

URBAN AGRICULTURE IN CUBA AND EXPLORING POSSIBILITIES WITH REFERENCE TO URBAN INDIA

RAMAMURTHY K. V.¹ & S. A. KAZI²

¹Faculty, Department of Social Work, Karnataka State Women's University, Bijapur, Karnataka, India

²Chairman, Department of Social Work, Karnataka State Women's University, Bijapur Karnataka, India

ABSTRACT

With seven billion mouths to feed, human agriculture exerts a tremendous toll on the planet, from water draws to pollution, and from energy use to habitat loss. But there is also a growing set of solutions, from organic agriculture to integrated pest management.

An urban farm or community garden can improve the environment, reduce greenhouse emissions, and improve access to healthy, locally grown food. Other possible benefits include promoting health and physical activity, increasing community connections, and attracting economic activity.

Urbanization is one of the key drivers of change in the world today as the world's urban population will almost double from the current 3.5 billion to more than 6 billion by 2050. It is a challenge not only for urban areas but also for rural areas. Supporting the most vulnerable group in an urbanizing world, demands discussions on food, agriculture and cities in the context of rural-urban linkage.

Now a day we see that globally concept of urban agriculture is quite popular. For example, the entire cultivated area of the Province of the City of Havana belongs to urban agriculture. 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.

Urban agriculture is the practice of cultivating, processing, and distributing food in or around a village, town, or city. It can also involve animal husbandry, aquaculture, agro forestry, and horticulture. These activities also occur in peri-urban areas as well. In India we have practiced implementing urban farming projects cities of Delhi, Hyderabad and Mumbai. My paper aims is to explore possibilities of urban agriculture with reference to Havana experiment.

KEYWORDS: Urban Agriculture, Urban Farming, Urban Poor, Resilience, Livelihood

INTRODUCTION

With seven billion mouths to feed, human agriculture exerts a tremendous toll on the planet, from water draws to pollution, and from energy use to habitat loss. But there is also a growing set of solutions, from organic agriculture to integrated pest management.

More people around the world are taking a look at urban farming, which offers to make our food as "local" as possible. By growing what we need near where we live, we decrease the "food miles" associated with long-distance transportation. We also get the freshest produce money can buy, and we are encouraged to eat in season.

Another benefit of urban farming is that it can add greenery to cities, reducing harmful runoff, increasing shading, and countering the unpleasant heat island effect. Garden plots can help people reconnect with the Earth, and gain a greater appreciation for where our food comes from (hint: not from plastic packages). (Brian Clark Howard)

Rooftop and patio gardens create peaceful places for relaxation or contemplation, and they can attract tourists—consider the booming businesses that have sprung up around New York City's lush High Line Park. And urban farming can bring jobs to underserved and depressed urban areas. (Brian Clark Howard)

Although planners have a long way to go, boosters envision soaring vertical farms that will eventually produce most of what we need within a short walk from home. Still, land in cities is often expensive, especially since gardens tend to contribute to gentrification and rising rents. Urban soils can be loaded with lead, arsenic, and other toxins, requiring remediation or replacement before planting can be done safely. (Brian Clark Howard)

Cramped conditions can limit yields, and getting enough water and sunlight can be concerns. Still, if the right combinations of new technology, community support, and economic incentives align, it's possible we may soon be munching on skyscraper scallions and avenue arugula.

An early example is the rooftop garden on the InterContinental New York Barclay Hotel, which includes an apiary. The Midtown bees produce honey used in the hotel's kitchen, and they fly to pollinate plants as far as five miles away. (Brian Clark Howard)

Havana

The city of Havana covers an area of 721 km², 0.67% of the total area of Cuba. Unlike many other cities in developing countries, Havana has not been plagued by a massive influx of migrants. The population growth is 1.8% per year. The city has about 2.2 million inhabitants, or 20% of the total population of Cuba, of whom 1.5 million are in their economically active age. The population density is 3,014 persons/km². The highest density is found in the districts of Centro Habana (45,093 inhabitants/km²), Habana Vieja (21,774 inhabitants/km²) and Diez de Octubre (19,480 inhabitants/km²). Administratively, the city of Havana is one of the 14 provinces of Cuba. It is divided into 15 municipalities, which are subdivided into 104 people's councils (*consejos populares*), the government structure at neighbour hood level.

Havana has a tropical coastal climate with a mean annual temperature of 25°C, a relative humidity of 79% and average annual rainfall of 1,400 mm. Characteristics of urban agriculture in Cuba The main idea of urban agriculture in Havana can be described as "Production in the community, by the community, for the community", which refers to the cycle of producers, products, marketing and consumers. Urban agriculture is very much seen as a way to bring producers and consumers closer together in order to achieve a steady supply of fresh, healthy and varied products directly from the production site to the consumer.

In general, urban agriculture is an intensive, high-input (organic pesticides and organic manure), high-output system favouring the production of a diversity of crops and animals throughout the year. Urban farming is a common practice and extremely heterogeneous. It involves efficient use of water; careful management of soil fertility, crops and animals; and close attention to environmental protection. It is strongly supported by the government, and governmental institutions play an important role in the organisation of urban farming. The Havana City Government passed a law prohibiting the use of chemical pesticides in agriculture within the city limits. Thus, the crops are grown almost entirely using active organic methods.

In Havana, urban agriculture is a quickly developing sector in which a lot of new ideas and adaptations from producers as well as scientific institutions are tested. The organisation of urban agriculture Until recently, most of the agriculture in Cuba was carried out on state farms, with each farm having certain production targets. However, in September 1993, the Cuban Government issued Law No. 142, breaking up the majority of large state farms into Basic Units of Production (Unidades Básicas de Producción Cooperativa (UBPCs), small collectives owned and managed by the workers. Law No. 142 aims to connect the workers to the land, encouraging a concrete feeling of responsibility, to make the collective of workers and their families self-sufficient, to connect income directly to the degree of productivity and to increase autonomy of governance.

Also, the previously banned farmers' markets have been allowed to operate again. In October 1994, 121 farmers' markets opened around the island. Most producers have state contracts meaning that their produce is used in the state distribution system. After complying with these contracts, however, all food producers are allowed to sell their excess produce directly to consumers rather than through the state redistribution chain.

Decentralisation has not meant that the government has stopped playing an active role in urban agriculture. On the contrary; for the relatively quick turn-around of the production system, from chemical-based to organic-based, and for the success of the urban agriculture programme, the strong government (national and provincial) support has been decisive, in addition to the strong educational base of the population. In this way, the booming urban-gardening movement was supported through the world's first co-ordinated urban agriculture programme, integrating: 1) access to land; 2) extension services; 3) research and technology development; 4) new supply stores for small farmers; and 5) new marketing schemes and organisation of selling points for urban producers.

Access to Land

The high demand for agricultural land needed regulation to settle land-use rights for gardeners. The first priority for the development of urban agriculture was to make land available for growing food. Therefore, land-use rights for urban gardeners had to be secured. Emphasis was put on giving land to all those who wanted to grow food in the city. The reorganisation was led by the newly created Urban Agriculture Department. The department worked with the Poder Popular (Legislative Council) to change city laws so that gardeners would have legal priority for all unused space. Citizens who wanted to set up a garden could solicit the local government, usually requesting a specific plot. Land-use rights are thus being distributed through the popular councils or the municipality.

This decentralised strategy has allowed for land transfer to happen in a timely manner, with little red tape. Even unused private land was turned over in usufruct to those who wished to cultivate it. However, if the gardener would not produce for six months, all rights would be returned to the legal owner.

Production Systems

By 1998, over 8000 officially recognised agricultural production units were operational, in which over 30, 000 people were working. Women play an important role in urban agricultural production; however, the majority of the official work force in urban agricultural production are men (ca. 80%). With approximately 30% of Havana's available land coming under cultivation, the city farms and gardens can be subdivided into five main categories.

Popular Gardens

Popular gardens (grupos de parceleros) managed by the cultivators are the most popular form of urban agriculture in Havana. These gardens more or less spontaneously emerged in yards and on balconies, patios and rooftops in response

to the problems of the “special period”. In the first years of the crisis, almost all of the food harvested in Havana’s popular gardens went directly to the families¹, close friends and neighbours of the producers. With the relaxation of laws governing the sale of urban produce, production increased and allowed gardeners to also make economic gains.

On the other hand, gardeners also make considerable food donations to the neighbourhood, especially to schools and daycare centres. This is considered to be only reasonable, since the communities provide the land to the gardeners free of charge. Today, over 26, 000 popular gardens cover 2, 438.7 ha in Havana and produce 25, 000 tons of food each year. The majority of gardeners already have an official job and farm in their spare time. A large number of the gardeners are retired men and women. The role of women in gardening is remarkable since, in Cuba, agricultural work is traditionally considered to be a man's job.

Many gardeners are organised into Grupos de Horticultores – voluntary organisations of gardeners working in the same neighbourhood. Today, there are 908 gardeners’ groups with a total of 17, 900 affiliates.

Basic Co-Operative Production Units

Basic production co-operative units (Unidades Básicas de Producción Cooperativa, UBPCs) are the result of the splitting up of state farms. They can be found throughout the country, usually with about 5-10 members, depending on the available resources. The UBPCs produce different kinds of products: some produce vegetables, e.g. in the organopónicos; some produce fruit in orchards; and 16 UBPCs in Havana are part of the Ranching Association and produce milk.

Farms of the State Co-Operative Supply Units

The production of these farms (CSUs) is intended to supply the cafeterias of factories². Most of these farms are on site, as the Worker Centres used to have idle land which, after the crisis, was made productive. Most of the CSUs produce a surplus, which is sold to the workers at the low “State prices”. They might also directly sell to the public, often from an on-site stand. The organisation of a CSU depends on the management of the workplace. It might be that a fixed group of employees tills the land while, in other CSUs, a system is in place whereby the agricultural work is divided among all employees. Often, the profits of the farming are redistributed among the farmers in one way or another.

State Farms

There are three state-run agricultural enterprises (Empresas Estatales) in Havana: Empresa de Cultivos Varios (Mixed-Crop Company), Empresa Hortícola Metropolitana (Metropolitan Vegetable Company) and Empresa Pecuaria (Animal Production Company). The Mixed-Crop Company is found on the fringe between the more urbanised and the more rural zones. The enterprise is organised into 21 municipal farms. Each farm supplies the enterprise at “reasonable prices”. This produce is then distributed through the state distribution system. Most of the land of the farms is dedicated to fruit production, amongst other things, for the tourist market. A group of 20 organopónicos form the Metropolitan Vegetable Company, which covers a total of 19 ha of irrigated land, permitting the organopónicos to gain high yields (up to 30 kg/m²). As the groups form a state farm, the financial responsibility is with the government, which supplies the money and uses the produce in the food distribution system.

Organopónicos and Intensive Gardens

A special feature of Havana’s agriculture is the so-called organopónicos. These are raised container beds with a high ratio of compost (50%) to hydroponic fibres or soil (50%). The organopónicos are used mainly for intensive vegetable production. This system works very well in urban settings; for example, on paved vacant lots or plots with poor soils. As already mentioned, 20 organopónicos together form a state enterprise. Other organopónico units are, however,

organised as a UBPC. The biggest organopónico is managed by the Federation of Cuban Women and employs 140 women. Where the soil is appropriate, the system of organopónicos is increasingly replaced by huertos intensivos or intensive gardens. The gardens use intensive gardening methods on raised beds without a retaining wall, promoting plant spacing for maximum yield per area and the incorporation of organic matter. Today, 773 production units of organopónicos and huertos intensivos cover 386 ha with an average production of 21 kg/m². Many of the organopónicos and huertos intensivos have their own stalls next to their fields and cater for a particular market with prices somewhere between State prices and those of the free market (Mercado agropecuario). However, even the successful system of organopónicos and huertos intensivos faces certain challenges, as obvious in the 11-point programme to improve the organopónicos/huertos intensivos system as announced by Mr Alfredo Jordan, the Minister of Agriculture:

- To strengthen the production in huertos intensivos;
- To dedicate 10 m² per inhabitant of Havana to organopónico/huerto intensivo by the year 2002;
- To appoint one person in each municipality to be in charge of all organoponics, including construction and maintenance;
- To promote planting more fruit and flowers in the schemes;
- To continue to hand over land in usufruct to UBPCs and individual farms and to increase the organisation of the plots and growers;
- To increase crop diversity and, more specifically, reach the full potential of leafy vegetable and condiment production, and increase the production of tomatoes, green beans, onions, garlic and chives;
- To build direct relationships between organopónicos and all municipal organisations;
- To address irrigation problems;
- To improve soil fertility through the use of compost and bio-fertilisers;
- To expand biological plant protection; and
- To expand the agricultural stores³ into houses for intensive outreach (Casa de Atención Intensivo).

Production of Urban Agriculture

The total area of Havana is 721 km², of which 299 km² is used for agricultural production, in which a very high diversity of crops is produced.

Table 1: Agricultural Production in the City of Havana

Year	1995	1996	1997	1998
Production (tons)	44, 243	80, 462	96, 653	113, 525

Table 2: Urban Agricultural Production in Cuba per Production System (1997)

Sector	Production (tons)
Huertos Populares	28, 385
Autoconsumos	23, 389
Organopónicos	47, 651
Campesinos Particulares	44, 480
<i>Empresa de Cultivos Varios</i>	16, 095
Total	160, 000

Source: Grupo Provincial Agropecuario 1998

The popular gardens not only overcame the monotony of available foods, but even brought back traditional crops (passion fruit, sesame, custard apple) and introduced new crops such as spinach. Among the various production types, some differentiation can be observed. Home gardens and workplace gardens mainly produce for self-consumption, so the gardeners plant what they want to eat, such as fresh vegetables, roots and tubers (cassava, sweet potato and taro), condiments and some fruit. Many also raise small animals for meat, milk, eggs, etc.

Autoconsumos raise similar crops, as they produce to cater the lunch of the workers in the workplace. When space is available, the autoconsumos often raise animals, sometimes even dairy cattle. In 1997, the autoconsumos produced 8, 355, 000 eggs, 1, 392, 000 litres of milk and 240 tons of meat (Fuster 1997b). Organopónicos have another role and focus on providing the complementary foods that residents cannot obtain from the ration, and which are best bought fresh daily. These products include lettuce, green onions, New Zealand spinach, tomatoes, green beans and some other vegetables and condiments.

Support Services

Urban citizens do not become experienced gardeners overnight. Also the major change from agriculture based on high chemical inputs to low-input sustainable agriculture cannot be made without technical support. The surge of urban agriculture has been made possible by an impressive set-up of support organisations for producers. The role of the Urban Agriculture Department has been very important in facilitating the changes by, among other things, creating an extension network. Urban agriculture comprises 26, 000 people and an integrated system organised by the municipalities, popular councils, research institutions, extension networks and service networks. Many women work as extensionists (45 out of 68), in the urban agriculture department (14 out of 30), in the agricultural store consultancies (32 out of 62), etc.

Extension Network

Each municipality has an extension team of two to seven workers, depending on the size and number of gardens. In most cases, each extensionist works in a specific consejo popular. In total, 68 extensionists are now working on local community level, providing veterinary and phyto-sanitary services, and transferring technologies. They spend most of their time visiting the different producers in their area. They assist the farmers in monitoring crops, identifying pests and obtaining the necessary (biological) control products.

Another important responsibility of the extension agents is to distribute land to the growers. Local residents can request garden plots directly from the extension agent, who in turn is obliged to find a suitable plot and to secure the rights for the gardener. At harvest time, the extensionist issues a selling permit to the producer. In case the extensionist observes that a piece of land is not being made productive, s/he can ultimately, after some warnings, give the land to another producer. The extension workers are also community organisers. Their role has been crucial in the creation and success of the Grupos Horticultores. The agents encourage producers to join the network and help with the integration of new members, the formation of new clubs, etc. Their work facilitates, in short, the grassroots level of the national transformation to a "new agricultural model" (Rosset & Benjamin 1994).

The extension agents also work closely with other institutes involved in urban agriculture - the agricultural stores, seed houses and agricultural research centres. In this way, the work of the different institutes complements each other. Educational workshops offered to both extension workers and city gardeners exemplify the co-ordination among these agencies. So far, over 30, 000 people have gone through training sessions and seminars organised by extension services and research institutes in Havana (Paez 1998).

Agricultural Store Consultancies

Havana has 26 agricultural store consultancies (tiendas agrícolas). Their role is to guarantee the technical and material viability of urban agriculture. The shops are found in urban areas and provide seed, seedlings, tree saplings, bio-fertilisers, biopesticides, soil conditioners and tools such as hoes, machetes, etc. The clients are given technical advice on agriculture and MoA publications can be found in the stores.

At first, the stores were run by employees of the MoA. In the general process of decentralisation, however, the employees became self-employed managers with a high degree of autonomy. The staff of the stores are well-qualified agronomists or other staff with substantial agricultural experience. Originally, the distribution system from state suppliers to the stores was not perfect, forcing the stores to close at times, but the situation has been gradually improved. The prices are set by the stores, and their salaries are determined by the net profits.

Biological Pest-Control Centres

The recent economic crises have deprived Cuba from attaining the foreign currency needed for importing the chemical products the country had formerly relied on so heavily. This accelerated the adoption and production of bio-pesticides. Eleven Centros de Producción de Entomófagos y Entomopatógenos (CREEs) provide services to all producers. The centres produce and supply bio-pesticides to the producers through the above-mentioned agricultural stores. As the city regulations do not permit the use of chemical pesticides, bio-pesticides are fundamental to the development of urban agriculture. Related to the CREEs is the phyto-sanitary service, which employs inspectors who are charged with the authority to fine any violation of the regulations.

Impacts of urban agriculture Havana probably offers the most successful example for which the concept of urban agriculture was used as a response to a food crisis, not only by individual residents but also as a government-supported strategy. The easing of the worst impacts of the crisis is not bringing with it signs of abandoning urban agriculture. In fact, farms and gardens are steadily increasing in size and number. With experience rising, not only the production has increased, but the quality has improved as well.

Food Security

It has only been a few years since Havana was consuming large amounts of food that was barely produced domestically. Thanks to urban agriculture, the city has become one of the largest producers of vegetables in the country, demonstrating the enormous potential of urban agriculture in Havana. Urban agriculture has had a dramatic positive impact on the deteriorating food situation in Havana during the “special period”.

The urban gardens were central to mitigating the food crisis. Urban production is not enough to provide for all food needs in Havana, but it has contributed to the amount of food available. Its increased local self-sufficiency has made food cheaper and more easily accessible, for instance, by reducing the time needed to buy food. Today, some neighbourhoods produce up to 30% of their food supply (Sanchez 1997). Urban farmers, on average, sell their produce 20% cheaper than mainstream market traders and effectively counter excessive price increases. Because the produce is bought on the spot and no storage and transport are needed, post-harvest losses are lower as well.

As mentioned above, neighbourhood gardens regularly donate food to schools and daycare centres. In an attempt to promote better eating habits and improve nutrition, production units are linked with youth groups and schools.

Thus, urban agriculture also improves the quality and variety of food consumed. Havana's residents are now eating more fresh vegetables than before the "special period". In addition, the popular gardens enhance cohesion and solidarity in the neighbourhoods.

Employment

The development of urban agriculture has created new employment opportunities – an important aspect, since the crisis reduced jobs significantly. Overall, the Government estimates that 117, 000 people work in urban agriculture and 26, 426 workers are employed in jobs related to urban agriculture. In 1998, urban agriculture accounted for 6-7% of the new jobs. The household income of many people working in urban agriculture is actually higher than the national average salary.

Environment

Originally, urban agriculture was not specifically aimed at improving the environment. Havana is not without its environmental problems, but the city does not face such grave environmental problems as do other large cities. Over time, however, the ecological aspects of urban agriculture have been appreciated by the Cuban Government.

The integrated approach has helped to avoid many of the problems associated with urban farming in other cities. For example, the use of toxic agricultural chemicals is banned. This ban was facilitated because the research institutes, internationally renowned for their achievements, were able to produce biological control methods, both for control by insects, fungi and bacteria as well as organic control by plants with insecticidal properties, such as neem (??) and tobacco. Instead of hindering urban planning, urban agriculture has become an important component in urban development. The Department of Urban Planning together with the Department of Urban Agriculture developed zoning plans for allocating land suitable for farming. Potential health hazards associated with raising animals are thus avoided. For example, the rearing of pigs is located in the urban periphery with strict sanitary management and veterinary control, and certain agricultural activities are banned close to water sources. Another example of co-ordination is the involvement of the Ministry of Public Health in mitigating health risks related to animal keeping.

Daily, the city produces 1, 400 tons of solid waste from residential areas. Part of the waste is recycled in the newly created centres for producing compost. In total, about 25 units are in place in Havana for the recycling of urban organic waste. An extra contribution to the environment by urban agriculture is the reforestation programme (Mi Programa Verde). The net environmental impact of urban agriculture thus has been positive, contributing to increasing the greening of urban wasteland, improving water retention, improving the air quality and beautifying the urban landscape.

Exploring Possibilities with Reference to Urban India

According to Census of 2011, India's population rose to 1.21 billion people over the last 10 years — an increase by 181 million. Urbanization is taking place at a faster rate in India. Population residing in urban areas in India, according to 1901 census, was 11.4%. This count increased to 28.53% according to 2001 census, and crossing 30% as per 2011 census, standing at 31.16%. According to a survey by UN State of the World Population report in 2007, by 2030, 40.76% of country's population is expected to reside in urban areas.

Resources are always limited. And in a developing and highly populous country like India, resources are even scarcer. Population explosion results in the shortage of even the most basic resources like food. According to an article by World Bank Group, "...more than half of all children under the age of four are malnourished, 30 percent of newborns are significantly underweight, and 60 percent of women are anemic." Resources are limited everywhere.

Thus, unless we can develop a technology that would enable us to live on just one grain of wheat, the population increase remains a serious problem in India. India spends approximately \$10 billion each year on malnutrition (World Bank Group), and even then the government of India cannot provide the everyday nutritional requirements to everybody in India. If you walk on the street of Calcutta or Delhi, you would notice several children fighting with each other for a small piece of bread that they found in a dumpster. While this might be shocking to most people, this is a daily routine and the only way to survive for many people in India. Survival of the fittest finds its true meaning on the streets of the urban cities of India.

The recent world food price crisis has rendered the importance of understanding and confronting the causes of food insecurity of the urban poor even more apparent. Poor urban dwellers, being largely net food buyers and depending mostly on markets for their food supplies, are particularly vulnerable to adverse food price shocks, and are consistently the group in society that suffers most from higher food prices. Urban Agriculture is one of the solutions that are perceived globally to meet the demand of food of urban population. There are a number of ways through which urban agriculture can, in principle, have an impact on urban food security. At the household level, urban agriculture can be a source of income, can provide direct access to a larger number of nutritionally rich foods (vegetables, fruit, meat) and a more varied diet, can increase the stability of household food consumption against seasonality or other temporary shortages, and can increase the time mothers spend caring for their children, as opposed to non-agricultural activities that are more likely to be located further away from home.

Urban agriculture can be defined shortly as the growing of plants and the raising of animals within and around cities. The most striking feature of urban agriculture, which distinguishes it from rural agriculture, is that it is integrated into the urban economic and ecological system: urban agriculture is embedded in -and interacting with- the urban ecosystem. Such linkages include the use of urban residents as laborers, use of typical urban resources (like organic waste as compost and urban wastewater for irrigation), direct links with urban consumers, direct impacts on urban ecology (positive and negative), being part of the urban food system, competing for land with other urban functions, being influenced by urban policies and plans, etc. Urban agriculture is not a relic of the past that will fade away (urban agriculture increases when the city grows) nor brought to the city by rural immigrants that will lose their rural habits over time. It is an integral part of the urban system. Urban Agriculture plays an important role for making a city more resilient and safe in term of not only food and economy but also improving standard of living of urban poor by increasing mean of livelihood.

Challenges Faced

Case of Hyderabad: On Paper, on reports, and on official projections, Official records all seems to be attractive and successful, but the realistic scene is completely opposite. The four areas mentioned in the news report, UPPAL, Dilsukhnagar, L.B. Nagar and Vanasthalipuram are so crowded, houses in these areas have no space for gardening or for drying the clothes, houses are built on 200 to 500 square yards have double or triple storied buildings, as these areas fetch good rents, most of the owners have rented out, tenants are not allowed to grow any trees or vegetables, very few houses on the outskirts of the city, say near Hayathnagar, Ghatkesar and others may have purchased few kits, but the result may not

have been satisfactory.

Case of Delhi: The Yamuna farmers present a paradoxical situation. On the one hand, they are a very significant subject for urban agriculture globally in terms of the sheer scale of their production. But at the same time, there is the imminent threat of development and it is unlikely that the farmers will exist in this capacity for much longer.

CONCLUSIONS

Urban agriculture, at first glance, may appear to be a fairly simple topic: Scatter a few plots about the City and let residents start gardening. In reality, however, urban agriculture impacts a community in a variety of ways, from providing food security, environmental benefits, and even modifying a city's urban form. Similarly, in spite of its seeming simplicity, urban agriculture does not just happen. To foster the development and growth of urban agriculture, a city may have to consider implementing techniques that include zoning ordinances, comprehensive plans and, in some cases, state legislation.

The take-away lesson for us is that people's livelihoods have to be at the center of any discussion about sustainability and making changes. At a most basic level the need to provide for oneself and one's family is a major driver of behavior. We need to be able to recognize this tension between short-term livelihood decisions and long-term sustainability goals and forge a path that works with people's need to provide for their families, but does so in an environmentally and socially conscious way.

REFERENCES

1. Fuster, Eugenio. 1997a. Provincial agriculture delegate for Havana City. Personal communication (December 1997).
2. Fuster, Eugenio. 1997b. Comments to Raul Castro at 10th anniversary of Organopónicos Havana.
3. Grupo Provincial Agropecuario. 1998. Tematicas y perfiles. Ciudad de la Habana: Secretaria de Colaboracion.
4. Iturriaga, Rafael. 1997. Director, Urban Agriculture Department of Havana. Personal communication (December 1997).
5. Moskow, Angela. 1995. The contributions of urban agriculture to individual control and community enhancement. MSc thesis, University of California, Davis.
6. Paez, Egidio. 1996. La agricultura urbana y el movimiento popular. Havana: MoA.
7. Rosset, Peter & Medea, Benjamin. 1994. The greening of the revolution: Cuba's experiment with organic agriculture. Melbourne: Ocean press.
8. Sanchez, Roberto. 1995. Nace una idea. Agricultura Orgánica 1 (3).
9. "Resource Centres on Urban Agriculture and Food Security, " [Online]. S. Vadlapatla, "Urban agriculture booms in Hyderabad," 4 may 2013. [Online]. J. Redwood-Martinez, "Urban Agriculture in Delhi: Thousands of Invisible Farmers, " 8 may 2013. [Online].
10. "Census of india," 2010-11 - The Registrar General & Census Commissioner, India, New Delhi-110011, 2010. [Online].

11. L. T. Alberto Zezza, "Urban agriculture, poverty, and food security: Empirical evidence, " Food Policy, pp. 265-273, 20 april 2010.
12. L. R. / U. A. / 21, "URBAN AGRICULTURE," [Online].
13. L. J. A. MOUGEOT, "THE HIDDEN SIGNIFICANCE OF URBAN AGRICULTURE," ACHIEVING URBAN FOOD AND NUTRITION SECURITY IN THE DEVELOPING WORLD, P. 6, 2000.
14. G. M. a. C. T. David Satterthwaite, "Urbanization and its implications for food and farming," Philosophical Transactions of the Royal Society B, 16 AUG 2010



Best Journals

Knowledge to Wisdom

Submit your manuscript at editor.bestjournals@gmail.com

Online Submission at http://www.bestjournals.in/submit_paper.php