

Full Length Research Paper

An evaluation of the performance of urban agriculture in Addis-Ababa City, Ethiopia

Thomas P. Z. Mpofu

Faculty of Science and Technology, Zimbabwe Open University, Harare, Zimbabwe. E-mail: tpz.mpofu@yahoo.co.za.

Accepted 20 January, 2013

Ethiopia has a high rate of urbanization, averaging about 4.3% per annum. About 30% of this population is concentrated in the capital and primate city, Addis-Ababa. The City's population growth has been accompanied by growing unemployment, urban poverty and malnutrition. The Addis-Ababa City Government has recognized urban agriculture as one of the important tools to end poverty. However, its contribution towards income generation, employment creation, food security, poverty alleviation and environmental protection has remained negligible. It was due to the apparent paradox between the latent and actual contribution of urban agriculture in Addis-Ababa City that the study was conceived. Specifically, the study identified and analyzed the factors that were hindering the sustained development and growth of urban agriculture in Addis-Ababa. The scope of the study was limited to vegetable producers within the City. The study revealed that, while some farmers were benefiting from urban agriculture, the sector suffered from weakness in the institutional, financial and human capacities of the City. These included lack of a facilitating policy, unavailability of collateral, high cost of the requisite inputs, and the absence of extension services. Therefore, the study recommends the urgent formulation of facilitating policies and strategies at both national and regional levels. These should specifically address issues related to land tenure, access to credit, as well as training and extension services to improve the capacity and productivity of urban farmers.

Key words: Malnutrition, agricultural policy, land tenure, extension services.

INTRODUCTION

About half of the world population lives in urban areas. It is estimated that, by 2020, the developing countries will account for about 75% of all urban dwellers (Bakker et al., 2001). However, while urbanization brings a number of socio-economic benefits, the rapid increase in urban population ushers in a number of challenges. Urban authorities find themselves heavily challenged in terms of their capacities to provide adequate services such as housing, infrastructure, facilities and employment. The continued expansion of urban areas into the immediate hinterlands often leads to the conversion of potential agricultural lands into non-agricultural land uses. This takes place at a time when many cities are saddled with the challenge to tackle growing unemployment and poverty.

Some cities have adopted urban agriculture as a strategy to address the increasing urban unemployment, poverty and hunger. This is because urban agriculture supports food security and nutrition, provides employment and generates income for the urban poor in

general and the disadvantaged groups such as women, the disabled, the elderly and the unemployed youth (van Veenhuizen, 2006). According to Armar-Klemesu (2006), about 200 million urban dwellers in the world participate in urban farming and the sector provides about 800 million people with at least some of their food.

What is urban agriculture?

Urban agriculture has been perceived and defined from different dimensions by different authors. According to Richtel et al. (1995), it is not the location of urban agriculture which distinguishes it from rural agriculture, but the fact that it is embedded in and interacting with the urban ecosystem. According to Mougeot (2000), the general definition of urban agriculture is the growing of plants and the raising of animals for food and other uses within cities and peri-urban areas. It also includes the production and delivery of inputs, and the processing and

marketing of products. Mougeot (2000) goes on to argue that the lead feature of urban agriculture, which distinguishes it from rural agriculture, is its integration into the urban economy and ecological system.

From the aforementioned definitions, Renevan (2006) concludes that urban agriculture is an industry located within or on the fringe of a town, which grows or raises, processes and distributes a diversity of food and non-food products, using largely human and material resources, products and services found in and around that urban area.

The significance of urban agriculture

There is now growing consensus that urban agriculture is not a problem, as previously thought, but an important contributor to sustainable urban growth and development, as well as to people's livelihoods. The sector contributes significantly to food supply, employment creation, income generation and environmental management. It is estimated that about 800 million people worldwide engage in urban agriculture (UN-Habitat, 2001). It is thought that globally, urban agriculture produces 15% of all food consumed in urban areas, and that this figure is likely to double within the next twenty years.

In Russia, 72% of households are urban farmers, 80,000 in Berlin, 68% in Tanzania, while in China the 14 largest cities produce 85% or more of vegetables (UN-Habitat, 2001). Increases in urban agriculture have also been recorded in African cities such as Bissau (Guinea Bissau), Dakar (Senegal), Kumasi (Ghana), Lome (Togo), Nairobi (Kenya and Dar-es-Salaam (Tanzania) [Food and Agricultural Organization (FAO), 2004]. Thus urban agriculture is, in most cases, a response by the urban poor to inadequate, unreliable and irregular access to food and to lack of purchasing power. Most cities, particularly in developing countries, are unable to generate sufficient income and employment for their rapidly growing populations. This translates directly into lack of food.

Urban farmers usually specialize in the production of perishable and high commercial value agricultural products such as vegetables, milk and milk products, eggs and meat. For example, in Shanghai, China, about 100 percent of milk, 90 percent of eggs and 60 per cent of vegetables are produced in the urban and peri-urban areas of the City. In terms of the Gross Domestic Product (GDP), urban agriculture contributed 2% in Shanghai (China), and 4% in Lima (Peru) (van Veenhuizen, 2006).

In six East and Southern African countries, the number of people obtaining part of their food from urban agriculture is expected to rise from about 25 million to 40 million by 2020 (Renevan, 2006). Dar-es-salaam, in Tanzania, produces 60% of milk and 90% of the vegetable demand of the City (Nugent, 2001).

In some cities, urban agriculture has been able to

attract the involvement of micro-enterprises in the production of inputs, processing, packaging and marketing of urban agricultural products. In addition, urban agriculture has contributed significantly towards solving waste management problems by converting urban solid waste into productive agricultural inputs such as compost while treated waste water has been used for irrigation. Urban agriculture is also part of the urban greenery that improves the urban micro-climate, increases biological diversity, as well as the aesthetics and recreational functions of urban areas.

Who are the urban farmers?

Generally, the urban farmers are men and women coming from all income groups. However, the majority of them are low to medium income earners, who grow food for self-consumption or supplementary income (Bakker et al., 2000). Low-income farmers practice urban agriculture mainly to survive and achieve a combination of nutritional and socio-economic benefits. Middle-income home gardeners practice urban agriculture mainly to provide supplementary food and /or income. Agribusiness farmers practice urban agriculture to obtain income, although these are often in the minority. In the second and third categories are found people who have their gardens maintained by their servants and watchmen. Most of the cultivation is informal, with little, if any support (Jacobi et al., 2000).

As women are still disadvantaged in the formal sector in several societies, they tend to dominate certain components of urban agriculture such as backyard gardening and small-scale animal husbandry. This is because urban food production offers opportunities to be integrated into other household activities where women uphold the responsibility for household food security, while men dominate the commercial urban food production (FAO, 2002). In some countries, children are also involved mainly in weeding and watering.

Thus urban farmers do not form a homogeneous group of people, but can be found almost among every socio-economic group of an urban area. Although urban agriculture is mostly practiced at household level, in several places farmers work together. One striking feature of urban agriculture is that most of the time it is a spontaneous and informal activity, and not officially planned. As a result, actual facts and figures on who the urban farmers are and how many they are most of the time missing.

FACTORS LIMITING THE SUSTAINED GROWTH AND DEVELOPMENT OF URBAN AGRICULTURE

Despite the fact that the growth and development of urban agriculture is an economically viable enterprise,

official projects and programmes aimed at improving urban agriculture have been relatively rare. This is typically because urban agriculture has not been taken as an integral part of the urban planning process. As a result, no sufficient data are collected on urban agriculture nor does the activity have any identity or validation as a productive sector of the economy.

The poor performance of urban agriculture has largely been attributed to the following factors:

- a) Institutional or organizational constraints;
- b) Lack of access to resources, inputs and services; and,
- c) Lack of post production capacity such as processing and marketing constraints (Smit et al, 1996).

Institutional or organizational constraints

According to Mougeot (2001), lack of positive government policy on and recognition of urban agriculture as a viable sector are prevalent in most developing countries. Most policies on agriculture, food, health, nutrition and environmental policies are silent on urban agriculture. Lack of official recognition of urban agriculture often leads to a feeling of insecurity among urban farmers, thereby limiting their commitment to investment in this sector. Similarly, some credit agencies, researchers, development agencies and market agents generally do not view urban agriculture as a significant industry (UNDP, 1996). As a consequence, the sector's benefits are not being fully realized by those urban populations who require nourishment.

Lack of access to resources

According to Drescher et al. (1999), the most critical institutional constraints to urban agriculture include lack of access to farming land as well as to farming inputs such as seeds, fertilizer, pesticides, and implements. Urban food markets are often designed, sometimes since colonial times, to import food from rural areas, while the input producing businesses are also oriented towards serving rural agriculture. Thus, both the input and output market systems and infrastructure often favor rural agriculture (UNDP, 1996). This is largely because the market structures tend to be composed of large wholesalers who purchase directly from rural areas or from intermediary wholesale markets at the edge of the city. Thus, generally, smaller urban farmers do not yet fit well into these structures.

Other constraints

Some other problems commonly experienced by urban farmers include loss of vegetables to theft due to

inadequate police protection. This is because urban agriculture, unlike most other industries, produces mostly in the open and is thus particularly vulnerable to theft (Smit et al., 1996).

Statement of the problem

Like many developing countries, Ethiopia has a high rate of urbanization, averaging about 4.3% per annum [Ministry of Works and Urban Development] (MWUD, 2006). About 30% of this population is concentrated in the capital and primate city, Addis-Ababa. This population growth rate is also accompanied by growing numbers of the urban poor and malnourished, due primarily to the high rate of unemployment.

The Addis-Ababa City Government has recognized urban agriculture as one of the important tools to end poverty. To this effect, the City Government has taken the following measures to encourage this sector:

1. Recognized the existence and continuation of urban farming within and around the City;
2. Accepted urban agriculture as an integral component of the City's development Master Plan; and,
3. Established the Department of Urban Agriculture at both city and sub-city levels.

However, no independent evaluation of the performance of urban agriculture in Addis Ababa has been carried out. It was, therefore, the need to assess its contribution towards income generation, employment creation, food security, poverty alleviation and environmental protection that prompted the study.

Study objectives

The main objective of the study was to evaluate the extent to which urban agriculture in Addis-Ababa had developed. Specifically, the study sought to:

1. Evaluated how urban agriculture had contributed to the socio-economic well-being of urban farmers;
2. Assess the contribution of urban agriculture to the environment of Addis Ababa in general;
3. Identify the challenges or constraints faced by urban farmers; and,
4. Propose measures that could lead to the sustained growth and development of urban agriculture.

Scope of the study

The study was limited to vegetable production within Addis-Ababa.

Justification of the study

The majority of urban farmers in Addis Ababa are men and women with low to medium incomes. They, therefore, practice urban agriculture to produce food for self-consumption and to supplement their meager incomes. The low-income farmers practice urban agriculture mainly to survive and achieve a combination of nutritional and socio-economic benefits. Most of the cultivation is informal, with little, if any support from official sources.

Addis-Ababa has a lot of potential for urban agriculture. This includes vacant pockets of land; a moderate agro-climate; many perennial rivers and streams that flow across the City; abundant ground water; and availability of organic waste that can be converted into compost. It is this potential that needs to be systematically harnessed to improve the livelihoods of many people who live in Addis Ababa.

METHODOLOGY

The study utilized the following data sources: reports, books, previous studies, internet and personal observation. Primary data were obtained through interviews with garden farmers and officials from the Addis Ababa City Government. It is pertinent to mention that, as a foreign, collection of data was not easy due to suspicion.

In terms of data analysis, the study employed the descriptive approach. The study used institutional, economic, social, and environmental aspects as indicators of performance.

RESULTS AND DISCUSSION

The study revealed that urban agriculture in Addis-Ababa was benefitting urban farmers and had enabled them to bridge the food gap by supplying fresh vegetables. This, in turn had enhanced the food security, daily food intake and nutrition of the urban farmers in particular and the urban dwellers in general.

The economic benefits accruing from urban agriculture can, thus, be categorized as follows:

1. Food security;
2. Income generation;
3. Employment creation; AND,
4. Multiplier effects.

Food security and nutrition

The research established that urban farmers in Addis-Ababa produced about 16,220 tons of different

vegetables within an area of 433 ha. According to ENDA-Ethiopia, compared to 2002, this was a steady increase from 6,692 tons of different vegetables within an area of 335 ha of land or 3% of the total vegetable demand of the City. The Addis Ababa Urban Agriculture Department also confirmed that vegetable production had increased to 11, 956 tons and that the area under vegetables had also increased to 396 ha of land in 2006. This was about 5% of the city's demand for vegetables.

However, while one informant, the Office for the Revision of Addis-Ababa Master Plan (ORAAMP), recognized that urban farming was making a positive contribution to food security and nutrition in Addis-Ababa, they felt that that was still insignificant compared to the estimated potential because, on paper, there were 40 km² of land per person available in Addis Ababa. If well utilized, this land could produce an estimated 600 grams of food per day. This would be three times the global standard of 200 grams per day or 60 times more than the present 10 grams per person per day nutrition intake of Addis-Ababa City.

Income generation and employment creation

The study revealed that one of the economic benefits of urban agriculture in Addis-Ababa has been its capacity to generate income and create employment opportunities. On average, three vegetable growing cooperatives gained an annual income of 157,005.31 Birr, giving an average monthly income of 581.00 Birr per each member of the cooperative. This was equivalent to the middle income of group in Ethiopia (In 2011, US\$1.00 was equal to 20 Birr).

In terms of employment, the study found that there were about 16,000 people engaged in producing vegetables in Addis Ababa. Out of these, about 7,454 families were organized into 11 farmer's cooperatives. The study identified 957 vegetable farmers with a total family size of about 7,454 people. Thus, it could be said that the sector secured permanent and/or part-time employment for around 5,057 household heads or 27,954 members of their families.

The data in Table 1 do not include income generation and employment creation from the pre- and post-production activities.

Multiplier effects

The study found that there were a number of multiplier effects emanating from urban agriculture. The study classified these into compost production and processing, and packaging and marketing of urban agricultural products. However, the study concluded that the compost produced from the organic waste was quite insignificant compared to the amount of organic waste generated in

Table 1. Employment creation from eleven vegetable cooperatives.

	Males	Females	Total
No of household heads	636	321	957
No of family members	2972	4478	7450

the City.

Most of the vegetables produced were supplied to the local markets while a relatively small amount was used for home consumption. The study estimated that, given the right support, urban farmers could supply more than 42% of the vegetable demand in Addis-Ababa.

Social benefits

The study found that, in addition to the above economic benefits, urban agriculture in Addis-Ababa was bringing about significant social contributions. It involved some vulnerable groups such as women and the elderly, thereby helping to reduce their dependency on other people. The study established that between 28 and 34% of urban farmers were female, while 43% were elderly. Urban agriculture also served to strengthen social integration of the farmers by organizing them into cooperatives.

However, the study found that the number of female farmers was less than their male counterparts. This finding confirmed previous studies carried out by Mohammed (2001), ENDA-Ethiopia (2002) and the Annual Performance Report of the Addis Ababa Urban Agriculture Department (2004) that the composition of women in selected three urban farmers' cooperatives in Addis-Ababa was 28, 21 and 34% respectively.

The study found that more women were actively participating in the pre-production activities such as waste recycling, and post-production processing and marketing of urban agricultural products. However, compared to the total number of women in Addis-Ababa, and their level of vulnerability, the study viewed this figure as being rather negligible. The low involvement of women was attributed to socio-cultural influences that often limit the involvement of females in out-door economic activities.

The second and perhaps more important factor to note was that most women lacked access to the most dominant ingredient in organizing urban farmers – the land! However, the study noted that, compared to other economic sectors, the proportion of women in agriculture was much more encouraging. This was due to the fact that urban agriculture could be practiced during spare times, side-by-side with household activities. It also involved relatively less skills, knowledge and capital to run the activity.

The study also found that urban agriculture was able to involve other vulnerable groups of the urban society – the

elderly. The study viewed the involvement of the elderly in urban agriculture as a positive step that enabled them to support their fragile economic base while at the same time strengthening their inclusion into their society. This finding confirmed Mohammed's (2002) earlier finding that the participation rate of the elderly above 55 years was about 43%.

Environmental benefits

The study established that, due to the favorable climatic conditions of Addis-Ababa, areas used for urban agriculture were green throughout the year. This contributed towards the creation of a micro-climate in some parts of the City, as well as to the City's aesthetic value. Ever greenness also helped to clean the air by reducing dust and protecting the soil from erosion. Some respondents added that urban agriculture had protected their areas from being used as sites for the unhygienic dumping of wastes.

The study found that there was a significant number of small scale enterprises that was engaged in producing compost from solid waste. According to the officials of the Addis-Ababa Urban Agriculture Department, more than 108 cubic meters of that compost was produced for use by urban farmers in vegetable production. However, in the opinion of the researcher, while the 108 cubic meters of compost was a commendable effort, it was inadequate compared to the amount of compost needed by the farmers, as well as the amount of organic solid waste generated within the City. The researcher was informed by the Environment Protection Authority that Addis-Ababa produced 400,000 tons of waste annually, of which 30% or 120,000 tons, was recyclable. On the basis of this information, it was the view of the researcher that, if the waste were converted into compost, it would create more employment; save costs of transporting the waste to dumping sites; replace artificial fertilizer; and protect the environment from water and air pollution.

Challenges of urban agriculture in Addis-Ababa

The study identified a number of challenges that were facing the urban vegetable farmers in the City of Addis-Ababa. These were classified into three broad categories, namely, institutional, financial and capacity related challenges.

Institutional challenges

Although both the Federal Government and the Addis-Ababa City Administration have recognized urban agriculture as a potential contributor to poverty alleviation

in urban areas and in Addis Ababa respectively, the study was able to identify the following factors that constrained the sustained growth and development of urban agriculture:

- a) Lack of institutional supportive in urban agriculture;
- b) Lack of integration of urban agriculture into City land use and zoning plans; and,
- c) Lack of coordination among the public agencies.

The first institutional challenge was lack of land tenure rights. This was regarded by many urban farmers as most restrictive to the growth and development of urban agriculture in Ethiopia in general and in Addis Ababa in particular. The existing unclear legal set up caused a sense of insecurity among most farmers, thus negatively affecting their commitment to invest in the development of the land whose ownership was uncertain. As a result, farmers lived in constant fear of being evicted from "their" land due to lack of tenure security. For example, about 51% of the members of the Mekanisa Furi Saris Cooperative expressed fear of eviction from "their" agricultural land. Thus lack of government recognition was the biggest institutional challenge facing their cooperative.

The second institutional challenge was related to poor coordination among various public agencies, in particular the Urban Agriculture Department; the Sanitation, Beautification and Park Development Agency (SBPDA); the Environmental Protection Authority; and the Micro and Small Scale Enterprises (MSEs).

Financial challenges

Among the most critical challenges or constraints that were identified by the study and confirmed by vegetable producers were:

1. Lack of credit;
2. High interest rates; and,
3. Poor supply of inputs.

About 89.9% of the selected cooperatives and 90% of individual farmers stated that they experienced difficulties whenever they needed *credit* to expand and modernize their operations. Similarly, although the Addis Credit and Savings Microfinance Institution had expanded their services to ten sub-cities in Addis Ababa, their *high interest rates* remained a stumbling block to urban farmers. As if this was not enough, the newly opened special branch of the Development Bank of Ethiopia had not yet made its position clear regarding credit access by the urban farmers.

The study found that lack of access to inputs such as seeds, fertilizer, and other improved agricultural equipment was by no means a less challenge as inputs

to urban farmers were not supplied by any Government institutions. As a consequence, the urban farmers were forced to buy from private suppliers at a much higher price.

Skills-related challenges

The study established that one of the critical challenges facing most urban farmers was their limited skills in agriculture. This was attributed to lack of training and/or technical support to help them improve their skills and knowledge, and increase their productivity. About 44% of the farmers stated that they did not get any kind of technical advice from the agricultural extension workers. On its part, the Addis-Ababa Urban Agriculture Department admitted that they did not have enough experts to provide the requisite and continuous support to the farmers.

Environmental challenges

The study found that some farmers used agrochemicals and untreated waste water for irrigating their plots. These ended up contaminating the soil as well as the agricultural products themselves. This is a potential threat to the sector as discerning vegetable buyers may eventually boycott these produce. Unfortunately, the study found that some responsible bodies either lacked the mandate or capacity to deal with this challenge.

Conclusion

The study established that the rapid increase in the rate of urbanization of Addis-Ababa City was accompanied by a rapid increase in unemployment, poverty, hunger, and environmental degradation. Although the phenomenon of urban agriculture had been recognized by the City as one of the options to alleviate poverty and sustain the environment, its economic, social and ecological contribution was still negligible, particularly to the vulnerable and disadvantaged groups such as women and the elderly. This was despite the high food demand in the City and the availability of adequate land to produce about 600 grams of micro-nutrients per day.

RECOMMENDATIONS

On the basis of the above findings and conclusions, the study recommends that the Addis-Ababa City Administration should change its mind-set and see urban agriculture as a viable sector that could contribute to food security and nutrition of the urban dwellers. In a labor-rich but capital poor country such as Ethiopia, urban

agriculture should, therefore, be encouraged, strengthened and given recognition in urban planning and development. Top among the requirements to stimulate this sector, is the need for an urban agricultural policy, at both Federal and City levels. It is through a comprehensive policy that the current lack of land tenure security can be addressed and weak institutional set up and training and extension services coordinated.

To address the problems of access to credit facilities, inputs and extension services, the City Administration should consider establishing a special fund, as has been done in the Integrated Housing Development Program, by negotiating with international organizations working in urban agriculture; or with financial institutions to lower their collateral requirements and/or cut their interest rates.

The newly opened special branch of the Development Bank of Ethiopia should be persuaded to offer credit to the urban farmers. Similarly, medium and small scale enterprises should be approached to supply credit services to grass root organizations within urban areas. On their part, urban farmers should consider forming input supply associations to provide their members with inputs and create a better market for their products.

REFERENCES

- Addis-Ababa Master Plan Project Office 1999.
- Addis-Ababa Urban Agriculture Department (2006), *Annual Performance Report*, Addis-Ababa, Ethiopia.
- Aldington T (1997). *Urban and Peri-Urban Agriculture: some thoughts on the issue*
- Bakker (2000). *Growing Cities Growing Food. Urban Agriculture on Policy Agenda*, RUAF Foundation.
- Binns T, Lynch K (1998). *Feeding Africa's Growing Cities into the 21st Century: the potential of urban agriculture*. Journal of International Development.
- BoFED (2007). *Urban Development Indicators of Addis-Ababa*, Addis-Ababa.
- Bowyer-Bower T, Drakakis-Smith D (1996). *The Needs of the Urban Poor versus Environmental Conservation: conflict in urban agriculture*, London.
- Deelstra T (2000). *Urban Agriculture and City Ecology*. Havana, Cuba.
- ENDA-Ethiopia (2002). *Experience of Urban Agriculture in Addis-Ababa*, Addis-Ababa, Ethiopia.
- Foeken, D, Mwangi A (2000). *Increasing food security through urban farming in Nairobi*.
- Food and Agricultural Organization (2007). *Urban and Peri-urban Agriculture*, Rome, Italy
- Jacobi (1999). *Urban Agriculture: justification and planning guide*, City Farmers, Canada.
- Mohammed J (2002). *Urban Agriculture Initiatives in Addis-Ababa*, Unpublished Masters Thesis, Addis-Ababa University.
- Mougeot (2000). *Urban Agriculture: Definition, Presence, Potential and Risks, and Policy Challenges*, Havana Cuba.
- Renevan V (2006). *Cities Farming for the Future; Urban Agriculture for Green and Productive Cities*, RUAF Foundation.
- RUAF Foundation, *How is Urban Agriculture Important?* <http://www.ruaf.org/node/513>
- UNDP (1996). *Urban Agriculture: Food, Jobs, and Sustainable Cities*. United Nations Development Program, Volume One, UNDP New York