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Chapter 3
Who Are the Urban Farmers?

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Who Are the Urban Farmers?

In Nairobi, a young mother finds a place on the roadside near her home where garbage has been dumped and burned over the years. Recognizing the better quality of the soil, she establishes a mixed-crop bean and maize garden. From her harvests she feeds her family, sets aside dried beans for the dry season, and sells roasted ears of maize for cash at the roadside garden site.

In metropolitan Jakarta, a transnational agribusiness firm establishes a vast, shed-grown mushroom farm and an adjacent cannery for world markets. The spent mushroom soil is sold to small-scale vegetable farmers, who use it to improve the soil in their gardens.

Both the young mother and the transnational firm are urban farmers, but each has special support requirements and makes different contributions to the economic, social, and environmental makeup of a city.

There is no such person as the 'average urban farmer'. He or she may emerge from any point along the population spectrum of a city. Urban farmers include the wealthy and the poor, recent immigrants, and landed gentry. During the 1980s and 1990s, the number of urban farmers grew rapidly, in many places faster than the rate of urbanization.

In most developing countries, it appears that urban farmers from low-income groups — often women — dominate. Frequently, they farm on a small scale on land they do not own, less than full time. However, in some countries (including Argentina and the United States), middle-income farmers practicing primarily backyard cultivation are particularly numerous. The motives of middle- and upper-income home farmers are often nutritional (cleaner and healthier home-grown food for the family) and cultural rather than economic. In all groups, the presence of cultivators often acts as a catalyst for others to do the same.

In most countries, urban agriculture is dominated by small producers achieving food security and earning income for their families. However, the smaller number of large producers — domestic private and public corporations and multinational agribusinesses — generate a significant share of the total value of urban agriculture, particularly in capital-intensive farming systems such as aquaculture and poultry. Larger enterprises and more wealthy entrepreneurs are more likely to have access to such requirements as land, water, credit, technology, extension support, training, seed and feed, markets, and market information.

The difference between the farming practices of low-income and high-income farmers is usually not just one of size, but also of farming systems and products. While monocropping is common among wealthier farmers, lower-income farmers tend to

choose multicrop farming systems that require low capital and minimize risk (for example, combining vegetable and rabbit production). The higher the farmer's income, the more specialized and high-value may be the crop or the market to which the farmer caters (for example, mushrooms, shrimp, or flowers for export). Table 3.1 shows the kind of urban agriculture practiced in selected cities around the world.

This chapter discusses the role of the various participants in urban agriculture, including low-, middle-, and high-income farmers; agribusinesses; farmer cooperatives; and more narrowly defined groups of farmers such as women, migrants, and refugees.

An important cautionary note is in order about why urban farmers farm — the various purposes of urban agriculture are not always evident. In particular, orientation toward consumption versus the market changes over time and is not usually clear-cut. Survey instruments do not easily identify — and are not always precise enough to measure — when urban production is for the informal market or barter economy and when it is for family consumption. The majority of the total economy in many cities is informal or non-monetary, and urban agriculture is commonly among the larger if not the largest element in the informal economy. Nuances should always be sought among seemingly different goals for urban agriculture such as improved food access, nutritional enhancement, and enterprise development. Data on these matters need to be handled with care.

Low-Income Farmers

The majority of urban farmers in most of the countries examined for this study belong to low-income groups and practice farming on a part-time basis. Often one working adult in the family (usually a woman) is the principal farmer and others support the production, processing, or marketing functions. For many urban families, however, agriculture is not just a side activity — it is the core source of income throughout the year, and day labor in other industries provides supplementary cash income on an intermittent basis.

Access to land for farming in the city is not equal for all citizens. The wealthy can afford to pay rent or purchase land. The poor live in higher-density areas with less open space. They lack the financial capacity or credit worthiness to purchase or lease land, and as well as the political influence that enhances the security of their access to land, water, and inputs. Using a usufruct arrangement, a number of jurisdictions and authorities make idle land available to the poor for food production under more or less strict conditions.

Low-income urban residents engage in agriculture primarily to increase their food security and income levels (Case 3.1). By growing their own food, they also improve their nutritional intake, since the food they grow is more nutritious than the food they can afford to buy. Less recognized, but also important, is the benefit of fungible income that farming provides by freeing up cash for essential expenditures other than food. In many Third World cities, food purchases can represent over 60 percent of total family expenditures (see Table 7.3). For the very poor mother, cash and food may be almost equivalent because most of the former is spent on the latter.

Table 3.1 Presence of urban farmers in selected cities

Country	Urban farmers in selected cities
Africa	
Burkina Faso	In *Ouagadougou,* 36 percent of families are engaged in horticultural cultivation, plus livestock production.
Cameroon	In *Yaounde*, 35 percent of urban residents farm.
Congo	In *Libreville*, 80 percent of families are engaged in horticulture.
Kenya	Sixty-seven percent of urban families farm on urban and peri-urban sites (80 percent of which are low-income); 29 percent of these families farm in the urban areas where they live.
	In *Nairobi,* 20 percent of urban dwellers grow food in the urban area.
Mozambique	In *Maputo,* 37 percent of urban households surveyed produced food and 29 percent raised livestock.
Tanzania	In six *Tanzanian* cities, 68 percent of families are engaged in farming and 39 percent raise animals.
Uganda	Approximately 33 percent of all households within a 5-km radius of the center of *Kampala* were engaged in some form of agricultural activity in 1989.
Asia	
Fiji	In *Suva*, 40 percent of families are engaged in horticulture.
Nepal	In *Kathmandu*, 37 percent of households raise horticultural crops and 11 percent raise animals.
Papua New Guinea	In the *Port Moresby* metropolitan area, about 80 percent of all households take part in some food production.
Europe/Former Soviet Union	
Russia	In *Moscow*, 60 percent of families were engaged in agriculture in 1998 (In 1970, only 20 percent of families did so.)
Latin America	
North America	
USA	Twenty-five percent of urban families work in food gardens and/or horticulture.

Source: Data compiled by The Urban Agriculture Network from various sources.

Case 3.1 Small-scale horticulturists in a squatter settlement in Lusaka

Residents of a squatter settlement near the sewage lagoons in Lusaka, Zambia farm the area to produce food for consumption. The production is small-scale, informal, and undertaken on public land using low-quality inputs collected from the market or neighboring areas. Although it is legal to use public land for cultivation in Zambia, using sewage for irrigation is not sanctioned. In this case, the effluent from lagoons has been biologically treated in a passive lagoon.

The farmers produce vegetables such as squash and beans for family consumption. One farmer has expanded his farming activity to produce cash crops such as sugar cane for toddy and bananas, from which he earns a good income. He has shaped fields by hand and rotates crops. The farmer composts neighborhood waste for his fields and uses effluent from the sewage lagoon for irrigation.

Contact: Harrington Jere (see Appendix F for complete address).

Consumption-oriented farmers producing for family and neighbors represent a significant population in most low-income cities. A 1986 survey in Kenya found that of the urban families engaged in agriculture, as many as 40 percent were dependent on self-produced food for nutritional survival.[1] The impact of this activity can be significant. In the Philippines, the district of Negros promoted home, school, and community gardens with support from the International Institute of Rural Reconstruction. Low-income community residents produced vegetables, fruits, herbs, and other products for both consumption and sale. Within two years, childhood malnutrition was cut from 40 percent to 25 percent.[2]

Some urban farming systems that require low levels of capital, inputs, and skills are easy-entry/easy-exit economic activities, which makes them very attractive to individuals with few resources. In Haiti, very low-income farmers produce crops on rooftops using green manure made entirely from collected organic waste. The crops are for home consumption and sale within the community.[3] On the garbage dumps east of Calcutta, hundreds of small cooperatives comprised of low-income urban residents pay rent to the city and produce one-fifth of the city's fresh vegetables.[4]

For many of the world's low-income urban farmers, monetary investment is quite small, with many inputs obtained by barter. Still, access to resources (seed, land, water), technology, and support (credit, marketing) is highly constrained for these farmers. In the face of poor-quality inputs and crop loss to insects, disease, and theft, the failure rate is frequently high, and returns to labor, efficiency of production, and per-hectare yields tend to be low.

For many, urban agriculture is a relatively long-term economic activity.[5] The average low-income farmer is a member of a poor but stable urban community.[6] The poor who have lived in the city for a number of years have better access to resources and greater familiarity with the market and the urban economy. Recent migrants to the city from rural areas, including refugees, can rarely assemble the necessary access to land, water, and other inputs. They also face problems in effectively adapting rural technologies and farming systems to the urban environment, thus necessitating much relearning.

Urban agriculture is an effective family security tool for those seeking to build a future in the city. When the poor cannot purchase food in the market because they lack cash or food supplies are disrupted, cultivating food may be an effective (and often indispensable) means of survival.

Urban farming is often initiated or increased during worsening economic times, war, or other catastrophes that disrupt food supply channels. A typical first venture may be to plant cassava roots on a roadside with a prayer for rain, or spinach next to a leak in a sewage pipe. Many beginners scavenge seeds from market wastes and cultivate on an irregular basis. A farmer who is producing for consumption in the household can increase returns sufficiently to make sustained farming profitable and more productive. He or she may begin bartering for other family needs and selling part of the crops. Over time, farming may evolve into a stable source of family income. In many countries, there is a direct connection between low-income entrepreneurs and retail markets such as street food, roadside stands, and municipal markets.

In richer countries, the beginning low-income urban farmer is more likely to get started in a community garden or allotment with municipal and employer support. In these cities, the informal barter economy is less-developed, and there may be fewer opportunities for urban agriculture to significantly support a household.

Cooperation and organization have a vital role in the ability of low-income farmers to expand their activities (Case 3.2). In some places (for example, Senegal), men tend to the crops and women do the processing and marketing. Members of one tribe in Dakar work together to farm the tribal land to produce vegetables, rice, fish, and livestock for the city market. In Lima, a community kitchen run by poor women supplements the rice, beans, and cooking oil it receives as welfare — providing a healthier diet for its members — by growing vegetables in community gardens and raising rabbits and poultry in backyards.

Case 3.2 Backyard gardeners using biointensive methods in Maipú

Farmers in a low-income settlement in Maipú, Chile grow a mix of vegetables, herbs, and fruits and raise microlivestock on small household plots ranging from 10 to 40 square meters. Farming began about 10 years ago through the initiative of SODEM, a Maipú-based community development organization, with training provided by the Centre for Education and Technology (CET), a national technical NGO advancing alternative agriculture. Several international agencies, including CODEL, GTZ, and Lutheran World Relief, formerly provided support.

The farmers collect garbage from neighboring residences and compost it for farming input. For most families, farming is a second economic activity, and they produce primarily for consumption by family and friends. A few sell their produce in the market. Some women farmers grow culinary herbs at home and sell them in the local market.

The original purpose of the project was to improve the food security and nutritional status of the settlement residents, but farmers gradually expanded their activities. They planted street trees to improve the neighborhood environment and for collective marketing of fruit. The farmers are now well established, and they have even created a city park that has farming as well as recreational space.

More recently, CET has established a project called Sustainable Cities as an overall framework for implementing similar programs in other, smaller cities in Chile. This model of cooperation among NGOs to promote urban farming is eminently replicable in other countries and cities.

Contacts: Camila Montecino and Rita Moya, (see Appendix F for complete address).

In addition to the better-organized groups of poor urban farmers, thousands of small, productive farmers in every town and city generate some income from farming. These farmers are not reported in most economic and nutritional statistics because their activities tend not to be noticed. The line between cultivation for consumption and for profit is often blurred among low-income farmers, who move easily from cultivation for their nutritional survival into bartering and selling surpluses and growing crops for the formal market.

Middle- and High-Income Farmers

Around the world, middle- and high-income farmers, like low-income farmers, may either cultivate for their own families and communities or may be entrepreneurial farmers seeking a profit. However, despite their many commonalities with low-income farmers and variations across countries, there are some distinct differences.

Middle- and high-income consumption-oriented farmers tend to have a different set of priorities and farm differently than lower-income farmers. They frequently farm to substitute healthier, home-grown food for store-bought products and for personal satisfaction from cultivating. Growing food for consumption improves the quality and nutritional value of foodstuffs consumed by the family, as well as freeing up income for other consumption needs (fungibility). It provides significant quality-of-life benefits, including improved nutrition, security against dependence on a single-wage income, and a stock of out-of-season canned and preserved foods.

Sometimes, the reasons for farming are economic. For many, urban agriculture offers a low-investment opportunity to be in business for themselves. For others, urban agriculture provides the equivalent of unemployment insurance during recessions. Falling real wages mean that middle-class expectations for living and consumption standards are no longer matched by incomes. In Argentina, for instance, pensioners unable to survive on their pensions farm in their yards to make ends meet.

Starting in the 1970s, so-called structural adjustment programs led to declines in the real income of urban populations, especially in Africa, motivating a significant percentage of the population to grow food for home consumption.[7] A survey in Tanzania found that 70 percent of the resident faculty at one agricultural campus were entrepreneurial urban farmers who found the income an essential supplement to their shrinking salaries.[8]

Farming is usually a part-time activity for one or more family members, with some input from the rest of the family. A typical example of a home farmer is a middle-class mother producing vegetables and fruits in her kitchen garden, with planting and harvesting help from the family or day labor.

Growing food at home is a low-risk way to supplement the family income because many middle-class families have some farmable land or surfaces available at home, making food production a convenient secondary activity. For these farmers, the issue of tenure is usually not as critical as it is for lower-income farmers since they generally farm in their own yard or on other land they hold. They also have access to better seeds, feeds, and other inputs than do lower-income farmers, and their livestock and vegetable beds tend to be more robust.

Middle- and high-income entrepreneurs, in contrast to gardeners for family consumption, tend to concentrate on high-value crops rather than easy-to-grow crops. They frequently concentrate on a few or even a single crop, such as cattle, ornamental plants, or lettuce. Farming still tends to be family-based, although larger enterprises may have several workers (Case 3.3).

Case 3.3 Silwood family farm, Auckland, New Zealand

The Silwood family runs a well-managed hydroponic farm on an ordinary lot in an inner suburb of Auckland, New Zealand. With an average year-round labor force of only seven, it produces 18-19 crops of gourmet lettuce on a mere quarter-acre (about 700 square meters), compared to 3-4 crops typically in both open-air soil farms or traditional greenhouse farms. The same amount of lettuce per year would require the equivalent of 6,000 square meters in an ordinary greenhouse. The current revenue is more than NZ$ 400,000 a year, with potential for even higher turnover as the technology and management is further refined. In 1996-97, turnover for every square meter of growing area was NZ$ 592. A duplicate start-up may cost only about NZ$ 200,000.

Fresh lettuce output is boosted significantly by using sterilized water, hydrogen peroxide water treatment against pithium, three tiers of hydroponic growing channels, lights for extended growing time, added carbon dioxide, and judicious heating. The lettuce seedlings are raised on site in a 'nursery tunnel' and move from there into special small growing troughs, fed with a nutrient suited to early growth. When the plants are about half grown, they are moved into conventional channels with wider spacing to grow to maturity.

Silwood produces a year-round superior product at a constant price, with speedy delivery. The produce is fresh, gourmet lettuce and herbs grown from both imported and local seed, and from on-site varietal development. A choice of up to 20 different varieties gives customers various options in taste and color.

Six local supermarket buyers and about 30 local restaurant owners buy 100 percent of Silwood's production for a sustained, year-round supply. All of the farm's customers are within a 10-minute drive, which allows an extra 3-4 days of shelf life for the produce.

Contact: Geoff Wilson (see Appendix F for complete address).

One middle-income Zambian family involved in entrepreneurial urban agriculture finds farming much more lucrative than the husband's accounting job. Its farm income is more than double his salary. He handles purchasing and marketing, and his wife does the field work. Another Zambian family produces a second income through ornamental horticulture **(**see Case 5.12).

These entrepreneurs are more likely than low-income entrepreneurs to have legal right to farm the land and to have access to good inputs, technical advice, and credit.

When asked what his number one problem was, an extension worker in Mexico answered, "College professors producing market crops in their backyard. They ask too many questions."

The main difference between middle- and high-income entrepreneurial farmers is in the scale or capital requirements of their ventures. Rich investors, particularly if they have an agricultural background or are landowners, are attracted to farming systems that require high investments and produce high returns, such as large-scale poultry and dairy products, or that cater to specialty markets, such as shrimp and orchids for export.

Like the middle-income entrepreneur, the big investor is likely to concentrate on a single, high-value crop and to either own the land or lease it from the government, institutions, or other landowners, including speculators. Examples of investments are land improvements to create ponds, irrigation, greenhouses, mushroom sheds, and storage facilities.

Many high-income urban farmers integrate the range of their operations — production, processing, distribution, and marketing. They often expand to higher-return specialty markets, including for export. In Tanzania, a retired high government official imports hybrid milk cows and raises them in his exclusive residential neighborhood. In Colombia, a former high-level official in the agriculture ministry exports culinary herbs to the United States.

These enterprises are often peri-urban. As land prices rise, these farmers sell their facilities and move their operations to the new urban periphery. Increasing urbanization is often accompanied by a shift to a more profitable and complex farming system or to more intensive crops. It is not unusual for a successful higher-income farmer to become an agribusiness entrepreneur. In Thailand, a farmer who had inherited fruit orchards from his father sold them for a considerable sum and purchased land at the Bangkok metropolitan periphery to build artificial ponds for fish rearing.

Thus middle- and high-income entrepreneurial farming may be viewed by the public and the state not as agriculture, but as agribusiness. This perception has implications for the degree of official support the activity commands. Urban agribusiness is supported and promoted in most countries as a productive industry with good access to credit, technology, and other requirements. More informal, small-scale urban agriculture fails to receive the same status.

Domestic and International Agribusiness

Large national and international corporations play a major role in urban agriculture, sometimes dominating a farming system. Large operators can have two different roles — they can employ many workers to produce crops, or they can contract through numerous small and medium 'outgrowers', and then handle the processing and marketing functions themselves.

In Abidjan, an integrated chicken firm produces poultry feed and owns and operates retail outlets throughout Côte d'Ivoire. For larger (including multinational) firms, the advantage of proximity and concentration of farmers in urban and peri-urban areas may make them more convenient outgrowers for crops that require fast delivery to the market.

In Bangkok, a single large firm has contracts with 10,000 small outgrowers of chickens. It runs the hatcheries and processes the meat it buys from the small growers. In many urban areas, aquaculture, especially growing shrimp, is dominated by large firms. An international agribusiness giant produces mushrooms in Jakarta.

Some agribusinesses support small-scale producers (Case 3.4), while others compete with their smaller counterparts. This competition can be uneven when agribusiness has preferred access to land, water, waste, or other inputs. Cooperatives, farmers' associations, NGOs, and other groups can help to level the playing field by providing assistance to small farmers.

Case 3.4 Vegetable and fruit production by Del Monte in Manila

Del Monte, an international agribusiness, was growing fruits and vegetables on a plantation in Manila, Philippines for export in cans. During the 1980s, the Urban Food Foundation, an NGO based in Manila, helped Del Monte move from a plantation-based system to an outgrower-based system, with Del Monte contracting production to about 500 small- and medium-scale farmers in metropolitan Manila. Del Monte performs the marketing, technical assistance, extension, and quality control functions.

The farmers are part of an association whose professional executive manager previously worked for Del Monte. The farmers' quality of life is much improved over that of plantation workers.

Contact: Roberto S. Guevara (see Appendix F for complete address).

Farmer Cooperatives

Farmer cooperatives are usually formed to increase sustainability by reducing input costs or increasing profits, thus reducing risk. By forming cooperatives, small operators gain economies of scale in areas such as technical and enterprise support, input supply, and marketing. Cooperatives ease the access of small farmers to formal markets where these are not easy to enter.

In urban areas, cooperatives tend to be comprised of lower-income farmers, although wealthier farmers also form their own specialized associations. Community gardening everywhere, from Leipzig to Lima, is typically operated through community gardening associations or cooperatives. In Germany, community gardens are rooted in the labor union movement of the 19th century. In Peru, they emerged from the alternative economics movement of the 1970s.

In Jerusalem, outside Bogotá, a cooperative of 100 poor women grows hydroponic vegetables on contract to supermarkets at premium prices. In the Democratic Republic of the Congo (formerly Zaire), cooperatives of urban farmers were partially instrumental in reducing problems caused by recent disruptions in the food supply from rural and international sources.

Farmers often start with common interests (for example, a common activity in a common location, similar background, or solidarity), then join together to achieve certain benefits, resolve specific problems, and protect their interests. Over time, they may formalize their association and work with outside experts to achieve these goals. Many

cooperatives are formed with impetus from an outside catalyst such as a development agency or an NGO. There is, however, no clear line distinguishing farmer cooperatives, farmers' associations, and NGOs. These groups can be classified both as producers and as actors that influence and organize urban agriculture, as illustrated by fisheries cooperatives in India (Case 3.5).

Case 3.5 Sewage-fed fisheries cooperatives in Calcutta

In West Bengal, India, Calcutta has the largest water area in the world devoted to aquaculture using urban waste. About 145 fisheries based on sewage, ranging from 4 to 80 or more hectares produce an average yearly yield of 8,000 tons of fish (tilapia, carp, rohu, catla, mrigal) for the local market. The fish farms are in the wetlands area in East Calcutta.

About 11,000 hectares were used for sewage-fed fisheries, but this area has shrunk over time to approximately 3,500 hectares. About 150 landlords have long-term leases from the municipality and the port authority for these properties. Farming is done by some 8,000 workers in 4,000 families, and another 8,000 jobs are generated indirectly. The fishermen rent the ponds from the landlords, and are organized into several cooperatives.

There is a tradition of strong fishermen cooperatives in the state of Bengal. The cooperatives are organized for production at the local level. At the district level, central societies or associations handle purchasing and input supply. The West Bengal State Fishermen's Cooperative Federation, Ltd., a state-level organization, helps manage cooperative societies and arranges input supply and finance.

This area was a center of brackish-water fish farming in the mid-19th century, with some sewage flowing into it. Following silting that cut off the tidal flow in the early part of the 20th century, fish farming came to rely exclusively on sewage flow into ponds in the 1930s as wastewater from Calcutta was increasingly channeled to this area. Most of the current fishermen migrated from the Sunderbans region in East Bengal (now Bangladesh) in the 1950s. Farming gradually expanded, then shrank to its current level.

The 250 ponds produce 3-4 tons of fish per hectare annually (according to 1996 data), and satisfy up to 10 percent of the city's fish demand. The city's raw sewage is channeled directly into the ponds at an appropriate rate for it to be treated through methods developed by the fishermen over the years. For years, the fish have been found to be as safe or safer for consumption than river-produced fish.

The area provides multiple benefits — fish for the city; biological treatment of city sewage by private profit-making and tax-paying organizations; recovery of nutrients that would otherwise pollute; and wetlands preservation. The fisheries area itself provides open space in a crowded city. The ponds and dikes are used for boating by local villagers, and the discharge from the wastewater 'treated' in the fish ponds is used to irrigate dry-season rice and vegetables. The cooperatives play a vital role in the effectiveness of this well-integrated system because coordination and control, which are essential to the system's long-term maintenance, would not be achievable by individual fish farmers.

The sewage fisheries are facing a threat from urban development — a resort hotel is even being proposed for the area. Further, the productive capacity of some of the ponds is endangered by siltation and dike erosion, as well as by industrial waste and leachate from the nearby garbage dump (see Case 7.7). Farmers in the region and environmental groups have united to work for preservation of farming, fishing, and recreation activities. They won a favorable court ruling,

although enforcement is always a challenge. The farmers and their cooperative have gained the recognition of national and international environmental groups.

Contacts: Dhrubajyoti Ghosh, Christine Furedy, and. Pabitra Giri (see Appendix F for complete addresses).

Special Groups of Farmers

Although the practice varies from one society to another, it is common for urban farming to be dominated by minorities or economically disadvantaged populations. For instance, in Tanzania urban agriculture employs a higher percentage of youth, older workers, and unskilled labor than other informal industries. Such demographic realities explain in part the lack of recognition and support for urban agriculture and therefore have important policy implications. Certain groups of disadvantaged farmers stand out in particular — women, youth, immigrants, migrants, and those farming in response to crisis.

Women Farmers

The image of the male as the family provider is common in many cultures. However, household surveys in countries throughout Africa and Latin America find that women are traditionally and commonly accountable for family food production and preparation. Because feeding the family is the responsibility of the woman, she is more immediately conscious of food insecurity and malnutrition as well as food quality, and is typically the first to seek opportunities to augment the food supply (Case 3.6).

Case 3.6 Women gardeners in Upper Silesia, Poland

Urban allotment agriculture is still going strong well over a century after its introduction in Poland, surviving since the country began to industrialize. It is particularly rooted in cities such as Katowice, Gliwice, and Opole in Upper Silesia, the country's mining and industrial heartland. Throughout this history, women had a special, though evolving, role to play.

Workers' garden plots date back to the mid-19th century, when serfs were liberated and their former owners and newer German investors started labor-intensive mining and industrial operations. Much of the region was in Prussia at the time. Plots were offered as part of the basic amenities used to attract workers and stabilize them. With the males employed in the mines and factories, garden plots became a woman's domain. These became formalized as allotments at the end of the century, with the influence of the German Schrebergarten movement (a national gardeners' association was established in 1897). In addition to vegetables, the lots often had enough space for a cow, some pigs, chickens, rabbits, and birds.

Between the two world wars last century, worker gardeners pressed for an increase in the numbers of allotments, and many of these became publicly owned. Women continued to dominate gardening because they were still largely excluded from paid employment, but still had the responsibility for a family's health, nutrition, and food.

In the Communist era when women had the right and were expected to engage in the formal paid economy, the two genders had an equal amount of time for garden labor. With both parents employed, and centralized distribution of food inefficient and unreliable, growing some of the family food, especially fruits and vegetables, became an important back-up activity, if not a necessity. The role of the garden as a place of leisure also grew.

The transition to a market economy after 1989 greatly changed the country's food system, but did not decrease the importance of the allotment garden in Upper Silesian cities. Now the problem is to afford the food rather than to find it. In the past decade, women in this region once again acquired a special role in urban agriculture for two reasons. Women became (and remain) under- or unemployed at much higher rates than men, and therefor have more time for gardening. The fungibility aspects of farming became particularly important for them. For similar reasons, the other group that dominates gardening is retirees.

A second and newer dimension in the relationship between women and urban agriculture has recently emerged, one that is particular to Upper Silesia — ecology and food safety. This region is the most polluted in the country, not surprising given its long industrial history. Garden soils tend to be contaminated with heavy metals, most commonly lead and cadmium. The contamination is partially explained by the circumstances under which the plots were established — industrialists provided land close to factories for their workers. The problem of garden contamination has recently been particularly recognized by women gardeners, generally associated with local chapters of the Polish Ecological Club. Given the continuing — and perhaps increasing — importance of gardening to food security, they developed a food testing program, including a campaign to increase the awareness of both the dangers and alternative practices so that they can maintain gardening as both a resource and a pleasure.

Contact: Anne Bellows (see Appendix F for complete address).

In some low-income economies, women are not fully integrated into the urban workforce. Their lack of access and familiarity with formal economies limits their economic activities. Furthermore, responsibility for managing the household and raising children imposes additional restrictions on the range of other work women can do.[9] Farming has the advantage that it can be undertaken informally, close to or at home.

In countries and cultures where women perform most of the rural farm labor, they are likely to do most of the urban farming according to most researchers in sub-Saharan Africa and Latin America (Table 3.2). Surveys in Kenya and other East African countries show that in three-fifths to two-thirds of households, the primary urban farmers are women who receive some help in planting and harvesting from their families.[10] In a survey in Lusaka, farming in all the neighborhoods studied turned out to be dominated by women.[11]

The Center for Education and Technology (CET) in Chile found that 90 percent of the urban agriculture producers in their low-income areas were women.[12] In a Lima study, four-fifths of home gardens were found to be farmed by women.[13] In Port Moresby, Papua New Guinea, a 1981 survey found that 67 percent of the principal gardeners were women.[14] In some countries and cultures, however, including Senegal and Argentina, our field visits and interviews found that the majority of urban farmers are men.

When both husband and wife are otherwise employed, women are more likely than men to be engaged part time in food production. In Dar es Salaam, some women employed by the government first supplemented their meager incomes by urban farming, but after a few years took up urban agriculture full time. As a full-time occupation, their farming income was on average 5-10 times their salary.[15] A recent study of allotment farmers in Great Britain found the majority of the growers are women.[16]

In general, it appears that male family members are more likely to be active in cash-earning activities than in fungible ones. In Bolivia, for example, women are concerned with food crops and men concentrate on cash crops.[17] A similar pattern is found in Zambia.

Table 3.2 Gender composition of urban farmers in selected cities

Country	Gender composition
Asia	
India	In Calcutta the vast majority of fishermen and fish farmers are male, while the vast majority of agricultural labor producing vegetables is women.
Africa	In *Africa*, 64 percent of urban farmers are female.
Kenya	In *Nairobi*, 65 percent of urban farmers are women.
Uganda	In *Kampala*, 67 percent of the urban farmers are older women.
Zaire	In *Kisangani*, 64 percent of urban farmers are women.
Europe	
UK	From WW II to the latter 1990s the share of allotment garden permits held by women moved from 20 percent to about one-half.
Latin America	
Chile	Eighty percent of vegetable and poultry producers in cities are women.
Colombia	Sixty-seven percent of the hydrocultivators in the Jerusalem project in *Bogota* are women.

Source: Data compiled by The Urban Agriculture Network from various sources.

Women's importance in urban agriculture is not limited to food production. They are more likely to be engaged in processing and preserving food for the family, neighbors, and markets. In some cultures, women are the primary marketers of urban agricultural products. In Africa and Latin America, more women than men are selling food on the street and in the markets. Gathering wood and manufacturing fuel from urban waste are also commonly women's work and enterprise. On the other hand, collecting and processing solid waste for soil improvement and livestock fodder is more commonly done by men and children in urban situations.[18]

A number of studies have defined the greater difficulties that rural women farmers face compared to men. Field interviews suggest that a similar bias exists against urban women, who face greater difficulty than men in attaining access to land, water, credit, extension services, and essential inputs.

Women face some constraints that arise from the specific urban context. In Eastern and Central Africa, for example, adult women have traditionally had the right to access tribal land in and near the village for vegetable production. Favored sites include spaces previously used as animal compounds and areas between rows and at the edge of commercial (cash) crop fields that are farmed by men. When the family moves to the city, women's accountability to feed the family continues in the culture, but the traditional usufruct access to land is lost to formal land titles and ex-colonial land-use laws.[19]

Certain aspects of Islamic culture have implications for urban agriculture, especially some that are based on gender. These help shape the division of labor — who cultivates what and where. The relationship between gender and spaces is not particular to urban areas, but rather the proximity of people to each other and the far greater likelihood of encountering strangers, which means that the role of women in urban agriculture is greatly affected. The location of gardens is affected, with farms inside the confines of a plot (particularly an enclosed one) being favored over shared spaces such as community gardens. Where the latter exist in Islamic precincts, the social interactions within them tend to differ from those found elsewhere. These considerations are contingent on the strictness of adherence to Islamic precepts.

Young Farmers

Urban farming is proving highly attractive to youth in cities across the globe. From San Antonio, USA; Havana, Cuba; and Ibadan, Nigeria; and countless other places, we receive reports of the enthusiasm and success displayed by urban youth who produce, process and sell food and ornamentals. Some have family roots as farmers, but for most, this is their first close encounter with urban nature. In many cases, it appears that a prime reason for getting involved in agriculture is that it is more attractive than most other opportunities being presented to them. As can be expected, schools tend to be play a central role in promoting farming to the young.

The UNDP supported a youth program in Benin, West Africa, which began with waste management and moved on to urban food production and distribution. The project collected waste, including organic waste, from city streets and open spaces and carried it to the edge of town for composting, where the compost was at first sold to urban farmers. In the second year the youth used the compost to raise their own crops and sell them in street markets. The third year saw the farm area double and the program further expand.

In New Jersey, Rutgers University has for years successfully run a production and sales program with college students that produces horticultural products that are marketed with other fresh food and flowers at eight farmers' markets across the state.[20] Three thousand miles away, Case 3.7 tells us about the many years of positive educational and financial success of an urban agriculture program directed at youth in the low-income south-central neighborhood of Los Angeles, California. In both these and other American cases (such as Atlanta Urban Gardening in the state of Georgia), youth gain doubly from the projects by learning and earning. They leave the project after learning every aspect of the business, along with the money they earned.

Case 3.7 Food from the hood — Los Angeles, California

After the 1992 Los Angeles riots, some students at Crenshaw High School met to discuss how they could help their community. They were troubled because there were no grocery stores in the area. They were driven by a desire to feed themselves better and gain a sense of ownership and entrepreneurship. With the help of a science teacher, a volunteer business consultant, and a volunteer corporate executive, they formed Food From the Hood, a for-profit company owned by the non-profit Food From the Hood Entrepreneurial Training Institute, whose corporate office is located at Crenshaw High School.

They cultivated an unused site behind the school, harvested their first crop in 1992, and donated it to Helpers for the Homeless and the Hungry, an area food bank. In 1993, the company joined the local organic Farmers' Market where it sold $300 worth of vegetables. The students then decided to develop and market their own brand name salad dressing, Straight Out 'O the Garden Creamy Italian Dressing. For advice, they contacted Rebuild LA, a privately-funded public-benefit corporation, which introduced the company to two local businesses that were willing to help. A few months later, a leading salad dressing producer also agreed to help. With this assistance, the company made financial projections, and created a marketing plan and distribution strategy.

In the years that followed, Food From the Hood has become nationally known for its remarkable success in creating, sustaining, and growing a serious and profitable company that produces and sells brand-name salad dressings in 27 states. In 1998, the company grossed about US$ 200,000.

Profits from the project have helped fund college scholarships for the student owners. In 1993, Food From the Hood students awarded their first $600 in college money. By 1997, the 25 students in the program could expect to earn between $3,000 and $12,000 each in scholarship money by the time they graduated. The company also helps to provide after-school tutoring, college counseling, and exam preparation. Although originally established as a company that would provide jobs for youth, Food From the Hood is now helping to create jobs for adults, and tends to work with companies located in the deprived areas of Los Angeles.

Although the salad dressings are no longer directly linked to the vegetable garden on the school property, the garden remains a vital part of the program. It is "where the new recruits build sweat equity, learn to function as a team and learn all sorts of critical lessons about the work ethic". Produce from the garden is now given to a nearby homeless shelter for people with AIDS.

Contact: Food from the Hood (see Appendix F for complete address).

The European Federation of City Farms, formed in 1990, has nine partners that have run youth and family farm programs for 20 years.[21] These youth programs:

- establish contact between youth and animals, gardening, and the food system;
- make cheese and butter;
- prepare meals from food they have produced themselves;
- participate in direct marketing, and
- participate in youth exchanges.

There is sometimes resistance to agriculture in the city by immigrant youth from rural areas, but youth born in the city do not usually express such resistance. Urban youth frequently enter urban agriculture as street hawkers. Others begin as field workers planting, harvesting, or weeding. Another entry point has been through secondary school programs. Where such programs have been applied in correctional institutions they have been particularly constructive in turning wayward youth toward productive careers.

Immigrant and Migrant Farmers

In many cities, groups migrating from other countries or from rural areas within the same country bring new technologies and crops from their native country or region. Japanese immigrants are well-known market gardeners in California and southern Brazil. On the North American east coast and in Argentina, Italians have been important urban gardeners. In Côte d'Ivoire, Vietnamese immigrants have far higher yields per hectare than the native farmers. In Senegal, the most productive farmers are Lebanese; in Panama, as in much of Asia, it is the Chinese. In Argentina, Brazil, and California, the Japanese have a strong presence as farmers.

Expatriate participation in urban agriculture is more pronounced in some farming systems (such as fish, mushrooms, vegetables, and ornamental horticulture) than in others (livestock, fruit orchards and poultry). Those who migrate from countries with an urban agriculture tradition are more likely to take up agriculture in their new settings. But as opportunities present themselves in growing urban food markets, other immigrants will join them. Cornell University and the Just Food project in New York City have been recruiting recent immigrants, mostly Hispanics with farming backgrounds, to responsible suburban jobs with farmers producing for center city farmers' markets. [22]

Ethnic foods provide a market niche for urban farmers in countries accepting refugees and immigrants, a burgeoning trend worldwide. Hundreds of vegetable varieties and small livestock are in demand for regional cuisine in countless cities. Cultivating expressly for these markets is proving to be a boon for urban farmers from both the host and other countries.

Differences in the levels, rates, and types of migration into and from cities are often reflected in the urban agriculture labor force. For example, many urban farmers are fairly recent migrants in many cities, including Cairo and Istanbul (Case 3.8). In Lebanon, by contrast, those who operate farms in peri-urban areas are mostly long-standing agriculturists who use cheaper labor from other countries such as Syria, Egypt, or Sri Lanka.

Case 3.8 Migrant farmers in Istanbul

Almost all the vegetable needs of Istanbul, one of the first 'world cities', were at one time met by an extensive system of neighborhood vegetable gardens known as *bostans*, complemented by home gardens. As many as 15-16 square kilometers of *bostans* supplied the vegetables consumed by a million people at the height of the Ottoman Empire.

The great expansion in the population of Istanbul in the 20th Century, now exceeding 10 million, led to a loss of most *bostans*. While much of this system has now disappeared, a variety of urban agricultural activities still remain in and around Istanbul. These range from balcony and rooftop production, to interstitial small plots and household gardens, to farming on communal land, to nurseries and seed suppliers.

Throughout its history, ethnic groups and migrants have played special roles in Istanbul's agriculture. During the Ottoman Empire, the Greeks and Armenians were traditionally the master gardeners. Successive waves of migrants from the Balkans (Bulgarians, then Albanians) gradually took over the trade late in the Empire. Migrants continued to take over farming the *bostans* after the founding of the Turkish Republic, but this time coming from the East.

Today, 9 of 10 *bostans* are operated and managed by people originating from a single district (Cide) along the Black Sea. One difference relative to previous migrant urban farmers is that the *bostancis* from Cide do not own their land (the largest plots are still held by former Albanians). The *bostans* not only supply Istanbul's food bazaars, but also provide between one-quarter and one-third of the produce consumed by the migrant farmers themselves. Most *bostan* households must supplement their income with other employment. Still, the demand for *bostans* by Cide migrants exceeds the availability of land.

Food production serves migrants to Istanbul in a different way as well. When waves of migrants from across Anatolia built *gecekondus* (squatter settlements) from the 1950s into the 1970s, they built their residences with house gardens in mind, ranging from 30 to 200 square meters, often with some room for livestock. This enabled some sale of farming surplus (fruits, vegetables, milk), and generated important savings for the household (the proportion of income spent on food in Istanbul is among the highest in the world).

Continued growth of migration, combined with granting of land tenure security by the government starting in the 1970s, has meant that many of the former sites of home gardens now have buildings on them. Nonetheless, a number of gardens have managed to survive in *gecekondus*, and they remain very important to their migrant owners for food and income. Typically, they provide over one-half the summer fruits and vegetables for the gardening household. There is a long history of links between migration and agriculture in Istanbul.

Contact: Paul Kaldjian (see Appendix F for complete address).

Immigrant farmers often face problems in gaining access to markets. Moreover, urban agriculture is perceived in some places as being of 'low status' because it is practiced by immigrants.[23] Being viewed as an immigrant trade can have cultural and policy implications for the industry because the stigma sometimes discourages native groups from participating.

Crisis Farmers

United Nations data suggest that there are about 50 million refugees and internally displaced persons in the world today, about one-half labeled as so-called 'environmental refugees'.[24] The hardships caused by war, long-lasting civil conflict, division of countries, and economic blockades have all meant that residents of these areas have had to achieve greater agricultural self-reliance. Urban areas especially have significantly transformed their food systems under such circumstances and dramatically expanded urban agriculture. This expansion is most notable under protracted conditions. In the Middle East and North Africa alone, a number of current cases of survivors of disasters (of both natural and human causes) can be identified.

The long history of displaced people engaging in urban agriculture is thus varied. Whether these refugees were formerly rural or city dwellers, they all had to learn a new agricultural system in order to survive. In each case, they found, invented, or were presented with an agriculture model to produce vegetables and small livestock on a small scale.

Refugee camps, whether formal or informal, generally have urban characteristics. This is particularly true of the increasingly common camps of long duration, some of which become semi-permanent. From the day of formation, each camp begins to shape its

own special economy — part subsidy, part trade, and part production. Because the largest part of such an economy is food, urban agriculture can play a special role.

Clearly to be a farmer under such circumstances is very different from farming under 'normal' circumstances — from practices and choices of what and how to cultivate, to access to resources and access to farmland. However, despite the 'specialness' of crisis farming, what may begin as a temporary adjustment to a hardship may have long-term implications beyond the the conflict. Being a crisis farmer can provide a basis to become an urban farmer after the crisis has subsided.

The recent trend among refugee organizations is to emphasize a degree of self-reliance among refugee camp inhabitants, and independence that can encompass nutritional self-reliance, particularly in micronutrients. Since some of the inputs to agricultural production will be the camp waste, the burden on the infrastructure of the surrounding local community can be reduced. The camps can achieve some food self-reliance if agricultural inputs are provided to the refugees (Case 3.9). The farming activity is also likely to lead to some social satisfaction and increased community interaction.

Case 3.9 Liberian refugees in Danane, Côte d'Ivoire

A biointensive vegetable production project for Liberian refugees at the edge of Danane, Côte d'Ivoire was started by a medical doctor working with the refugees. It was supported by Africare in February 1994. With the influx of refugees, Danane had grown from 40,000 to 80,000.

Production was from seeds and self-produced seedlings. Shade structures for seedlings were made from materials found on and near the site, as well as some lumber. Water was drawn from a well that the refugees dug themselves. Products were distributed directly to the refugees, sold to Caritas (a Swiss NGO) for distribution to other refugees, and sold in weekly markets.

Africare provided training, seeds, tools, and other inputs. It hired Liberian expert advisors to help with marketing. The Ivoirian government provided free access to land and the services of extensionists. The refugees and Ivoirian families provided management and other inputs.

Benefits included improved food security, improved nutrition, economic development, and positive use of domestic waste without environmental degradation. A survey by UNICEF in 1995 found that the Liberian refugees had a better nutritional status than the local Ivoirian population, which the Africare project manager, Erin Marshall, attributed to the share of their diet contributed by fresh vegetables. In 1999 international support was withdrawn. Many refugees in and around Danane are not returning to Liberia because they are from the region of the hometown of ex-president Dow.

Contact: R. Montanez (see Appendix F for complete address).

The results of these community and individual enterprises have been reported as very beneficial. Small intensive plots were farmed at the edge of Palestinian camps in the Gaza Strip (1960s-1990s) and by Bihari people after the Pakistan civil war in Bangladesh (1972-1980). In Sarajevo, Bosnia (1992-1996) farming was done in open spaces in the city and in and on residences. News photos of women and men risking sniper fire to tend their plots showed both the risk and necessity of this activity.

Crops with a short maturity cycle can be grown even in short-term refugee camps. Animal husbandry (such as raising day-old chicks into broilers) can be particularly suited to such situations.

Urban agriculture may have a role to play not only in emergencies where large population movements take place, but also when a temporary breakdown in food supply to cities occurs through natural, civic, economic, or wartime disasters. Rural food production may come to a standstill, the infrastructure may collapse, and distribution may fail. In addition to taking steps such as recycling and reducing consumption, portions of the population may temporarily turn to farming to survive the crisis. Such temporary farming activity was noted recently in Baghdad, Kinshasa, and Bosnian cities.[25]

Many mayors of disaster-struck cities have responded to economic crises by making public land available to residents for food production. This practice was particularly widespread on both sides of the Atlantic during and after World War II. The most recent such occurrence may have been in Jakarta in 1998. After initially resisting to no avail, the metropolitan governor made thousands of cultivation sites available to emergency farmers.

People from all backgrounds become engaged in urban agriculture. In Havana, when Russian food and agricultural inputs were cut off, one of the prime initiators of the revolution in agricultural practices was a Chinese-Cuban who remembered his family's vegetable market garden in Havana's Chinatown.[26]

As in most places, crisis farmers are more likely to be women and the aged than young men, in part because the early stages are a survival strategy. An interesting case is the community kitchens of Chile and Peru, organized by women to economize on money, fuel, and time. Shortly after becoming operational as kitchens and eating places, the organizations began food production on vacant lots and along stream and roadsides.

Although urban farmers represent a significant share of the population in numerous developing-country cities, they face considerable obstacles and biases. They are pioneers in an important industry without the benefits accorded most industries by government, associations, and commercial organizations. Nonetheless, in one place after another, urban farmers are beginning to be heard and noticed. National policies favoring urban agriculture are being established, national associations are being formed, surveys are being conducted, and in a few cities and countries, government departments are becoming operational.

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