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New Challenges for China's Urban Farmers

by Jennifer Pepall

Unlike universities in most countries of the world, the campus of Beijing University includes several irrigated rice fields -- farmers have been harvesting rice there for generations.

Mixing farming and urban activity is typical of Chinese cities, each of which is completely self-sufficient in food production. Enough fruit, vegetables, grain, fish, livestock, poultry, and trees are cultivated within each city boundary to provide millions of Chinese with an adequate, affordable, and accessible supply of food. But urban agriculture is threatened by China's open economic policy. Since 1978, residential and industrial development has increased rapidly in urban areas,

encroaching on valuable fertile land. With more than one billion people, "China's concern has been how to feed its population, particularly those who live in cities," says Dr Yue-man Yeung, a specialist in urban agriculture at the Chinese University of Hong Kong, and participant in an IDRC workshop on urban environmental management held last May. This concern predates the Communist regime, which came to power in 1949, as does a government policy of supporting urban self-sufficiency in food. A 1953 study shows that by the early 1930s, Shanghai was able to feed its three million people with food produced within a 100-km radius. The Chinese government has built on this concept of self-sufficiency to keep pace with a growing urban population.

The lack of refrigerators in Chinese households means there is a constant need for daily supplies of fresh food. City farming addresses this need while also offering several economic advantages. For one thing, city-grown food is relatively inexpensive, especially important for the poor. According to Dr Yeung, "the nutrition of the urban poor depends on sufficient food being available at the marketplace at prices they can afford."

When food is grown close to its source, transportation costs are minimized - farmers typically bring their produce to market on foot or by bike or cart, keeping food prices low. Moreover, the government has discouraged regional trade in food because of high associated costs, such as refrigerated transport. These factors help reduce the gap in food prices between urban and rural areas. In most developing countries, by contrast, food is considerably more expensive in cities than in the countryside.

Urban agriculture also provides a decent income for farmers living on the outskirts of Chinese cities, an incentive to keep working in the agricultural sector rather than migrating to jobs in the cities' crowded cores. Most urban farming takes place in the cities' "inner" and "outer" suburbs. Perishable vegetables, such as beans and cabbage, are grown in inner suburbs -- those areas within 10 km of city centres. Most of these vegetables are sold about 10 to 15 hours after harvest. Hardier vegetables, including carrots, radishes, onions, and potatoes, are produced in the outer suburbs. These extensive suburbs are key to urban farming in China and the government has extended municipal boundaries to encompass agricultural land. "The cities are overbound so that they will have enough space for the production of food," says Dr Yeung. For

example, Shanghai's boundaries were increased tenfold in 1958 to cover 6000 sq km.

INTENSITY AND RECYCLING

The land in the suburbs is intensively farmed. In Guangzhou in southern China, a single field can produce up to nine crops a year. Such concentrated use means that soil fertility must be continually renewed. It is done through the recycling of waste, a traditional Chinese practice. Recycled human waste, in particular, has long been used in urban agriculture. The waste is collected from households and taken to a cesspool. Once it is rid of pathogens, it is applied to the fields. Dr Yeung says, however, that this practice is becoming less common with the growing popularity of chemical fertilizers.

Another example of organic waste recycling is found in the Pearl River Delta of Guangdong. Reclaimed 600 years ago, the delta now supports an integrated system of agriculture and aquaculture, known as the mulberry-dyke fish-pond system. Briefly, mulberry trees are grown to feed silkworms and the silkworm waste is fed to the fish in the ponds. The fish also feed on waste from other animals, such as pigs, poultry, and buffalo. The animals in turn are given crops that have been fertilized by mud from the ponds. Dr Yeung describes this sophisticated system as "a continuous cycle of water, waste and food... with man built into the picture" as both farmer and consumer.

THREATS TO FARMLAND

China's recent economic growth, however, is threatening this efficient ecological cycle. Massive tracts of fertile land in the Pearl River Delta have been lost to industrial development and concentrated housing, a trend mirrored elsewhere in the country. Dr Yeung warns that "this is something the Chinese will have to watch because once the land is converted (for residential use), it cannot be converted back to agriculture." Mindful of this, the government has urged peasants in Beijing to build space-saving, two-storey homes.

Even where city farming is successful, its rate of growth trails that of the industrial sector. In prosperous Guangdong province, Dr Yeung estimates that industrial output has increased by 160% over the last decade, compared with a 40% rise in agricultural productivity.

INDUSTRY AND POLLUTION

A second threat to urban agriculture concerns industrial development. As the numbers of factories increase, so does pollution, worsened by the relative lack of pollution controls. The effects are felt in the Pearl River Delta, where the leaves of the mulberry trees show traces of contamination. The silk worms are dying after eating the leaves and silk production is dropping. Farmers are turning to other, more pollution-resistant crops like sugar cane and bamboo.

Changing conditions in urban farming are causing other adjustments. A 60% gap in revenues between growing vegetables and growing grain in Shanghai has prompted farmers to switch to the higher-value crop. Farmers are also increasingly supplementing their earnings with income from other activities, such as factory work. Dr Yeung feels these changes merit further study. The actual science of food production has been well documented but other issues have been neglected. These include the impact of the increased use of household appliances such as refrigerators, the modernization of traditional farming practices, the growth of non-farming jobs in rural areas and the transformation of household labour.

A greater focus on research in urban agriculture is also important in light of the world's changing demographics. "The world is going to be more and more urban," says Dr Yeung. "For the first time, by the end of this century, there will be more people living in cities than in rural areas." The amount of land devoted to urban farming will undoubtedly shrink, just as the need for food in cities becomes more pressing.

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According to Dr Yue-man Yeung, the future of urban agriculture exists today in many Asian megacities, where competition for land demands new products, techniques, systems and policies. Hong Kong is resorting to poly-aquaculture integrated with animal husbandry, technically improved livestock farming with local breeding stocks and cheap feed supplies, leading to fewer and larger chicken and pig farms using massive amounts of urban food wastes. Singapore's policies emphasize self-sufficiency, no subsidies, and fully commercial farming businesses. Vegetable output has kept up despite the acreage reduction thanks to multicropping methods, hydroponics and short-growing varieties. In some cities, such as Shanghai, urban food circulation systems are now highly integrated: the control of production, distribution and marketing is centralized, with coordinated regional management superseding fragmented individual decision-making. Metro-wide planning and fiscal instruments are being introduced to accommodate farming within industrial, institutional and commercial land uses.

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