

Issues in urban agriculture

Studies suggest that up to two-thirds of city and peri-urban households are involved in farming

Urban and peri-urban agriculture (UPA) occurs within and surrounding the boundaries of cities throughout the world and includes crop and livestock production, fisheries and forestry, as well as the ecological services they provide. Often multiple farming and gardening systems exist in and near a single city.

UPA is estimated to involve 800 million urban residents worldwide in income-earning and/or food-producing activities. The findings of national censuses, household surveys and research projects suggest that up to two-thirds of urban and peri-urban households are involved in agriculture. Much of the food produced is for own consumption, with occasional surpluses sold to local markets.

Farming is done in city core areas, wedge areas and corridors out of the city, and on the periphery. One study of urban agriculture in Nairobi showed the land used for farming was 32% private residential land, 29% roadside land, 16% along river banks, and 16% in other publicly-owned areas.

Part of the reason for the growth in UPA is its adaptability and mobility compared with rural agriculture. As cities expand physically, the frontiers between urban, peri-urban and rural activity are blurring and merging, creating opportunities as well as risks

Nutrition, employment. UPA can contribute to food security in several ways. It increases the amount of food available and enhances the freshness of perishable foods reaching urban consumers (case studies have shown differences in nutrition, especially among children, when poor urban families farm).



This article is based on Urban and peri-urban agriculture, a report to the FAO Committee on Agriculture (COAG), which met in Rome on 25-26 January 1999. Get full COAG documentation

From vacant lots to terraces...

Urban and peri-urban agriculture (or UPA) refers to agricultural practices within and around cities which compete for resources - land, water, energy, labour - that could also satisfy other requirements of the urban population.

Urban agriculture refers to small areas within cities, such as vacant lots, gardens, verges, balconies and containers, that are used for growing crops (e.g. in Yemen, above) and raising small livestock or milk cows for own-consumption or sale in neighbourhood markets.

Peri-urban agriculture refers to farm units close to town that operate intensive semi- or fully commercial farms to grow vegetables and other horticulture, raise livestock, and produce milk and eggs.

It also offers opportunities for productive employment in a sector with low barriers to entry. The intensive horticultural and livestock production that thrives in peri-urban areas employs workers and produces high value-added products that can yield reasonable income and returns. In particular, the commercial peri-urban production of livestock is an extremely fast-growing sector, representing 34% of

total meat production and nearly 70% of egg production worldwide. With it comes expansion in food processing activities in the peri-urban zones.

Efficiency of production. Vegetable production has expanded in and around cities in many developing countries. The broad diversity of horticultural crop species allows year-round production, employment and income. Growers have realized that intensive horticulture can be practised on small plots, making efficient use of limited water and land resources.

Horticultural species have considerable yield potential and can provide up to 50 kg of fresh produce per square metre per year, depending upon the technology applied. In addition, due to their short production cycle they provide a quick response to emergency food needs (several species can be harvested 60 to 90 days after planting.) Leafy vegetables provide a quick return that helps families meet their daily cash requirements for purchasing food. Urban production has another advantage: leafy vegetables are particularly perishable and post-harvest losses can be reduced significantly when production is located close to consumers.

Urban producers also achieve real efficiencies by making productive use of under-utilized resources, such as vacant land, treated wastewater and recycled waste, and unemployed labour. Productivity can be as much as 15 times the output per hectare of rural agriculture, although yields often suffer from inferior or insufficient inputs, use of poorly adapted varieties, poor water management, and lack of farming knowledge.

In addition, urban farmers often use low-input processing and storage techniques. Estimates of the households engaged in urban farming that also preserve and store some of their production range up to 90%. However, for market - including street food - sales, there are limits to the quantities that can be produced and delivered without infrastructure for transportation, distribution and marketing. Micro-credit support for storage and refrigeration could raise the income potential of urban farmers, and improve the safety of food sold by street vendors who rely heavily on urban and peri-urban food production.

Sustainability. Agricultural production systems in urban and peri-urban areas can pose risks to public health and the environment. These arise from the inappropriate or excessive use of agricultural inputs - including pesticides, nitrogen, and raw organic matter containing heavy metal residues - which may leach or runoff into drinking water sources, microbial contamination of soil and water, and air pollution. In particular, leafy vegetables can be contaminated through overuse of chemical sprays, while zoonotic diseases and veterinary public health problems can arise from intensive livestock production.

The most viable source of water for urban and peri-urban agriculture is recycled treated wastewater. FAO has estimated that typical wastewater effluent from domestic sources, when appropriately treated for agricultural reuse, could supply all of the nitrogen and much of the phosphorus and potassium that are normally required for agricultural crop production. Unprocessed liquid waste (e.g. pig slurry, flush waters) or semi-processed waste is sometimes used for fertilization, and raw chicken and cattle manure enhance soil fertility and structure. These practices carry some health risk, but when properly managed, this risk is minimized.

The major danger in utilizing waste waters is food contamination by pathogenic micro-organisms and outbreaks of water-borne diseases. High health risks associated with the use of untreated or improperly treated sewage water in irrigation include infection from helminths, while medium to low risk is associated with enteric bacteria and viruses. In general, evidence suggests that negative health effects are a problem only when raw or poorly treated wastewater is used for irrigation.

Another water quality issue arises in intensive aquaculture in peri-urban areas. Intensification implies heavier use of water for recirculation, commercial feed and drugs (antibiotics, bacteriostatics). Excess nutrients and organic matter enhance the proliferation of micro-organisms that lead to eutrophication by depleting dissolved oxygen in the water systems.

Another major challenge to the viability of UPA is land availability. Looming over many urban farmers, both men and women, is the constant threat of losing access to their plot and being forced to stop production. In many areas, non-farming households' inability to access land in the city is the major reason given for not farming. However, one of the paradoxes of UPA is that substantial agricultural

investments appear to occur on very insecure holdings. Good markets for agricultural produce guarantee high short-term returns and make the risks of agricultural investment worthwhile, even on insecure lands.



Food security for low-income urban consumers

Many Asian and African cities are likely to double their populations within a decade. In particular, the number of low-income urban consumers will increase. Their food security will depend upon the level and stability of the cost of food access as well as on the variety and quality of food available to them.

A very effective way of enhancing urban consumers' food security is to improve the efficiency of all activities that bring food into cities and distribute it within urban areas - assembling, handling, sorting, packaging, storing, transporting, processing, wholesaling, retailing and cooking for sale as street food.

City and local authorities can do a great deal to enhance the food security of low-income urban consumers by supporting the development of efficient private-sector food marketing systems. However, their actions face a number of constraints.

Subject to donor funding, the [FAO Interregional Programme Food Supply and Distribution to Cities](#) assists city and local authorities in developing countries and countries in transition develop technically sound urban and municipal food-marketing development policies and programmes for lowering