



Good Practice Urban Agriculture and Better Built Environment in India

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Abstract

There must be a long term regional perspective to make cities sustainable through urban agriculture. The rivers, canals, agricultural land and forests in metropolitan areas are connected with those in the surrounding region. Urban agriculture and associated developments can be a link between urban and rural areas. In the present context the author argues that 'Good Practice Urban Agriculture' needs to be incorporated as a type of new land use amongst all other land uses.

1. INTRODUCTION

Presently India has a population of 1.18 billion as per Census of India 2011 over a land area of 32, 87,240 sq km. Although, India occupies only 2.4 percent of the world's land area, it supports over 15 percent of the world's population. Presently India is the second most populated country in the world after China. However, it is projected that India will be the most populated country by 2025 surpassing China. By 2050 it will have over 1.6 billion people. Table 1 shows the decadal urban growth rate as per Census report.

Hence, with limited natural resources, water, limited land area and a vast majority of poor, uneducated and underutilized human resources, our cities are becoming increasingly un-sustainable. Good practice urban agriculture is one of the solutions to convert urban poor to being employed while at the same time improving the built environment. Ecologically sustainable urbanization is

Table 1: India: Indicators of Urbanization

Census Year	Urban Population in Million	% Urban Population	Number of Towns / UA per 10 lakhs Rural Population	Decennial Growth rate of population (%)
1951	62.44	17.29	9.5	41.42
1961	78.93	17.97	6.6	26.4 1
1971	109.11	19.91	5.6	38.23
1981	159.46	23.34	6.4	46.14
1991	217.17	25.72	6.0	36.10
2001	285.35	27.78	6.0	31.30

Source: census of India <http://www.censusindia.net> (2001 census).

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also inconceivable without good practice urban agriculture. Urban agriculture is probably the largest and most efficient tool available to transform urban wastes into food and jobs. Further it creates a better living environment, better public health, energy savings, natural resources' savings, land and water savings and cost reductions in urban management. According to Jac Smit, President, Urban Agriculture Network, Washington DC: "there are about 800 million people throughout the world who are engaged in urban food production" (Smitt, 1996).

There are hundreds of cities both in rich and poor countries that have set targets to make their cities green and sustainable cities. The cost of greening and cleaning can be borne by urban food production and urban agriculture. Different countries in the world like China, Australia, USA, South America, Europe and many Asian as well as African countries are doing it and constantly improving on this. In India, though the concept of urban agriculture is beginning to become popular, the concept of good practice urban agriculture is yet to gain momentum. However, 'Good practice Urban Agriculture' efforts have to become much more popular in India for the survival of Indian cities and its citizens.

2. GOOD PRACTICE URBAN AGRICULTURE

What is meant by 'good practice urban agriculture'? "Good practice urban agriculture is effectively regulated agriculture to provide 'safe food' to the city dwellers" (Jac Smit, 1994). Good practice urban agriculture includes farming, fishery, horticulture, forestry, poultry and livestock development. It has the potential for providing much higher benefits in nutrition improvement, income generation, enterprise development, and land as well as waste management. Moreover, with Good Practice Urban Agriculture, urban environment can improve. A system of sanctions and rewards may be necessary to promote optimum results. In this regard, much focused study is needed to identify and quantify.

There are different views on this. One of the views of regulation is cost savings from using waste to generate food rather than its sanitary disposal under strict regulations. From city to city there may be variations as extension of health programs, environmental programs, etc. China is a very good example of 'Good Practice Urban Agriculture'. In 1900, eight of the sixteen cities in the world with population over 500,000 were in China. All of those cities have effectively regulated agriculture for over 100 years and today's China is highly dependent on urban agriculture. Now the question is what is meant by healthy sustainable built environment and where are the open spaces within a built environment?

2.1 Open Spaces within Built Environment

Utilizing parks, rivers and canal banks, etc; is becoming a well-known way to improve the environment in a city. To do so through an economically viable way is of great interest to cities with income constraints and land constraints, but



less popular. Most of our Indian cities due to high population densities have both the above disadvantages i.e. land constraints and income constraints.

Production of fruits and vegetables within cities is a greening application that can operate on a large scale with low operating costs compared to equivalent ornamental green spaces. Planting trees on road sides, plants on roof tops and available bare compact soil is a kind of greening application which can transform any city scape. This statement may require substantial research and documentation to be made for convincing many bankers and recreational open space planners in India. But it is already being proven in many developed countries.

Although converting wastes to food and greenery is important but where. Land unsuitable for use as 'built up' space such as steep slopes, wetland, land cover, and aquifers can be utilized for urban agriculture. Further ancillary spaces along highways, river banks, costal zones under electric power lines , at airports and prisons, land around institutional buildings, peripheral areas around schools and parks, etc; are the areas where fruit trees and vegetables can be grown. This greening application will transform the city into a green city. Moreover, the above land under strict regulatory measures can be rented out to farmers who pay land rent to the owners. Besides, the backyard home garden should be encouraged.

Perhaps, the most underrated role of urban agriculture is revitalizing the city soil. City land tends to be starved as its life is leached away and replaced due to pollution. Even street leaves are collected in plastic bags and hauled away whereas this practice can be easily replaced by production of vermicomposting. Vermicomposting, thus produced, can be utilized as organic manure for growing useful trees in the city.

Thus, urban agriculture in the city can decrease pollution. It can help in reducing the fuel costs by bringing food from afar. It can decrease hunger, poverty and help in waste management. Further, it can support the economy and employment of the city. There is a significant decrease in the secondary sector of labor force due to upgradation of technology and extensive use of computers and machinery in India. This labor force can be gainfully employed and used their indigenous skills in agricultural production. It is worth noting that women folk are also especially skilled in this area.

2.2 Benefits to Slums and Peri-Urban Zones

Biological transformation of urban wastes to food and green is essential for sustainable cities. In Indian cities two areas, which will be most benefitted by 'Good Practice Urban Agriculture' are low income residential and mixed use areas, and urban fringes.



Low income areas typically have the worst environmental conditions like presence of garbage, sewage, dust packed earth, unstable soils, etc. Farming in these areas is particularly feasible because of the availability of low cost labor. Benefits could accrue not only to serve the immediate community but also to a lesser degree the entire city and periphery.

Urban fringe in Indian cities is mostly used as dumping site for city wastes. If appropriate agricultural practices are practiced by squatter settlers living there, it would be beneficial to all. Urban agriculture, with good practice, introduced to the fringes has several environmental benefits, namely reduced pollution, beneficial reuse of wastes, increased tree cover and better living conditions for the urban poor living in the urban fringe areas.

2.3 Urban Forestry

Lately, Urban Forestry in the urban fringe is being encouraged in India. Since, it serves dual purpose i.e. urban agro forestry can reduce air pollution and add oxygen to the city air while providing food, fuel and inputs to industry, and delimiting the size of the city.

However, in a marked difference to the city greening programs of the 1970s and 1980s, presently urban agro-forestry is becoming more popular. Urban agriculture greening programs are expected to pay back in their own way by producing products with market demand. This includes food, fuel, insecticides, medicines, building materials and compost. These projects can involve active participation of the poor who can perceive both short term and long term family benefits and community benefits. These illiterate poor are not devoid of indigenous skills of producing vegetables and fruits. Further, they are innovative enough in survival technique. They need a little financial help and guidance from the government to improve their own economic condition and quality of life.

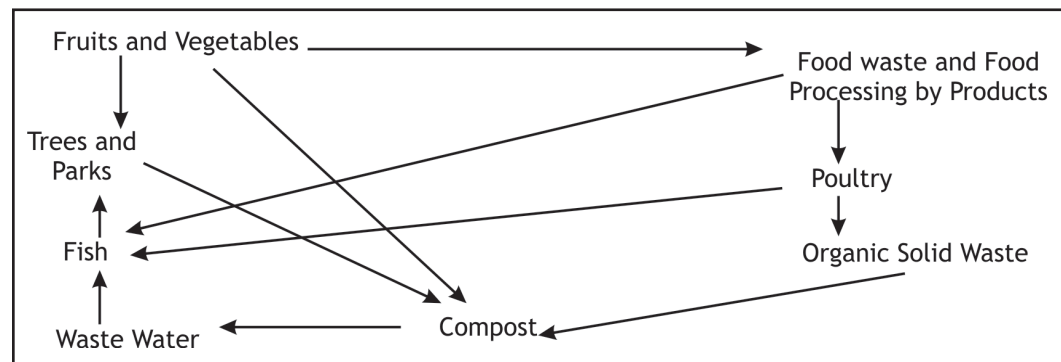
The other very important function of urban agro-forestry is to delimit the size of a city, which is presently being overlooked. In ancient Indian city moats were built for different purposes, one of them being to delimit the size of a city, which can be replaced by urban agro-forestry in the present day scenario.

2.4 Closing Ecological Loops

In India, urban agriculture is just witnessing the beginning with piecemeal efforts made in a few cities. But in the perspective of growing population and growing food scarcity in the near future, it can be present in every city as a 'resource conserving industry'. It takes away a city's wastes and converts them into resources. It creates a diverse ecology where fruits trees, vegetable plantations and fish could coexist with built environment - a wholly ecologically sustainable scenario. Surveys suggest that almost 50 percent of vegetables can be composed as organic manure to help produce vegetables and fruit trees. Similarly 50 percent



Fig. 1: Closing the Urban Nutrient Loop



Source: *Proceedings of an international workshop on 'Vegetable Production in Peri-Urban areas in the tropics and sub tropics food, Income and Quality of life', organized by German Foundation for International Development.*

of urban waste water can be biologically treated to be used for irrigation of food products or as a medium for aquaculture.

3. CONCLUSIONS

Good Practice Urban Agriculture has to be linked with food system planning and land use pattern of a city and surroundings. As urban planners we should realize that every activity on earth has some spatial implications. Hence, good practice urban agriculture, food system and land use patterns are closely linked and are to be brought under the purview of regulatory framework. In consonance with this realization, the following actions are suggested:

- Identification of land for urban development with agriculture;
- Prohibition of filling of major water bodies and marshy lands;
- Specific land uses for waste land including useful tree plantation and city farming;
- Agricultural land within metropolitan area is to be protected under the provisions of Town and Country Planning Acts;
- Underutilized areas on long banks of rivers or canals can be developed for urban-agro forestry including parks and garden at places;
- Planting fruit trees in the periphery of existing city parks, which can generate employment and municipal income for maintaining of parks and other such areas;
- New townships and housing estates should incorporate city farming, horticulture, etc; from the planning stage itself;
- Derelict land, abandoned brick fields and other areas near industries should have an ecological restoration program making it part of the planning condition while granting permission;



- Revitalization of canals will encourage aquaculture and fish production;
- Garbage dumping sites and sewage fed fisheries in east Kolkata are already producing substantial vegetables and fish through pisciculture, the concept could be extended to other areas; and
- In rural fringes and non-municipal urban areas of the metropolitan areas, there is a potential for poultry, diaries and livestock development, which could be linked with both rural and urban areas in the surrounding region

There must be a long term regional perspective to make cities sustainable through urban agriculture. The rivers, canals, agricultural land and forests in metropolitan areas are connected with those in the surrounding region. Urban agriculture and associated developments can be a link between urban and rural areas. In the present context 'Good Practice Urban Agriculture' should be incorporated as a type of new land use amongst all other land uses.

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