



Deutscher Tropentag - Bonn, 9-11 October 2001
Conference on International Agricultural Research for
Development

Urban agriculture in the third millennium

Madaleno, Isabel Maria

Instituto de Investigação Científica Tropical, Sítio do Carrascal, Tapada da Ajuda, Apartado 3014, 1301 Lisboa Codex, Portugal. Email isabel-madaleno@clix.pt.

Abstract

How will the cities of the future look like? It was always a passionate task to imagine the future of urban settlements, closely followed by utopic drawings and visions of ideal cities. There are countless projects of urban planning, devised by the most illuminated visionaries, ranging from cities multiplied in height, subterranean cities ideal for desert climates, or floating cities in highly densely riverine populated areas, etc. Some of these projects are simply spectacular, others science fiction in action, and far too many are garden cities, spaces where human beings can be happily associated with nature. Urban agriculture, defined as food and non-food production dispersed throughout urban and peri-urban areas, will certainly play an important role and occupy a considerable space and people in the cities of the future. The main benefits of these activities will be the improvement of nutritional health of the urbanites, which in developing countries is more likely to be a synonym with food self-reliance, jobs and survival strategies; urban agriculture will also give the opportunity for purposeful recreation and educate the youngsters on health and environmental issues; urban agriculture will help to develop community bonds, even when it is practiced by families or on an individual basis, because it intensifies cooperation between people and the sense of share; urban agriculture will constitute the best solution to ameliorate the urban environment, once it enhances a wide range of benefits one can take away from public open spaces.

Introduction

Agriculture is an activity that provides contact with plants and animals. But after the industrial revolution, the urbanites have separated themselves from nature, confined as they were to narrow indoor spaces, or then prevented from feeling the soil under their feet by modern transportation and urban circulation infrastructures. The accelerated improvement of the means of transportation also contributed to expand even away from any reasonability the cities, because it permitted the separation between the residence and the working place. Therefore, the urban sprawl integrated many formerly rural spaces, which sometimes persisted as green as before inside the metropolitan areas, maintaining their primary activities, which simultaneously benefited from the proximity of a wide range of consumers.

The first real type of planned urbanization created to conciliate men with nature was the garden city of the nineteenth century, designed for low human densities, small houses

surrounded by a garden and public green spaces supposedly conceived to be enjoyed by the whole community of urbanites. Several neighborhoods and towns were built accordingly in France, Germany, the U.K. and the United States, usually in straight connexion to heavy industries and well-known private enterprises (Krupps or Pullman). By the end of the century, the Spanish visionary Arturo Soria y Mata expressed his notion of the ideal city through a particular form of garden city, lineal shaped. The vertebral column were the transportation infrastructures, a street about 500 metres wide, where railways at different levels and speeds should be installed, serving sets of residences surrounded by woodlands, with horticultural spaces and family gardens attached to them. The British Ebenezer Howard would further theorize the idea of the garden city through a radio-concentric model, conducing to the enunciation of the satellite towns and green belts dominant all over the world in the 20th century cities. Even so, urban agriculture was seen as an oxymoron till the 1980s, and only recently, with the evolution of environmental sciences, urban planners started emphasizing the importance of inter-relationships between human beings and the care of plants and animals, meaning, living things like us, promoting a wider contact with green spaces, providing the possibility for the urbanites to realize the immutable cycle of seasons, that endlessly marveled our ancestors, long before the age of artificiality and of the domain of machines over modern men and women.

In most cities of the world, the home gardens remain the only bond with nature, and nurturing small livestock or pets, together with watering, fertilizing, and cropping fruit plants, or then tending spices, vegetables, medicinal plants, makes the urbanites feel better, contributing altogether to their good health. The actual public determination in conservation has been widely accompanied by an increasing interest on an interior living plants growth trend, shaping modern interior design. Western European and North American urban populations are also engaged on a chlorophyll search, which is radically transforming metropolis, spreading the cities through the countryside, intertwining built-up and farming spaces, hence reshaping the future of the cities, and definitely introducing nature in the cities of the future.

Urban agriculture in European metropolis

Agriculture is a highly productive activity developed inside most of European metropolis. In the example of Paris, with only 10% of the Isle of France occupied with intensive farming, peri-urban agriculture insures about 35% of the regional crop deliveries in value, mainly constituted by vegetables, flowers and fruits. Usually the producers sell their produce directly to Parisians or on local markets (Pujol and Beguier 1998).

In London there are about 30,000 active allotment gardeners controlling a total of 831 ha of public land, 13.4% of which are located inside the urban area and the remainder in the outskirts of the British capital city. In the peri-urban agriculture spaces market gardening dominates, covering a surface around 13,566 ha, either public or private, largely in decline due to continuous urban development pressures. There are also 8 city farms in London, up to 2.5 ha in size, where animal keeping predominates (Garnett 2000), following a path of getting urban people reconciled with nature as we will further discuss in this paper. Additionally, there are about 1,000 beekeepers in Greater London, contributing to a production of about 27,000 kg of honey annually.

As to Russia, in St Petersburg more than half the population of the city is engaged with cultivation, varying from backyards, basements, rooftops to vacant spaces near houses and peri-urban farms (dachas), these ones usually commercial oriented, and most of the times privately owned. Fruits, vegetables, potatoes and flowers are the main

productions, a means to supplement the family budget of about 2 million urbanites in the city of the Tsars, but there are also several thousands of pensioners and middle aged people who practise subsistence-oriented agriculture. The main concern in Russia is to maintain traditional cultivation habits, based on the usage of manure and compost. Besides, there is normally not enough cash for chemicals; so most of Russian gardeners and urban farmers are active in the field of sustainable organic agriculture (Moldakov 2000).

Evidence from the Spanish capital, Madrid, and from Barcelona show that from the eighties onwards a sort of fashion blossomed throughout the country, brooming the urban populations out of city boundaries, creating a peri-urban sun/greenery belt search, that has compelled many of the citizens, including the one's financially less prepared for business, to buy or to rent small plots of land, and to start a sort of family affair with market gardens. Some of these farms are considered illegal, resulting from middle and upper classes subdivision of big portions of previous rural property, hence generating clandestine handkerchief size plots, badly equipped, with no infrastructures, yet in times of crises extensively used for informal businesses in self-built structures or shacks, like cafés, food-markets, repair-shops, and also explored as part-time subsistence horticulture and fruit trees plantations, whose exceeding produce is frequently sold *in situ* (if the lot is located close to the main roads) or in the nearby big city through hawking and street trading (García-Bellido 1986; Garaitagoitia 1988)

In Lisbon, Portugal, intra-urban agriculture is a micro-scaled phenomenon, widely practised in inner yards, where fruits like oranges, tangerines, dates, and even bananas and avocados can be easily found, together with subsistence horticulture. In suburban municipalities, shifting farms and fringing agriculture plots are frequent, displaying vegetables, flowers and very good grapes, suitable to produce the finest wines. In some metro eccentrically located municipalities one can find cattle, like sheeps and goats, whose milk is used to confection tasty cheeses, and also ostriches, whose meat is largely appreciated by the consumers, particularly after the burst of "mad cows" disease (Bovine Spongiform Encephalopathy-BSE). Surrounding the capital city, in which metropolis somewhat like one third of the Portuguese population lives, intense riverine horticulture qualifies as a highly rentable form of peri-urban agriculture, along the rich alluvial Tagus valley, being tomatoes the most important of the productions. Some foreign firms also use the fertile soil and the mild climate to grow specific ornamental plants, like tulip bulbs, further on exported to The Netherlands.

Exactly in this last other small western European country, there is a long tradition with peri-urban agriculture. Literature reports the existence of community-based Dutch organizations of producers and consumers, in which the growers provide a sufficient quantity and quality of food, while the consumers agree to provide direct support to the producers. One known example is an horticultural farm located at city boundaries of Wageningen, using bio-dynamic farming principles, that offer the urbanites the possibility to decide when and what to harvest, through commitment to buy a share of the production (de Kring 2000).

City farm programmes

In European City Farms, the primary activities in analysis are practised at a small scale, ranging from watering plants, compost making, planting and caring for trees or vegetable gardens or milking cows. The aim of the programme is to give opportunities for children, young people and adults to develop more respect for the farmers' tasks, formerly seen as alien to the cities, to be engaged in community and educational work,

capable to better understand the impact of agricultural activities on the urban environment, and involved with the production of healthy food.

The evaluation of changing weather along the year, accompanied by changes on bucolic landscapes and on farming activities, is another aim of the programme, together with the assessment of snow, heavy rain, ice or drought on nature, as problems to be solved. This way the vulnerability of the environment and the understanding of the difficulties of the farming business are acquired by the urbanites, making them more conscious about the produce they eat (EFCF 2000).

Fast food businesses, super and hypermarkets tend to give the fake idea that animals, cereals, fruits and vegetables come out of paper or plastic bags in kits, dead and ready to be eaten, in standardized shapes, sizes and forms, conveniently hygienized. So the idea of introducing City Farms in Europe, already active in countries like France, Denmark, Portugal, the U.K. or Germany, is to get people re-acquainted with livestock, reconciled with biological agriculture and nature, wishful of a better urban environment, but above all keen of taking initiatives for sustainable development.

This term was first mentioned in the “Bundtland Report”, as is commonly known, and can be defined as a development, which satisfies the needs of the current generation, without risking that future generations cannot satisfy their needs anymore. We should stress that this sort of ecological sustainability is closely nit with economic and technological sustainability, meaning, efficiency in the use of resources, and with a demand for social justice, that we can name social sustainability (Ginsberg 2000).

A broadening of these programmes would be advisable in other developed areas and in most developing countries too, for as it happens with national parks and reserves, that contribute to improve the genetic conservation and ameliorate education for the environment more widely, city farms would act as promoters of agriculture in the urban settings, educating the urbanites to better respect and preserve other living creatures, dissuading them to further recycle their garbage and less pollute the environment.

Therefore we consider that the future of urban agriculture depends much on City Farm Programmes, meant to become pedagogic farms, an objective only possible to achieve through public promotion and political engagement on primary activities protection within the cities of the world.

Urban agriculture in Developing countries

The growth of the cities has been intense in the last 5 decades, dependent on large migratory movements. Mass poverty, social conflicts, spatial segregation have been recorded in vast parts of the developing world urban areas, turning imperative a serious discussion on social integration policies, improvement of intercultural understanding and ecological awareness.

One of the most interesting examples of food production within and around city boundaries is the capital of Mali, Bamako, located in the fertile Niger valley, auto-sufficient in vegetable production, but where the urban growers also raise cattle and produce milk, butter and meat. In 1997, there were 1780 farmers registered in the city (population 1 million inhabitants), ranging from formerly rural settlers, women associations, cooperatives and even middle classed public functionaries engaged with highly rentable forms of commercial agriculture (Sidibe 2000).

At Dakar, where 21% of the Senegalese population lives, there are semi-industrial poultry ventures, which provide about 30% of the national needs, together with legumes, fruits, flower farms and household plots, usually family owned and very small in size. In fact, 70% of the cultivated land has less than 1 ha (Mbaye 1999).

In Togo, Lomé, there are two main production types: the food grown during the rainy season, for instance corn and cassava, practised on more fertile clay soils, and the home gardens tended all year round on sandy soils by individualistic urban agriculture practitioners, in small plots farmed for commercial reasons, where horticulture dominates in close association with spices and medicinal plants (Schilter 1991).

The Southern part of the African continent has the most interesting examples of peri-urban agriculture practices. In the second half of the year 2000, a Portuguese team has researched the capital of Mozambique, one of the poorest countries in the world. Our survey indicates that around 6 200 women grow food on the outskirts of Maputo, together with small livestock like chickens. They are integrated in several cooperatives run by the General Cooperatives Union, a highly organized and very productive agricultural structure, occupying about 2 100 ha of peri-urban land. Health care and education to the youngsters is also provided by the GCU, turning its social function as important as its economic role within Maputo metropolis (Madaleno and Correia 2001). In Latin America, the city of Havana accounts for 20% of the islands' population and has an agricultural potential of about 299.38 Km² or 41% of the province territory. But the official support to urban agriculture only started in the 1990s, with the decline of imports and food aid from the formerly socialist European sphere, and because of food shortages in a country where more than 7 people out of ten live in urban areas. The government recognition of the primary activities includes delivery of land in usufruct, transference of modern and environmentally sustainable techniques and technologies from extension services and research institutions, availability of seeds distribution facilities throughout the city, training targeting women, men and children. Productive stages are divided in: Company Farms, 316 farms for self-supply of state entities; 178 Basic Cooperative Production Units (UBPC); 48 Loans and Services Cooperatives (CCS); and groups of small farmers and gardeners that include more than 20,000 orchards and small parcels, the average surface not exceeding 1 200 m² (Novo and Dubbeling 2000).

We've also researched Belém, located in the Brazilian Amazonia, in 1998. Results indicated that one in three households grew food and non-food products or raised cattle. Fruit culture being the most important agricultural activity surveyed within city boundaries, it contributed to ameliorate the quality of nutrition of the less wealthy families, and was largely practised in very small home gardens, in close association with other species, including ornamental plants, generally cared by women. Medicinal plants were next, followed by spices and vegetables, while ducks and chickens were preferred by the urban agriculture practitioners to any other types of livestock, and were even sponsored by either the municipality or the Pará state.

In the Southeastern city of Presidente Prudente, in the more industrialised S. Paulo state, a municipal project called "Feed Prudente" stimulates non-built plots occupation with vegetable gardens by low-income families, mainly because local authorities lack funds to maintain the public areas made available to them. As we have concluded in other mission to Brazil, dated by 1999, retired or unemployed growers, particularly men, with extensive usage of organic fertilisers, tend sweet potato, cassava and several types of legumes, all year round. Extension services provide ploughing machines, water pumps, and give away the necessary seeds, at least for the first crop (Madaleno 2000).

Finally, Jerusalem has an interesting example of City Farm, a place where ethnically diversified communities grow food and work together, in a country ravaged by political instability and cultural differences. The goals are to promote sustainable food systems for affordable and pesticide-free organic food, as well as to encourage ecological solutions to restore land and water in a difficult setting, and above all it aims at fostering

local social problems. It has a pedagogical function too, being visited by over 1,000 children weekly, intended to learn how to preserve nature, recycle solid wastes, and reuse wasted water, hence helping youngsters to create practical ecological solutions for a sustainable city. People are stimulated to bring food scraps to compost and receive back organic vegetables or training on how to grow biological produce in community gardens placed at their own disposition (Kaufman 1999).

The future of agriculture in urban settings

How will the cities of the future look like? We strongly believe some of the probable features in the third millennium cities, regarding intra-urban and peri-urban agriculture production activities, will be the following:

1. The community gardens, places where people will come together to cooperate in the growing of food. Followers will be urban people that didn't forget their rural past and above all preserve the need of nature. In order to maintain the connexion between man and the environment in urban settings agriculture will indeed be one important activity. Of course, training and formation will be necessary frequently to improve gardening and to develop urban farming as a fair representation of nature inside the cities.

2. Pedagogic farms, aimed at different ages and at different people, will be other possible solution, and should be promoted as much as possible by local authorities. Contests and prizes for the best home gardens, street bushes and trees or even window vases should also be generalised as a strategy of city beautification aimed at ameliorating family cultivation habits.

3. In developing countries, family gardens should be stimulated to help solve social problems. It will be mutually beneficial for poor families and the municipalities who lack funds to maintain public areas, as it already happens in Brazil. Urban agriculture has proved to be quite effective in creating jobs and generating profit, but above all it will contribute to improve family food security and the quality of nutrition, especially among the urban poor.

4. Many cities of the future will experience problems regarding urban solid and liquid waste management. Community efforts will have to be added to the actions taken by the public sector in the collection, reuse and resource recovery of large amounts of garbages and residues. New technologies and frequent workshops will have to be developed and organised, particularly in cities of the South, in order to improve environmental sanitary conditions, being compost making and its usage in home gardens for food and flowers production one of the most advisable forms of waste recycling in the future cities.

One of the biggest challenges of the third millennium will without possible doubt be the urbanization of the developing world population. That's why the creation of "sustainable cities" is the good path to identify ways to provide food, shelter, basic services and jobs to the urbanites. Targeting individuals more than institutions, so far unable to deliver a much promised help to the urban poor has to be the focus of the world intelligentsia. The idea is to integrate the people we intend to help in the activities and solutions so far devised and available in several urban settings of the present, so that it will possibly improve the quality of life in the cities of the future, without compromising genetic reserves and basic resources for the next generations. Whatever happens in this third millennium, it will be the responsibility of concerned citizens, whose aim will certainly be to further stimulate and enhance the contact between man and nature, so that mankind can have physical and mental stability, in full communion with other living things, because Earth is all of us.

References

- EFCF 2000 We are Part of the Earth and the Earth is a Part of us. *In* European Federation of City Farms, (www.ruaf.org), pp.1-8.
- Garaitagoitia X. E. 1988 El Plan del Espacio Rural Metropolitano de Barcelona. *In* Ciudad y Territorio, 75 (1), Madrid, pp. 33-54.
- García-Bellido J. 1986 La Cuestión Rural. Indagaciones sobre la Producción del Espacio Rustico. *In* Ciudad y Territorio, Julio-Septiembre, Madrid, pp. 9-51.
- Garnett T. 2000 Urban Agriculture in London: Rethinking Our Food Economy. *In* Growing Cities, Growing Food. Eds. de Zeeuw, H. at al., DSE, Feldafing.
- Ginsberg O. 2000 Sustainability from the Children's Perspective – A Journey through the Landscape of German Children's City Farms. *In* Urban Agriculture Notes, (www.cityfarmer.org), pp.1-6.
- De Kring 1997 First Bulletin on Urban Agriculture in Europe. *In* Urban Agriculture Notes (www.cityfarmer.org), pp. 1-12.
- Kaufman E. 1999 Jerusalem Cityfarm. *In* Urban Agriculture Notes, (www.cityfarmer.org), pp. 1-2.
- Madaleno I.M. and Correia, A.M. 2001 Alleviating Poverty in Maputo, Mozambique. *In* Urban Agriculture Notes (www.cityfarmer.org), pp.1-7.
- Madaleno I. 2000 Urban Agriculture in Brazil: a tale of two cities. *In* Trialog, 65 (2), pp. 24-27.
- Mbaye A. 1999 Production des Légumes à Dakar: importance, contraintes et potencialités. *In* Urban Agriculture in West Africa: contributing to food security and urban sanitation. Ed. Smith, O.B. IDRC/CTA, Ottawa, pp. 56-66.
- Moldakov O. 2000 The Urban Farmers, Gardeners and Kitchen Gardeners of St. Petersburg. *In* Trialog, 65 (2), pp.33-38.
- Novo M.G., Dubbeling M. 2000 Institutionalization of Urban Agriculture Policies in Havana (Cuba). *In* UMP-LAC/Habitat-UNDP, IDRC-CFP, IPES, pp. 1-16.
- Schilter C. 1991 L' Agriculture Urbaine à Lomé. I.U.E.D.-KARTHALA, Paris.
- Sidibe H. 2000 Agriculture Urbaine et Periurbaine, Sécurité Alimentaire et Nutrition dans les Ménages. *In* SNV-Mali, Bamako, (www.ruaf.org), pp. 1-4.
- Pujol D and Beguier M. 1998 Paris' Near Urban Agriculture. *In* FAO-ETC/RUAF electronic conference (www.ruaf.org), pp.1-6.