Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 03, Issue: 03 (MAY-JUNE, 2023)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Urban and Peri-Urban Agriculture: Food Production and Food and National Responses Security

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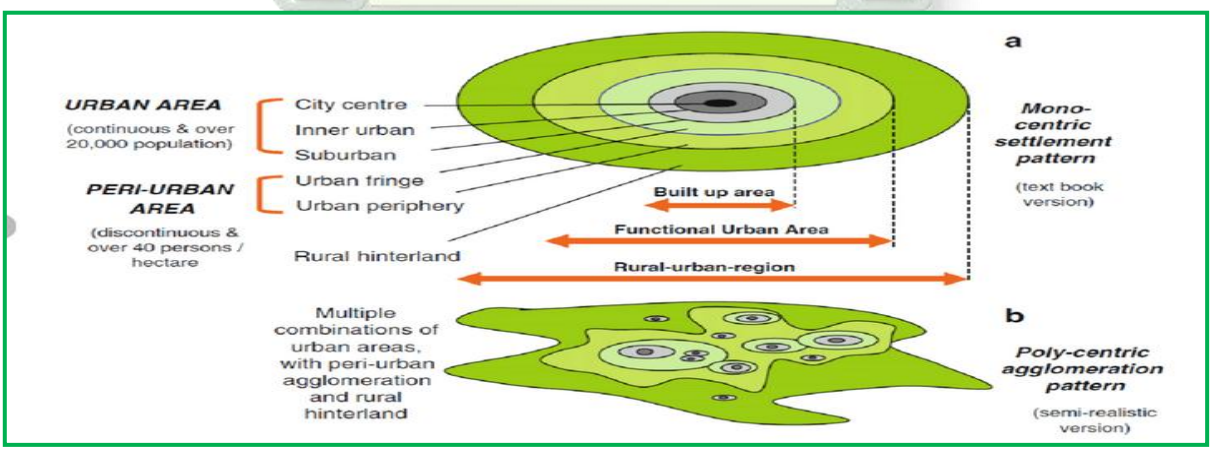
Urban areas are our cities and towns. Urban areas encompass residential, commercial and other land uses. An urban setting can be defined broadly on the basis of population density, concentration of administrative bodies and infrastructure and a diverse set of livelihood and income generation activities. Urban areas will be characterized by high population density when compared to other areas. While some cities are defined by municipal boundaries, many urban centers have not been designated as such. They are usually characterized by the presence of administrative structures such as government offices and courts and a relative concentration of services such as hospitals and financial institutions such as banks. In an urban setting, the forms of livelihood and income generation activities will be diverse and unlike rural areas not bound mainly to agricultural production. If the area in question fits some if not all of these basic characteristics, it can be regarded as urban.

Peri-urban areas are defined as rural areas that are superficial and are located in the orbits of urban hubs, surrounded by large population centers. These areas represent the transition zones between rural and urban i.e., interface of landscape country and town. They are the resultant of the peri-urbanisation process. The dispersive growth of urban areas created landscapes that are hybrid characteristics of both urban and rural areas. Peri-urban areas are also known as hinterland or outskirts or urban space.

What is this 'Urban and Peri-Urban Agriculture?

Urban and peri-urban agriculture (UPA) can be defined as the growing of plants and the raising of animals within and around cities. Urban and peri-urban agriculture provides food products from different types of crops (grains, root crops, vegetables, mushrooms, fruits), animals (poultry, rabbits, goats, sheep, cattle, pigs, guinea pigs, fish, etc.) as well as non-food products (e.g. aromatic and medicinal herbs, ornamental plants, tree products). UPA includes



Concept of peri-urban areas and the rural–urban-region (Piorr *et al.* 2011)

trees managed for producing fruit and fuelwood, as well as tree systems integrated and managed with crops (agroforestry) and small-scale aquaculture (FAO 2019). Urban agriculture takes place in intra- and peri-urban areas and one of its key characteristics is that it is more deeply integrated into the urban system compared to other agriculture. Urban agriculture is structurally embedded in the urban fabric; it is integrated into the social and cultural life, economics and the metabolism of the city(Vejre *et.al.,* 2015). According to United Nations Food and Agriculture Organization, peri-urban agriculture is defined as the practices of agriculture around the cities that are competing for resources and satisfies the requirements of urban population. The leading feature which differs from peri-urban and rural agriculture is that peri-urban agriculture integrates into the ecological and economic systems of urban areas.

Urban agriculture is the practice of farming in urban and peri-urban areas. Farming connot a wide range of food and non-food products that can be cultivated or grown, including rearing livestock, aquaculture and bee-keeping. However, in the context of Indian cities, the focus is on the cultivation of vegetables, fruits, and flowers for human consumption. It is now part of a growing trend in cities globally to look towards locally produced food. Besides city administrations, urban agriculture has started drawing the attention of many non-governmental organisations (NGOs), community groups, and citizens. At the global level, the Food and Agricultural Organization (FAO) believes urban and peri-urban agriculture has a role in food and nutritional security. The Urban Food Agenda is an FAO flagship initiative to enhance sustainable development, food security, and nutrition in urban and peri-urban areas. It encourages partnerships with different stakeholders such as civil society, academia, international agencies, city entities, and the private sector.

UPUFS play an important role, however, not only for farm households but the city at large. They have a comparative advantage for intensification, if safely done, due to readily available wastewater and the nutrient surplus in urban wastes containing nitrogen, potassium and phosphorus (NPK). Peri-urban and urban farming systems have been shown to improve food security as well as incomes. The consumption of animal source foods, fruits and vegetables has beneficial effects on child health and nutrition security, suggesting urban livestock-keeping and backyard farming need to be supported. Corresponding food health and safety measures are needed to encourage health risk mitigation strategies based on current and continuing research. (Smith *et al*. 2019).

Historical Background

From 1960 to 1989, the Cuban Communist Party was in power in Cuba. During that time, Cuba imported most of its food produce, except sugar. Most of its land was dedicated especially to sugarcane cultivation. Soviet Union imported sugar from Cuba and in turn paid Cuba with gold, food, petroleum, fertilizers and machinery. But 1989 marked the fall of Soviet Union which led to food scarcity in Cuba. Cuba had to quickly revamp its agricultural policy in order to strengthen its food supply. Fidel Castro, the then President of Cuba ordered that there should not be any piece of land left uncultivated. Even on the lawn of government buildings, crops were cultivated. This had led to the development of peri-urban agriculture. This has not been very popular in India.

Why is it Needed?

By 2050, India has been projected that it would have a total addition of 400 million (World Urbanization Prospects, 2014) to its urban population. Using techniques such as vertical farming, hydroponics contribute to additional food supply, utilization of peri-urban areas has turned to be the need of the hour. The nutritional requirements of the population are also on an increasing scale. About 50 percentage of women population are anaemic and undernourished causing deficiency in energy. Urban population generally has a lesser control

over the quality and supply of the food product hey consume. High fluctuations in prices of these food products also have a higher impact on the consumption in urban areas (Smit *et al*., 1996).

Urban and Peri-Urban Horticulture

Horticulture production development in urban and peri-urban areas is proposed as a means to partially meet the job and food requirements of the increasing urban population. In view of its potential high return rate and scope for intensification, horticulture (mainly vegetable and ornamental plant production under irrigation, but also fruits, tubers and roots, and mushrooms) can be an attractive opportunity in meeting the above challenge. Horticulture species, asopposed to other food crops, have a tremendous yield potential and can provide up

to 50 kg of fresh produce per square meter per year, depending on the technology applied. As compared to other agricultural activities horticulture makes efficient use of the scarcely available land and water resources. Locating their production close to the consumption centres will help to contain the requirements for special packaging and storage facilities and reduce the post-harvest losses, which commonly reach 30%. (Moustier and Danso ,2006)

Urban and Peri-Urban Agriculture in India

Mumbai, though a city with very limited open space, its citizens through their innovativeness have transformed several spaces for cultivation of vegetables. The Indian Railways also has its stand for promoting peri-urban agriculture. It has leased the land along the tracks to farmers, so as to promote agriculture as well as to prevent encroachment. In Pune during 2008, City Farming Project was launched by which people were allocated lands to cultivated vegetables which was a failure. In Kerala, increasing cultivation of plantation crops and rapid raise in urbanization had led to decrease in supply of rice and vegetables.

Benefits of Urban and Peri-Urban Agriculture

Peri-urban areas mostly have soils which are highly fertile because of their lesser usage for farming purpose. Livestock production worldwide on a commercial scale is larger in peri-urban areas as they contribute 34 percentage and 70 percentage of total meat and egg production, respectively (FAO, 1999). Peri-urban agriculture plays a vital role in food supply, environmental waste processing and shaping the growth of urban areas. It ensures nutritional security as well as promotion of farmers' interests, recreation facilities and energy management.

Key Challenges

Increasing the food security of the urban poor represents the main challenge for UPUFS. This challenge needs to be linked to the potential for intensification, which, if realized, may not only increase urban food supply, but have flow-on effects for surrounding rural farming systems through feedback of information via rural-urban household links and institutional networks. Key participants in addressing this challenge are urban local governments and farmers' organizations. Options for change include increased use of: micro-spaces in densely

populated areas; available recyclable nutrients from organic wastes for soils and animals; available water (especially wastewater); and un- or underemployed household labour. Policies are needed that will address the food security needs of the urban poor, especially women-headed households. Allocation of public lands for this purpose is appropriate, as was the case with Maputo's zonas verdes (green zones) from the 1980s.

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