several members are taking courses at the university extensions in their municipality, which are part of a Cuba-wide effort to universalize higher education. Members also participate in cultural programs in the local Casa de Cultura, and as urban residents they can take in a ballet or theater performance in the evening. The unit’s leadership is committed to doing what it can to spread the perception that the work is based on science and technology. Gone are the days where agriculture is seen as backbreaking work undertaken by backward farmers toiling from sunup to sundown. The idea is to support workers’ self-esteem while raising society’s respect for them and their contribution.

Encouraging a sense of “ownership” among the members is part of treating them with the dignity they deserve. Not only are the incomes dependent on receipts generated through sales, but the general assembly of the cooperative, consisting of all members, decides upon the distribution of this income, following both general laws that apply to cooperatives and internal regulations. The financial affairs of the unit are completely transparent to the membership. In fact, the main office displays on its wall a blackboard containing financial information about the operations of the last completed month as well as the cumulative data for the year up to that
point. Also reported are the percentages of the year’s plan fulfilled versus the percentage planned for this point in the year. The information displayed includes total receipts, total expenditures (including each salary paid), cost per peso of receipts, profits, average salary, and average income for the unit. The last point has to be emphasized: members receive a salary. In addition, about half of the profits are distributed as individual income, the rest goes to collective social expenditures including investment.

One can get a sense of the material incentives offered to the coop members by summarizing what was displayed on that blackboard during March 2007. The average income for 2007 had been planned at 8,528 pesos, with 1,421 pesos for the first two months. The actual average income for the first two months was 1,629. Thus, the actual monthly income of the membership, amounting to about 815 pesos, exceeded the planned monthly average of 711 pesos by 15 percent, and the average monthly income of salaried state workers, which is 385 pesos, by 112 percent. It is no wonder that a 2005 study on urban agriculture production units, which included Alamar, found that thirty-five of the fifty members working had been there for more than five years.36

I visited a number of other urban farm cooperatives in Havana. One of these, the Arides Estevez Sanchez CCS, was at the western end of Havana, in the municipality of Playa. Clearly opulent and prosperous, the CCS has a collective area consisting of an organoponico and three greenhouses producing tomatoes and cucumbers for the tourist hotels. It has 140 members, ninety plots (more than twenty individually owned, the rest held in common). They produce enough compost and worm humus to have some available for sale. The most important obligation of this cooperative is honoring its contracts with thirty-eight schools, which call for eight pounds of vegetables per student per month. The CCS owns a truck with which it makes the deliveries to schools. Other “authorized organismos” also make purchases by contract from the coop, but they have to provide their own transport. In addition the CCS has multiple points-of-sale for direct sales to the population. The local government determines prices according to monthly or quarterly (for schools) price lists. The point-of-sale prices are set about 20 percent below the corresponding prices at farmers’ markets, in which the CCS does not participate.

Away from the central area, there is a small organoponico (Organoponico Girasol) belonging to this cooperative but held by two members. Only 0.22 hectares in size, it has its own well for irrigation and specializes in the production of flowers. It produces its own worm humus and has its point-of-sale right on the premises. One

of the “owners” is an irrigation specialist and teaches irrigation to a circle of interest at an elementary school. And, according to him, he is not unique: many members of the CCS either visit schools or receive visits from school children on their plots.

In addition to these “cooperative” experiences, there are tens of thousands of plots and backyard gardens under a fourth of an acre in size in Havana. These gardeners make their individual contributions to urban agriculture. For example, a plot in Vedado in the municipality of Plaza was dedicated to the production of medicinal plants. In 1992 the “owner,” A. Falcon, was an ordinary worker with no experience in agriculture, when he was given the task of rescuing an abandoned lot full of garbage and producing medicinal plants, as the government turned to “green medicine” in the import-starved atmosphere of the Special Period. Now, fifteen years later after first reading and studying, over forty different plants are grown here in organoponico type beds. The beds are constructed utilizing compost and worm humus produced on the premises, with waste vegetable matter generated at the plot and the manure obtained from the chickens raised and kept here.37 In addition, on the weekends Falcon collects fallen leaves from the streets of the neighborhood to add to his compost pile, and obtains orange peels and other refuse from the farmers’ markets. He has plans to raise rabbits and fish to generate additional organic materials.

Pests are controlled by diversification and the planting of repellent plants as well as by hand picking in the case of an invasion by snails. There are, in general, few problems. If one arises that Falcon can’t handle, he gets advice and help from the local Tienda Consultorio del Agricultor (Farmer’s Shop and Consultancy). All of his sales occur right at the plot: neighbors stop by to buy medicinal and “spiritual” plants at two pesos a bunch. However, more important than his role as a producer of medicinal plants is his ability and willingness to share the knowledge that he acquired over the last fifteen years with the community. He welcomes groups of students sent by their schools to visit the plot. He visits schools to give workshops on growing and preserving herbs and plants, by drying and canning. He advises neighbors on how to start their own garden or rooftop production. He consults with medical doctors, many of whom do not have a strong background concerning medicinal plants.

His commitment to improving the environment of his community is further attested by his vigorous participation in Mi Programa Verde (My Green Program). He has planted ornamental plants, many rescued from among plants other people had discarded, along the ten to fifteen yard long pathway that leads from the street to the gate of the plot. And, between the sidewalk and the curb of the street in front

37 Falcon says: “I started with 100 worms, now I have millions.”
of the parcela, he has planted several trees. What used to be an abandoned lot full of refuse is now green space, and Mi Programa Verde is doing well here.

Another interesting example of individual contributions is the patio belonging to Dr. Raul Gil, at his house in the town of San Miguel del Padron. The owner of the house has a master of science degree in social psychiatry and is the director of a mental health center in the town of Regla. After becoming interested in the efficacy of “plant therapy” in the treatment of mental health problems, he decided to learn how to grow plants for use in his clinic, and, in 1995, contacted Salcines (of the UBPC Alamar) to get help. At his house, he had a neglected backyard with hard ground. Neighboring his house was an abandoned industrial site, fast becoming a garbage dump infested with rats and cockroaches and home to “undesirable” social activities. Dr. Gil asked the local government to let him use the site. When his request was granted, he cleaned the “dump,” hauling away twenty-three truck loads of trash.

Now, in his backyard, including the plot he has use of, a thriving garden is home to lettuce, beets, peppers, green beans, spinach, onions, Swiss chard, parsley, mint, and cilantro, growing in small flowerbeds, resembling large water pipes cut in half, and banana, mango, tamarind, mandarin, fig, guava, guayaba, lemon, and anon trees. To plant the trees, Dr. Gil excavated holes, one meter in diameter and eighty centimeters deep, in the hard ground, before filling them with a mixture of soil, worm humus, and compost so that a seedling could be transplanted into each hole. Oregano (a pest repellent) and corn (which attracts beneficial insects) are grown for pest control. Neem and nonni trees provide additional protection. Last, but not least, bonsai trees are being grown.

Seeds, as well as other inputs and technical assistance, come from the Tienda Consultorio del Agricultor. MINAG provides organic material for free. There are plans to start worm humus production in an old bathtub in the garden. In a second bathtub frogs are used for mosquito control.

Yet, this patio does not produce anything for sale! As is the case with most of the over 60,000 patios in Havana, all produce is used for self-sufficiency and/or shared
with the neighbors. Thus, the contribution of this patio to the urban agriculture of Havana is not so much in production, as it is in its impact on the physical and social environment of the community.

And, this impact is greater than the description so far would imply: for two hours every Saturday morning, an educational workshop, led by Dr. Gil and his wife, is held in the patio for the children of the neighborhood. During my visit, about a dozen youngsters, mostly under the age of ten, were in attendance. The first half of the workshop consists of theoretical instruction and discussion of a physical or social environmental issue. This is followed, after a break, by practical activity in the garden. The children learn how to plant seeds and grow plants, how to be sensitive to the environment, how to behave at the beach, and how to treat each other. They also engage in creative activity such as drawing pictures.

Dr. Gil sees his and the children’s activities as environmentally focused community development: at the same time that food is produced, attitudes are changed concerning the physical and social environment. His success in converting an urban eyesore into a beautiful, productive garden and in instituting an impressive community development project with children has led to national recognition.

**Conclusion**

The headline of a June 8, 2008, Associated Press story read “Cuba’s urban farming program a stunning success.” And it has been in many ways. The last two examples illustrate a key point about urban agriculture as it is being practiced in Havana and in Cuba generally: it is not just about economics, i.e., about producing food, or even just about producing food and creating employment. It is also about community development and preserving and improving the environment, bringing a healthier and saner way of life to the cities. In fact, when the editor of *Le Monde Diplomatique*, at some point during the one hundred hours of interviews in 2005, asked Fidel Castro what measures he could cite that Cuba had taken to help preserve the environment, Castro referred first and foremost to urban agriculture.\(^\text{38}\)

As for the impact on food production, one can definitely conclude that because of urban agriculture residents of Havana have access to a much improved supply of fresh produce, improved not only in quantity, but also in quality and diversity.

Even with resource and input constraints, made all the more difficult due to the blockade imposed by the United States, Cuba has every prospect of extending its success in urban agriculture with its helpful innovations and improvements in basic knowledge, technology, and social organization. The basic ingredients of such

success were already present in Cuba: an educated population; a socially concerned and committed, people-oriented central government giving support and organizational backbone to the effort; and ample stimulation of decentralized initiative and decision making by producers at the base, encouraging local solutions to local problems.

Urban agriculture in Havana is a model of urban self-sufficiency worthy of imitation. But a caveat is in order: it may not be easy or even possible in any given place to duplicate all the factors that have made Cuba’s success possible. But the further a country proceeds in this direction, the better its chances for a greener, more humane society.

Sinan Koont teaches economics and is coordinator of Latin American Studies at Dickinson College in Carlisle, Pennsylvania and recently spent a sabbatical semester in Cuba studying urban agriculture.
CUBAN URBAN AGRICULTURE AS A STRATEGY FOR FOOD SOVEREIGNTY
Christina Ergas

The agricultural revolution in Cuba has ignited the imaginations of people all over the world. Cuba’s model serves as a foundation for self-sufficiency, resistance to neocolonialist development projects, innovations in agroecology, alternatives to monoculture, and a more environmentally sustainable society. Instead of turning towards austerity measures and making concessions to large international powers during a severe economic downturn, Cubans reorganized food production and worked to gain food sovereignty as a means of subsistence, environmental protection, and national security.\(^{39}\) While these efforts may have been born of economic necessity, they are impressive as they have been developed in opposition to a corporate global food regime.

In *Sustainable Urban Agriculture in Cuba*, Sinan Koont indicates that most of the global South has lost any semblance of food sovereignty—the ability to be self-sufficient, to practice a more sustainable form of agriculture, and to direct farming toward meeting the needs of people within a country, rather than producing cash crops for export (187). The World Bank and International Monetary Fund imposed structural adjustment programs and free trade agreements on the so-called third world. These policies increased the influence of multinational corporations, such as Monsanto and Cargill, in global food production. They also encouraged large-scale monocultures, whereby food production is specialized by region for international trade. These policies threatened the national food security of countries in several interrelated ways.\(^{40}\)

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\(^{39}\) Koont defines food sovereignty as “the right of each people to define their own policies concerning agriculture, to protect and regulate their national agricultural production and markets with the aim of sustainable development, to decide to what extent they want to be self-sufficient in food, and to prevent their domestic markets from being inundated with subsidized products from other countries. The emphasis is on local, ecologically sustainable production of culturally appropriate, wholesome, and nutritive foods. Thus conceived, food sovereignty incorporates the concept of food security (adequate food supplies to meet the population’s needs) and even overlaps with national security” (187). Also see Daniel Whittel and Orlando Rey Santos, “Protecting Cuba’s Environment: Efforts to Design and Implement Effective Environmental Laws and Policies in Cuba,” *Cuban Studies* 37 (2006): 73–103.

\(^{40}\) According to the Food and Agriculture Organization of the United Nations, “food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” See Food and Agriculture Organization of the United Nations, “World Food Summit: Rome Declaration on World Food Security,” November 13, 1996, [http://fao.org](http://fao.org).
First, economically vulnerable countries are subject to the vagaries of the international marketplace, fluctuating food prices, and heavily subsidized produce from the global North that undermine the ability of the former to compete. Second, in a for-profit economic system, certain crops, like sugarcane, potato, and corn, are planted to produce biofuels, primarily ethanol, instead of food for poor populations. Rich nations that can afford to buy crops for biofuels inflate market prices for food, and when droughts or floods destroy whole harvests, then scarce food still goes to the highest bidder. Third, nations that specialize in cash crops for export must import food, increasing overall insecurity and dependency on trade networks. These nations are more vulnerable to changes in the costs of petroleum, as it influences expenses associated with transportation, fertilizers, pesticides, and the overall price of food. In countries with higher per capita incomes, increasing food costs are an annoyance for many people but not necessarily life threatening. In countries with high rates of poverty, price increases can be devastating. All of the above problems converged during the 2007–2008 food crisis that resulted in riots in Egypt, Haiti, Indonesia, Mexico, and Bangladesh, just to name a few.

People worldwide have been affected by these policies and have fought back. Some nations have taken to task corporations like Monsanto, as in the case of India’s response to genetically modified eggplant, which involved a boycott of Monsanto’s products and demands for the eradication of genetically modified foods. There are burgeoning local food movements, even in the United States, that despite numerous challenges attempt to produce food outside the current large-scale agricultural paradigm. There are also international movements that are working to change agricultural policies and practices. For example, La Vía Campesina is an international movement comprised of peasants, small-scale farmers, and their allies. Their primary goals are to stop neoliberal policies that promote oligopolistic corporate control over agriculture and to promote food sovereignty.

In conjunction with these movements, Cuba has made remarkable strides toward establishing a system of food sovereignty. One of their most notable projects in this regard is their institutionalized and organized effort to expand agroecological practices, or a system of agriculture that is based on ecological principles and environmental concerns. Cuba has largely transformed food production in order to pursue a more sustainable path. These practices are not limited to the countryside.

Cuba is the recognized leader of urban agriculture. As Koont highlights, the Cuban National Group for Urban Agriculture defines urban agriculture as the production of food within the urban and peri-urban perimeter, using intensive methods, paying attention to the human-crop-animal-environment interrelationships, and taking advantage of the urban infrastructure with its stable labor force. This results in diversified production of crops and animals throughout the year, based on sustainable practices which allow the recycling of waste materials (29). In 2007, urban agriculture comprised approximately 14.6 percent of agriculture in Cuba. Almost all of urban agriculture is organic.

Cuba’s environmental protections and agricultural innovations have gained considerable recognition. The 2006 Sustainability Index Report, put together by the World Wildlife Fund by combining the United Nations Human Development Index and Ecological Footprint measures (or natural resource use per capita), contends

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that the only nation in the world that is living sustainably is Cuba. The island nation is particularly lauded for its strides in urban food production. Sustainable Urban Agriculture in Cuba is the first book to take a comprehensive look at this practice around the entire island.

Koont indicates that the significance of urban agriculture in Cuba is that although Cuba is not completely food self-sufficient, it is the only example the world has of a country that produces most of its food locally, employing agroecological techniques for production. Furthermore, most of the food produced is for local consumption. As a result, Cuba has one of the shortest producer-to-consumer chains in the world. In this book, Koont documents the impressive transformations that have taken place within this nation.

While Cuba imports the majority of its calories and protein, urban agriculture has increased food security and sovereignty in the area of vegetable production. In 2005, Cuba was “importing 60 percent to 70 percent of what it consumes [mostly so-called bulk foods] at an estimated cost of $1.5 billion to $2 billion annually.” However, urban agriculture within and around Havana accounts for 60–90 percent of the produce consumed in the city and utilizes about 87,000 acres of land. Cubans employ various forms of urban agriculture, including gardens, reforestation projects, and small-scale livestock operations. In 2010, 75 percent of the Cuban population lived in cities—a city is defined as such if the population is in excess of 1,000 persons. Thus, urban food production is the most practical and efficient means to supply the population with food.

These transformations did not suddenly materialize. Koont provides a useful overview of the historical circumstances that contributed to changes in food production in Cuba. After the 1959 revolution and the subsequent imposition of the U.S. embargo, Cuba became reliant on the Soviet Union. Cubans used large-scale, industrial, monoculture to produce sugar, which was exchanged for Soviet petroleum and currency. The economy was largely tied to high-yield sugar production. In a vicious cycle, this type of agriculture required importing agrochemical fertilizers, pesticides, herbicides, and oil to run heavy machinery. In

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1989, three times more arable land in Cuba was utilized to produce sugar for export than food for national consumption. Most of the Cuban diet came from imported food.\textsuperscript{49}

When the Soviet Union collapsed in the early 1990s, Cubans and their economy suffered greatly. Cubans no longer had access to the inputs required to maintain large-scale agriculture, given how dependent such agriculture is on oil. To make matters worse, the end of trade between the Soviet Bloc and Cuba resulted in a loss of access to food, which reduced Cubans’ protein intake by 30 percent.\textsuperscript{50} The system of agriculture that was in place was not sustainable or organized for self-sufficiency. Cubans refer to the ensuing period of resource scarcity as the Special

\textsuperscript{49} Also see Sinan Koont, “The Urban Agriculture of Havana.”
Period in Peace Time. This period included shortages of food, fuel, and medicine. Faced with food scarcity and malnutrition, Cubans had to revamp their food production systems, which included collectively producing a variety of crops in the most efficient manner possible. Additionally, the necessary mission of Cuban politicians, ecologists, farmers, scientists, biologists, and farm workers was to mend the ecological cycles of interdependence that large-scale, exploitative agriculture destroyed.\footnote{Also see Rebecca Clausen, “Healing the Rift.”}

In spite of these hardships, Cuban society was equipped to contend with the ensuing crisis, given the country’s specific commitments and agroecological projects that were already in operation. The Cuban government and leadership worked to provide institutional support to re-direct food production and to enable the development of an extensive urban agricultural project. Governmental policies, following the 1959 revolution, that prioritized extending education, science, and technology served as a springboard for these new agricultural projects. First, the revolutionary government established organizations to address social problems and concerns. These organizations served as supply and distribution networks for food and centers for research that examined farmers’ traditional knowledge, continuing education programs that taught agroecological practices, distribution of technological innovations, and evaluation of existing programs and operations. Second, the government prioritized human resources and capabilities. Thus, the Cuban government invested in human capital by making education more widely available and accessible at all levels. Making use of the organizational infrastructure and investing in the Cuban people made the agroecological transition possible during the economic crisis in the early 1990s.

Koont examines how the early agroecological projects, prior to the Special Period, served as a basis for future development and expansion of the revolutionary transformation of agriculture in Cuba. Science is publicly owned and directed toward furthering human development, rather than capital accumulation. Cuba had the human resources to address food scarcity, given that they had 11 percent of the scientists in Latin America. Scientists were already experimenting with agroecology, in order to take advantage of ecological synergisms, utilizing biodiversity and biological pest control. These efforts were focused on diminishing the need for inputs such as artificial fertilizers and pesticides. Other projects included integrating animals into rotational grazing systems with crops and diversifying with polycultures. Cubans also began recycling sugarcane waste as cattle feed; the cows, in turn, excrete waste that is applied to soil as fertilizer, thereby restoring ecological interdependence. By combining manure with worm castings, Cubans were able to fertilize most of their crops organically without having to import fertilizer from long distances. Their experimentation also included
creating urban *organopónicos*, which were constructed four years before the Soviet
collapse. *Organopónicos* are raised beds of organic materials confined in rectangular
walls where plants are grown in areas with poor soil quality. Additionally,
personal household plots had long existed within urban areas.\(^5^2\) Altogether these
experiments and projects served as the foundation to pursue greater self-
sufficiency, a system of urban agriculture, and a more sustainable form of food
production.

The pursuit of food sovereignty has yielded many benefits. Urban agriculture has
increased food production, employment, environmental recovery and protection,
and community building. Perhaps the most impressive strides are in the area of
food security. In the early 1990s, during the Special Period, Cubans’ caloric intake
decreased to approximately 1,863 calories a day. In the midst of food scarcity, Cuba
ramped up food production. Between 1994 and 2006, Cubans increased urban
output by a thousand fold, with an annual growth rate of 78 percent a year. In 2001,
Cubans cultivated 18,591 hectares of urban land; in 2006, 52,389 hectares were
cultivated. As a result of these efforts, the caloric intake for the population averaged
3,356 calories a day in 2005. During the economic crisis, unemployment sharply
increased. However, the creation of extensive urban agricultural programs, which
included centers of information and education, provided new jobs that subsumed 7
percent of the workforce and provided good wages.

Urban agriculture and reforestation projects also constituted important gains for
the environment. Shifting food production away from reliance on fossil fuels and
petrochemicals is better for human health and reduces the carbon dioxide
emissions associated with food production. Urban reforestation projects provide
sinks for air pollution and help beautify cities. Finally, local production of food
decreases food miles. It also requires both local producers and consumers.
Therefore, community members get to know each other and are responsible for
each other through the production and consumption of food.

*Sustainable Urban Agriculture in Cuba* is a detailed documentation of the
agroecological transformation in Cuba. Koont delivers a significant amount of
information regarding the mechanics of urban agriculture. He highlights the
enabling factors of urban agriculture in Cuba, which are the government’s creation
of the organizational infrastructure and their investment in human capital. He also
provides an assessment of the results from urban agriculture. The results he
discusses are gains made in food production, increased employment,
environmental recovery and protection, and community building.

However, the majority of the book reads like a dry technical manual or guide to
urban agriculture, something akin to official Cuban government documents. There

\(^5^2\) Ibid.
are many bulleted lists throughout each chapter that outline types of crops grown, strategies, key features of urban agriculture in Cuba, collaborating organizations, evaluation criteria, tons of produce in each province, program objectives, and the lists go on. While the book contains a significant amount of information regarding process, extent, technology, education, and evaluation surrounding urban agriculture in Cuba, it does little in the way of setting up a theoretical framework and thoroughly exploring the significance of Cuba’s model of urban agriculture for the world. The introduction and the final chapter of the book are the two chapters that touch on Cuba’s relevance and implications. In addition, Koont offers minimal critical analysis of the challenges that Cubans still face in their quest for food sovereignty.

Despite these shortcomings, Koont provides a much-needed detailed account of the strides made in Cuban urban agriculture. Cuba’s example has clear implications for food sovereignty and security for the rest of the world. With the very real threat of climate change, potential energy crises, market fluctuations, worldwide droughts, or other economic and environmental problems that may force nations to relocalize food production, this example can serve as a template for future food sovereignty. We can continue to learn from Cuba as they generate new technologies and
innovations in organic urban agriculture into the future. In addition, the Cuban example serves as a testament to the potential for a society’s resilience and is worth investigating not just for their innovations, but for inspiration.

Christina Ergas is a graduate student in sociology at the University of Oregon.

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People’s Resource Centre aims to build new infrastructures of solidarity with the valuable fragments of learning derived from collective actions everywhere and the possible alternatives imagined by all people. The initiative seeks to explore the possibilities of bringing the resources back into the people’s powerful control, and to understand whether and how that can eradicate the most persistent problems such as hunger, homelessness, ambient pollution, and social injustices based on caste, gender, and religion. PRC engages with movement groups and communities in the places with the ongoing or potential struggle over resources, and regularly undertakes policy monitoring, research and documentation, and grassroots networking to generate resources for collective resistance and creative action.