

Review

Family urban agriculture as a component of human sustainable development

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Abstract

The universal phenomena of professional urban agriculture (PUA) and family urban agriculture (FUA) are the subject of growing attention. However, it is necessary using a multifunctional analysis to try and gain a global comprehension of their intrinsic worth and differences. Past research on Western European and North American countries has emphasized the food, social and cultural functions of FUA. Most of the recent work on developing countries focuses on the food, employment and environmental functions. Some research on FUA of East European countries has allowed identification of the following functions: second homes, therapy, personal stability and transmission of knowledge and culture. An attempt at a global comprehension is presented that considers those different functions, uses an anthropologico-socio-cultural approach and goes beyond the criteria of the market economy to identify the distinctive nature of the FUA activity. It permits one to understand that FUA contains an important potential compensator, of therapeutic value and contributing to the stability of the person and of the society. Consequently, urban agriculture includes PUA (a market activity which can be termed industry) and FUA (a non-market activity). The implementation of the potential of those two categories for a more human sustainable development of the towns may lead to an institutionalization of this activity not only as a 'distinct industry' (United Nations Development Program), but also as a 'distinct activity'.

Keywords: Urban agriculture, Habitat, Health, Education, Culture, Food, Employment, Environment, Sustainable development, Therapeutic

Review Methodology: We searched the CABI database (Keywords: Urban agriculture, Garden plots). For French publications, we also searched in several French sources. For urban agriculture in Russia, we mention an article that we are writing presently. It is the result of our own research.

Introduction

Research into potential solutions to the social and economic problems of the present period leads us to look at elements of society which were forgotten or misrepresented by previous development models. One of those elements is urban agriculture.

The concept of *urban agriculture* has spread during the 1990s with the pioneering work of the Urban Agricultural Network supported by the United Nations Development

Program (UNDP). The result of this work was presented in a report for the Second United Conference on Human Settlements 'Habitat II' in Istanbul in 1996 [1]. Considering that institutionalization contributes to *human sustainable development*, the foreword of this UNDP report proposes to define it 'as a distinct industry that needs to be recognized and treated as such'.

The numerous examples presented in this UNDP report permit a rediscovery of a universal phenomenon, in the sense that urban agriculture exists in most parts of

the world. The present paper reinforces that acknowledgement of universality, showing that urban agriculture had always existed.

However, with the suggestion of defining urban agriculture as an industry and to institutionalize it as a 'distinct industry', the UNDP report restricts the comprehension of this urban agriculture because it applies to all this activity the criteria of professional urban agriculture (PUA) and of the market economy. In fact, numerous cases presented in this report show that a big part of urban agriculture is not an industry but a family urban agriculture (FUA), non-professional and mainly non-market activity. So, conceptualization of urban agriculture in terms of industry contributes to FUA being overlooked.

Consequently, the potential contribution of urban agriculture to human sustainable development is not fully identified. In the UNDP report, the emphasis is put on the perspectives in terms of employment, food and environment. The potential contribution of FUA in terms of second homes, individual and social therapy, individual and social stabilization, transmission of knowledge and culture is ignored, although there was a lot of research on those subjects during the 20th century.

So, the concept of urban agriculture must be deepened.

The current definitions of this agriculture show that it involves various aspects of plant production (food, flowers and herbal medicines, horticulture and greenhouses) and animal breeding (apiculture, aquaculture and breeding of domestic and wild animals for food, skin and fur). It is put into practice in individual or allotment gardens, orchards, vegetable gardens, glasshouses, market gardens, agricultural lands, cellars and other buildings. It is defined looking at the concepts of intra- and periurban agriculture [2].

In addition, the actual renewal of theories and methods permits to understand better the nature of FUA, its functions and their contribution to human sustainable development. Consequently it permits the outlining of a new institutionalization of urban agriculture.

The Rediscovery of a Universal Phenomenon

A Continuous Phenomenon since Antiquity

Urban agriculture has been in constant existence in all continents. The historico-literary, theoretico-political and philosophical sources which describe the birth of the first towns, their structure and their functioning (Virgil: *The Georgics*, Aristotle: *Politics*, Fouquidide: *Histories*) and the testimonies of theory of architecture (Vitruvius: *Treaty on Architecture*) show a strong interweaving between urban and rural in the life of the individual.

In a thorough book, Paul Bairoch [3] explains that the *peasant component of the towns* was present continuously from Neolithic cities to today's towns. The organization of urban and periurban territories always reserved a place

for urban agriculture. Farmers certainly were a dominant part of city populations of periurban cities in the Neolithic period (Jericho, Çatal-Hüyük, Jarmo), the early stages of agriculture merging with formation of first periurban cities. There is a thesis, until now a minority one, which argues that agriculture would have originated in the centre of towns, and extended after that to the periphery [4].

It seems that 40–50% of urban citizens were farmers at the birth of the urban phenomenon in Africa and China. During the Middle Ages in Western Europe, most Communal Charters provided special places for that purpose. Urban agriculture remained important in the 20th century in spite of the marginalization process.

Agricultural employment remained significant in the 1970s in the big towns of developed countries (4% in the towns of 200 000 to 600 000 inhabitants in the United States), and especially of developing countries, where that part of urban populations could represent up to 25–30% in towns of 5000 to 20 000 inhabitants. To those estimates of professional urban agriculture employment, it is necessary to add non-professional activities, even if data about them are imprecise.

With regard to production activity, the UNDP report on urban agriculture focuses on the lack of systematic information. It estimates at 200 million the number of urban farmers producing for markets, most of them as a part-time activity. It estimates at 800 million the total population engaged in this activity, most of them in FUA producing for self-consumption.

The Return in Interest

During the 20th century, the international scientific community did not dedicate significant attention to this activity. At the same time, the urbanization patterns in most of the Western countries left it less space.

The return in interest in this activity is the result of the conjunction of many factors, in particular: incapacity of development policies to eradicate poverty, under-nutrition, violence, disease and pollution in urban areas [5]; incapacity of the international community to prevent wars and systemic crises which disturb food production systems and food supply of towns; rapid growth of world urbanization (on a world average, urban population, which increased from about 9% to 11% between 1300 and 1800 jumped to 26% in 1900, 38% in 1980, and nearly 50% in 2000; it could be more than 60% in 2025); expansion of that urban agriculture in several parts of the world [6–10]; emergence of a new development paradigm based on concepts of *sustainable development* (United Nations Environmental Program) and *human sustainable development* (UNDP) [11].

The work conducted for the Second United Conference on Human Settlements (Habitat II – Istanbul, 1996) [12], and in particular the 'Urban agriculture report' presented at this conference by UNDP [1], marks an

important step in the new awareness. In the case of numerous Southern Hemisphere countries, the actual development of FUA is a consequence of agricultural modernization, which, from the 1940s, and particularly in the 1960s and 1970s, provoked strong migration from rural to urban areas. The strong urbanization had modified all aspects of food production and consumption. The economic recession and structural politics adjustments in many countries did not permit these problems to be addressed, especially the creating of sufficient new jobs. So poverty increased in the suburbs of numerous towns in Africa, Latin America and Asia.

The four main purposes of the UNDP report were (i) to present a comprehensive picture of urban agriculture in Asia, Africa and Latin America; (ii) to define a distinct industry that needs to be recognized and treated as such; (iii) to persuade leaders in governments, non-governmental organizations, research institutions and other public and private entities to conduct research, support action projects and eliminate unnecessary constraints to the growth of the urban agriculture industry and (iv) to foster a climate that empowers practitioners and the agencies that back them to fulfil the industry's potential for improving well-being and the quality of urban life (in Foreword of [1]).

Since this report's publication, the number of programmes, seminars, symposiums, scientific networks and scientific publications on urban agriculture, especially in Southern Hemisphere countries have increased (nine references on Urban Agriculture in the CAB database in 1994, eight in 1995 and 29 in 2004). In 1999, FAO created an Interdepartmental Working Group on Food for the Cities, which incorporates technical units involved in 'Urban and Periurban Agriculture' and 'Food Supply and Distribution to Cities' [13]. Development agencies reinforce support to this sector in collaboration with NGOs. The number of international networks is increasing [14, 15].

The Renewal of Theoretical Approaches

Most of the publications concerning urban agriculture refer explicitly [16] or implicitly [17] to multifunctional analysis of agriculture. This analysis was developed by numerous researchers, institutions and politicians since the 1990s [18]. The analysis of environmental functions and natural resource management (land, water and organic waste) is detailed in publications concerning all world regions. On the other hand, publications concerning developing countries pay particular attention to economic functions (in particular foodstuffs) of this activity. Those concerning Western European countries and North America pay more attention to social functions. Urban agriculture in East European countries is much less covered in the scientific literature. Consequently, it was impossible to identify plainly the functions of this activity,

and this restricts the understanding of its potential contribution to a more human sustainable development.

The UNDP report includes references about Western European countries and the United States, but is mainly based on research about African, South American and Asian countries. It mentions social, cultural and environmental aspects of urban agriculture, but the focus is on poverty, food and environmental problems. A classification into two categories differentiates between two types of urban agriculture:

(i) PUA: farmers and market gardeners of low, middle and high income, farmers' co-operatives, private or public firms including agrobusiness, and *family business gardeners* [19]. The production is mainly intended to be sold.

The proposal of institutionalization as a distinct industry is adapted to that part of urban agriculture. So, populations practising urban agriculture are identified in accordance with income level and professional categories. The report (p. 54) distinguishes:

- low-income farmers,
- middle and high-income farmers,
- agrobusiness,
- farmers' co-operatives, and
- special groups of farmers such as women, migrants and refugees.

(ii) FUA (which includes parts of the categories of the UNDP report, and the concepts of 'kitchen gardens', 'collective gardens', 'allotment gardens', 'community gardens' and 'urban family gardening') of the people and families working in gardens during the weekend and holidays: families, retired workers, unemployed or underemployed persons. It is mainly a non-market activity, most of the production being intended for self-consumption.

FUA is classified as a part of 'informal sector', 'informal economy', 'non-official economy', 'economy of the population', 'auto-production', 'self-provisioning', etc. The limitations of neoclassical logic do not permit it to be analysed properly [20]. But several theoretical works try to demonstrate the permanency through history and the importance of that 'other economy'. Kirdina refers to Polanyi [21] and North [22] to reconceptualize that economy and its integration into the market economy [23].

The present research process goes beyond the neo-classical component, and uses an anthropologico-sociocultural approach. This approach permits us to identify the true significance of FUA, which is inherent to identity. It lies in the fact that FUA contributes both to personal autonomy and to the possibility for the person to connect with other people and belong to the society.

From a social point of view, that identity appears connected with functions relating to second homes, to

therapeutic effects, education, environment and territory management, and employment. These functions have deep roots in society. They are useful for poor people as it is mentioned in most studies. But, in reinforcing the middle class, they also contribute to social cohesion, and consequently to the social stability. It is possible to qualify those functions as *compensating, therapeutic and stabilizing effects* of FUA on individuals and society.

From a cultural point of view, the identity appears like an inheritable phenomenon, which means the accumulation of wealth that is passed from generation to generation. The definition of that wealth always had been changing, applying from material to cultural and to intellectual. UNESCO explains that 'Heritage is our legacy from the past, what we live with today, and what we pass on to future generations'. UNESCO uses the concept of 'World heritage' and applies it since 1972 to protection and preservation of cultural and natural heritage [24]. Present research of that organization concerns the concept of 'Oral and Intangible Heritage of Humanity' in application of the *Convention for the Safeguarding of the Intangible Cultural Heritage adopted in 2003* [25]. So FUA permits accumulation and transmission of cultural and natural heritage, material and also oral, what we called *transmission of knowledge and culture*.

The beneficiaries of that wealth are very variable, from a narrow family group to humanity, as shown by research about 'public goods' [26]. So, FUA is seen from the point of view of its potential benefit for individual people, families, towns, countries and humanity.

This inheritance approach begins to be used in agricultural research in continuation of works relating to preservation of biological diversity (genetic heritage [27]), emergence and evolution of the forms of cultural heritage, accumulation of professional knowledge and know-how (professional heritage) [28].

The heuristic potential of those identities and inheritable approaches may be important for understanding FUA and explaining how it contributes to human sustainable development.

The FUA-Specific Functions

The Food and Shock Absorber Functions

The most closely studied function in the literature on urban agriculture is how it participates in food security of populations [29–31]. The way in which the international community approaches food problems explains this attention.

According to FAO, 840 million people are suffering from hunger, including 799 million in developing countries, 30 million in transition countries and 11 million in the industrial countries. It seems that more than half of the people (a study suggests an estimate of 57% for the year 2000 [32]) classified as poor or suffering from hunger

are now inhabitants of towns. That problem is especially acute in case of serious crises: wars, economic crises or social disruption, like the collapse of Soviet Union, the consequences of which affected food supplies to several countries, Cuba included [33, 34].

In Western European countries, the demand for plots in allotment gardens changed according to the period. Their creation was a response to the great depression that occurred at the end of the 19th century, which had increased the poverty of the working class in the towns. The number of allotments increased in the period up to the Second World War and then jumped again during the War in all countries occupied by Nazi armies, or under blockade (UK [35]). Numbers regressed slowly during the period of prosperity up to the 1970s, then increased again [36, 37].

In the Russian case, where the State has always been controlling food distribution channels, FUA, as with peasant plots in rural areas, served a food contribution function, including a way to help the survival of families in case of serious crises. The Soviet period caused a specific evolution in the long history of FUA. The social destruction and very rapid urbanization of the 1920s and 1930s happened with destruction of the older forms of urban agriculture. Afterwards, throughout the war, the city dwellers were obliged to participate in agricultural production to feed the army, in particular in St. Petersburg (previously called Leningrad) during the siege of the Nazi armies. Every piece of available ground in the town was cultivated. This ordeal and then the starvation of 1948 persuaded the State to encourage development of urban allotment gardens. During the 1990s crises, when the United States and European Union began to think about food aid to Russia, this FUA, more than peasant plots, helped urban people to avoid suffering from hunger. In other East European countries, especially in Poland [38], FUA is also very developed and plays the same survival functions for families.

So, FUA is a shock absorber in crises, and consequently a basic element of food security politics.

In other periods, when there are no serious crises, the food function of FUA diminishes in favour of other functions. Flowers and trees for pleasure gardens take the place of vegetables. But people may quickly return to food production if a new crisis occurs.

But even in those more stable periods, the food function continues to be very important in developing and developed countries. In Russia, from the 1960s to the 1980s, the food function of FUA had been decreasing in the two capitals (Leningrad and Moscow) but remained very important in provincial towns, which always had supply difficulties. In the developed countries, including United States, there is always a little part of the urban population which lives in great poverty, and for this reason, looks to FUA.

The contribution of FUA related to diversity and quality of products finds increasing interest. In some cases, it can

permit families to eat products they could not buy. The main hope is that it could, as a rule, supply food and medicinal plants of high quality at low cost of production and which does not contain dangerous substances. Numerous urban gardeners know how to use composts and organic fertilizing to treat diseases and other problems of plants by natural methods.

However, it is also well known that there are some cases where products of urban agriculture may include more dangerous substances than products bought in the markets. The causes are air, water and soil pollution in the land dedicated to that activity, and also the practices of production.

Sometimes, research on those problems has yielded unexpected results. So, a study by the World Health Organization [39] on St. Petersburg discovered that the lead and copper contents in vegetables produced on the roofs of buildings inside the town were lower than the norms considered acceptable in the production of vegetables [40–42]. However, levels were twice those norms in vegetables from allotment gardens located at 30 km out of town, and five to six times more than the norms for vegetables from professional agriculture bought from the markets in the town.

Second Homes

In numerous areas of the world, in particular in East European countries, FUA permits access of populations to second homes.

The identity and heritage character of FUA are very apparent in Eastern European countries. In Russia, research analyses it from the point of view of the second home that is classically called a *dacha* [43, 44]. Between half and three-quarters of urban people from all social categories have a plot in an allotment garden (20–25 million plots, according to evaluations) or an individual garden. Nowadays, it is possible to build a small house, which may include a cellar to conserve fruits and vegetables and a structure in which to take a steam bath. From April to September, most urban people live in their gardens during weekends and holidays, some of them all the summer. This possibility of living in the garden was one of the few popular achievements of the Soviet system [45].

In Western European countries and other parts of the world, a proportion of middle- and high-income people have a second residence which fulfils similar functions. In most *urban allotment gardens*, it is prohibited to construct this kind of second habitation. However, the pressure of occupants often means it tends to be used for that purpose [46].

This has been an ever-present phenomenon since antiquity [47]. In ancient Greece, the nobles came to Acropolis to fulfil their civil and religious obligations (the Acropolis also could be used as protection in periods of trouble). Afterwards, they returned to their rural

residence. Then, they built up the town, building habitations around Acropolis, for their use and for their servants. Later they turned mainly urban: building houses in rural areas, in that way retaining second homes, and maintaining their servants in the towns. Progressively, the town appears to be a more protective and more functional place.

Several variants of this phenomenon were analysed. The first towns did not have any clear frontiers with the village. The inhabitants of towns continued to have a house in the rural areas, going to town to fulfil their obligations. The growing complexity of social relationships and of the forms of social life required more presence in the town. Urban habitation, which until then appears as a temporary shelter, with time turned into a permanent habitation. But those who could afford them had second homes.

The permanent aspiration for second homes seems to be linked with the bio-socio-cultural nature of the human identity. Home in a town gives access to cultural and social life, and home in another place gives access to Nature.

Several factors such as the building of fortifications around the towns and evolution towards technical and technological improvement led city-dwellers to distance themselves from Nature and produce an opposition between agrarian and urban cultures. We may wonder to what extent withdrawal from Nature and the requirements of urban life divide the bio-socio-cultural component of human identity, so it would be a cause of disequilibria on the person and on society. Being at the interface between the rural and the urban, and permitting a low-cost form of second homes, urban agriculture would, as a main function, help in reunification of these components.

The Individual and Social Therapeutic

The UNDP report [1] explains that 'Urban Agriculture contributes to the health and well-being of a community by reducing hunger, improving nutrition and improving environmental conditions that affect health' (p. 160).

This contribution to health has always been well known. However, on the contrary, in many cases, there are also sanitary risks linked to this activity: contamination of the products by heavy metals, agrochemical wastes or pathogenic organisms, etc. [48]. The contribution of urban agriculture to health is real in some cases and potential in other cases. It needs active involvement of public and private actors.

The therapeutic aspects of FUA are missing in the UNDP report. However, it begins to be mentioned in the works of international institutions [48].

From the end of the 19th century, promoters of urban gardening and the 'hygienist' movement explained that urban gardening offered solutions to food deficiencies and

diseases, but also contributed to the renewal of the working class affected by cultural destruction, violence and alcoholism. They demonstrated that physical work with Nature had curative virtues.

This potential inspired architects who wanted to introduce more Nature in the urban planning, among them city gardens proposed by Ebenezer Howard in London from 1898.

Socialist and Christian thinkers had been proposing at the end of the 19th century that each family could have an inalienable right to have possession of a house and a piece of land.

The *family gardens movement* [49] experienced some success. It had been promoted by Christian reformers, most of them referring to the Leon XIII Encyclical called 'Rerum Novarum': Lemire in France, Gruel in Belgium, Collins in the UK and Schreiber in Germany. In France, they referred to Saint Vincent de Paul who, in the 17th century, obtained land for poor people, so they could cultivate by themselves and in that way rebuild their dignity. In 1926, national organizations (from Germany, Austria, Belgium, Finland, France, UK, Ireland, Italian, Luxembourg, the Netherlands, Poland, Sweden, Switzerland and Czechoslovakia) grouped together as a European organization entitled International Office of the Piece of Land and Workers Gardens. Nowadays, it groups together organizations from 15 countries having more or less five million plots in collective gardens.

In Russia, the State always regarded dachas and gardens as places to rehabilitate health from physical, psychological and emotional points of view.

This need for Nature is stronger for children and old people, as indicated in dialogues with Russian gardeners and research in others countries [50]. Adolescents often prefer the company of other young people, discotheques and holidays in other places. Adults have to engage in social and professional life, and the garden is sometimes seen as a heavy obligation. But when old age is coming or when health is precarious, the garden becomes more attractive.

Numerous recent studies show that FUA permits self-validation of the person. In Russia, enquiries provide indications that gardeners connect this activity with liberty, autonomy and creativity. Research in France shows that it reinforces self-respect, which comes from the pleasure of producing something by oneself, to show other people what they have produced, to give friends and family some vegetables, fruits and flowers [51, 52].

In the United States, UK and other Western European countries, numerous studies mention initiatives to use FUA as a contribution to physical, mental and emotional health [53], to social reinsertion of damaged people [54, 55], to social development [56, 57] and to social regulation [58]. In countries that accept 'communitarism', collective gardens give the possibility of reinforcing the sense of community of immigrant populations [59]. In other countries such as France that promote cultural

assimilation, authorities want to avoid those communities and promote ethnic and professional diversity inside those collective gardens. In countries that suffered of a great trauma (war, massacres or genocides), the garden is one of the few places where the person recuperates the possibility of thinking and speaking about those events.

In addition to their therapeutic effects, family gardens aid the creation of other social activities like collective meals, annual feast of gardens, friendly societies, purchasing co-operatives, juridical consultations, studies circles, chorals, bands, etc.

The Transmission of Knowledge and Culture

The transmission and fortification of familial links are an important component of the identity dimension of FUA. This transmission is included in the basic process of education before the formal education in school [60]. By teaching children how to recognize plants, to plant and to look after vegetables, sometimes learning how to make cuttings, to graft, to prune, to experiment with new varieties of fruits and vegetables, adults pass on to children principles of life and working methods. This function is particularly vital when populations are fragile, when families are threatened by destruction from rapid transformations, are from displaced populations or are living in refugee camps.

Gardening is also supportive of other activities that create social links and transmit culture and knowledge. Shows and competitions encourage research, quality of the production and aesthetics of gardens. Radio and television broadcasts and garden magazines diffuse scientific and practical knowledge. Schools of gardening, firms and associations take an inventory and protect scarce species, experiment, select, and produce new varieties. In the Southern Hemisphere countries, numerous actors are mobilized for conservation of biodiversity to domestic and salvage species, on the curative power of medical plants [61], and organic agriculture.

Noticing the new interest in gardening, educational systems are trying to make the most of its educational potential. They are encouraged in that way by urban agriculture organizations that provide information and know-how [cf. for instance RUAFA, CGIAR/Urban Harvest (Lima), City Farmer (Canada) and Community Food Security Coalition's North American Initiative on Urban Agriculture (USA)]. Examples are numerous in the United States [62] and other developed countries. In the UK for instance, one intention of the Federation of City Farms and Community Gardens is to provide educational activities for school groups [35]. In France, the Ministry of National Education is beginning to encourage schools to use gardening as a support for teaching botany, chemistry, biology, etc. Each year at spring time, an operation called 'The week of gardening for schools' is organized. During that operation, professionals interested

in the development of the FUA market provide teachers with educational materials and help children to discover plants, to cultivate, to observe their growth, to understand what they need, to enrich vocabulary, to awaken their senses and to work on concepts such as cycle of life, reproduction of plants, etc.

In another example, in 1986, the programme 'Community Gardens' of the São Paulo Town Council reserved gardens for schools, nursery schools and youth centres. They also provided experiences about nutrition and environmental education.

The Environmental and Territory Management Functions

The environmental and territory management functions were the subject of controversies. Frequently, public actors and sectors of urban populations had a real hostility to the effects of this activity about aesthetics of urban and periurban landscapes, on pollution, etc. Those critics were stronger about FUA because of the wild and spontaneous aspects of the previous landscape.

But, in two decades, the view has changed. Nowadays, numerous studies mention its positive role on the environment [63–65], especially by improving the quality of soil, air and water, improving urban microclimates, cleaning up insalubrious regions, protecting against erosion [66], contributing to recycling of some wastes, and the possibility of improving the quality of urban landscape [67]. In Russia, research shows that, in several cases, gardeners had transformed poor land, located in marshy areas or of difficult access, into healthy and fruitful zones.

Comments confirm a better consideration about the necessity of urban agriculture, and of the obligation for public services and private organizations to be actively involved in solving the problems and to reinforce its positive effects.

New proposals are now appearing for a better integration of urban agriculture in strategies for sustainable development of the towns [68], and consequently for introducing it into the policy agenda [69].

Outlines of a New Institutionalization

The proposal of the UNDP report to define, recognize and treat urban agriculture as a *distinct industry* is adequate for PUA, but not for FUA. The concept more relevant would be a 'distinct activity'. It permits one to take into account the fact that FUA is mainly a non-market, non-industrial activity and to recognize the important services it provides to the society. That proposal suits the objective of the UNDP report, which argues that institutionalization of urban agriculture is necessary to build a human sustainable development of urban and periurban areas.

This recognition of urban agriculture as a distinct activity tends to reinforce the status of FUA, which is

precarious in numerous regions of the world. In many cases, garden areas are in danger of being replaced by buildings, roads, etc. The UNDP report underlines that precariousness in developing countries. It mentions (p. 101) several legal or extralegal arrangements for access and utilization: economic rent or lease, farming under permit, informal agreements and farming that occurs without the landowner's consent.

Reinforcing urban agriculture as a distinct activity is needed to reinforce the status of FUA. For that purpose, it could be useful to recall lessons from historical experience.

At the end of the 19th century, a period of big economic depression and enormous social problems, there was a proposal in the United States and in Western European countries that each family could have an inalienable right to own a 'homestead' which cannot be subject to distraint, and that includes a house and a piece of land (cf. J-M Mayeur L'abbé Lemire et le terrianisme, in [49] 21–29). Concerning the right for urban people to own a piece of land, this proposal took two concrete forms during the 20th century.

In communist countries, the governments imposed collective property ownership to the disadvantage of private property ownership. In Russia since the 1940s, the expansion of plots into urban allotment gardens is the most important case of institutionalization of FUA in the world. The possibility of living in a little house in those plots is a result of a bottom-up movement, one uncommon popular conquest inside the Soviet regime. Currently, the owners in the allotment gardens can sell their plots, and it is difficult to know the future of the system which permitted the allocation of plots to needy families [45]. But that historical experience and the present situation give references for the prospects.

In Western democracies, co-operative and associative systems have permitted the administration of collective gardens in order to allocate plots to needy families that ask for them [49]. The plots were reassigned to other families when users did not fulfil the conditions of utilization. So, over decades, allotment gardens continue to permit needy categories of the population access to a piece of land.

In those Western democracies, the food crisis during the Second World War period had propelled that model into new associations, for instance in France the association 'Gardens of the Railwayman', linked with the national railway enterprise.

In the present period of economic and social crisis, we can identify a bottom-up movement of the same nature. In France, numerous initiatives using gardens to reinsert damaged people have been initiated in the last 20 years. They are recognized and regulated by a law (29 July 1998) relating to the struggle against exclusion. Several organizations are developing, in particular the 'Jardins de Cocagne' (Gardens of Plenty).

Those experiences in Western democracies suggest that FUA is durable over many generations and is a modern practice of citizenship. But in most of the countries, those co-operative and associative systems are dedicated to a small part of the population, mainly the disadvantaged sections of it. The difference is very important in the Russian case where urban allotment gardens concern the main part of urban population (50–75%), and all categories of it.

Conclusion

The contribution of urban agriculture to human sustainable development is potentially important. However, the proposal to institutionalize it as a *distinct industry* does not permit the realizing of all of its potential.

It is necessary to make a distinction between PUA and FUA. PUA may be correctly analysed with the criteria of the market economy. But to identify the interest of FUA, one needs to go through those criteria and to adopt an anthropologico-socio-cultural approach. This approach permits the recognition of its identity, its heritage components and its functions, which were studied in the Western European countries during the 20th century. Those functions relate to food security, second homes, individual and social therapeutics, transmission of knowledge and culture and environmental and territory management. They have a compensating, stabilizing and therapeutic effect on individuals and on society. This treble effect permits to bring responses to the double face of urban crisis, the one linked with environment and the one linked to social tensions [70].

So, the potential of urban agriculture, and mainly its FUA part, is much wider than explained in the UNDP report and a lot of present studies among southern countries.

Developing this potential needs an institutionalization of urban agriculture as a distinct activity that reinforces the status of FUA. For that purpose, it is useful to recall the lessons of historical experiences in several parts of the world.

The perspectives of the research are linked to the deepening of the compensating, stabilizing and therapeutic effect of FUA on person and societies, to the introduction of those results inside an examination of the human dimension into sustainable development. This analysis opens a new look on agriculture, and on its urban components, understood from the point of view of their contribution to society.

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