URBAN AGRICULTURE AND FOOD SECURITY IN DEVELOPING COUNTRIES: A CASE STUDY OF ELDORET MUNICIPALITY, KENYA

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ABSTRACT

As many parts of the world are facing an ever increasing challenge of urbanization, absolute and relative growth in urban poverty and food insecurity are becoming a challenge. Urban Agriculture (UA) which entails production, processing and selling of food and other products within and around cities and towns is gaining ground as a mitigating measure to these challenges in many urban centres worldwide. There is now a general recognition of the importance of UA in most countries of the world and in the African continent in particular. Available literature shows that over the past ten (10) years, rapid growth in interest and activity in UA has increased tremendously (Urban Harvest, 2008, Mbiba, 1998, 1999; Lee-Smith, 1998). Urban Agriculture could therefore become an instrument that could tackle household food insecurity if geared towards increasing urban food production and employment by encouraging productive participation in urban development. According to the United Nations Habitat, UA in many cities play a critical role in sustaining the integrity of the environment and in contributing significantly to the attainment of food self-reliance by improvement of livelihoods of the urban poor, through cultivation of a wide range of crops and rearing of livestock with substantial yields. However UA still receives the least priority in many countries, particularly in the area of development planning (United Nations, 2005; UN-Habitat, 2006). This paper investigated the contribution of Urban Agriculture to the food security of residents of Eldoret Municipality, Kenya with the aim of laying the foundation for future policy formulation for Urban Agriculture in Kenya.

Keywords: Urban Agriculture, Food security, poverty eradication.

INTRODUCTION

As many parts of the world are facing an ever increasing challenge of urbanization, absolute and relative growth in urban poverty and food insecurity are becoming a challenge. Urban Agriculture (UA) which entails production, processing and selling of food and other products within and around cities and towns is gaining ground in mitigating these challenges in many urban centres worldwide. There is now a general recognition of the importance of UA in most countries of the world and in the African continent in particular.

Many argue that the principle reason that makes people engage in UA in urban centres is in response to inadequate, unreliable and irregular access to food supplies. Available literature shows that over the past ten (10) years, rapid growth in interest and activity in UA has increased tremendously (Urban Harvest, 2008, Mbiba, 1998, 1999; Lee-Smith, 1998). Urban

Agriculture could therefore become an instrument that could tackle household food insecurity if geared towards increasing urban food production and employment by encouraging productive participation in urban development.

Studies done in Malawi, Kenya and Ethiopia, indicate that many low income households as well as higher income households are constantly turning to UA for the production of food for own consumption and income generation (Foeken et. al., 2006). According to the United Nations Habitat, UA in many cities play a critical role in sustaining the integrity of the environment and in contributing significantly to the attainment of food self-reliance by improvement of livelihoods of the urban poor, through cultivation of a wide range of crops and rearing of livestock with substantial yields. UA however still receives the least priority in many countries, particularly in the area of development planning (United Nations, 2005; UN-Habitat, 2006).

In Kenya recent studies have revealed that about 64 percent of urban households practice some form of UA (Foeken et al., 2006). Despite being highly practiced, UA is not a recognized urban land use and there is no category for it in land use zoning in Nairobi (Musoga, 2004). Gaps in Kenyan policy on Urban Agriculture still exist and it has in the past not been seriously considered by the government as a viable livelihood option (Musoga, 2004). Many by laws prohibit or restrict the practice in urban areas citing health risks associated with agriculture in general as well as specific to Urban Agriculture (Ayaga, et al., 2005). However from 2005 the then Ministry of Agriculture and Livestock Development (MoALD), together with NGOs and research institution (KARI) came together to try and identify knowledge gaps in urban farming and devise a steering mechanism for addressing policy requirements (Ayaga, .et al., 2005). But since then existence of practical regulations to guide and support urban food production and their implementation is still unknown and unclear (Musoga, 2004). Other major challenges facing the farmers are contamination from pathogens and toxic chemicals in the waste materials used in urban farming systems. Despite the problems facing UA, NGOs and urban farmers promote and practice UA.

Statement of the problem

Many studies document that Urban Agriculture is an increasingly important livelihood activity in developing countries which contribute significantly to both household livelihood systems and the urban informal economy. Development programmes by NGOs such as Cities Farming for the Future (CFF), and the International Development Research Council (IDRC)'s AGROPOLIS have tried to put urban agriculture onto the policy agenda through the development of policy sheets, planning guidelines, in a number of countries. Despite these programmes that promote Urban Agriculture particularly in cities like Nairobi, there is still no relatively in-depth information and analyses available on who is conducting urban agriculture and the extent to which low income groups within smaller towns like Eldoret use urban agriculture (Musoga, 2004). Studies confirm the importance of Urban Agriculture as a strategy that contributes to food security by increasing access to and availability of food in urban settings (Ayaga, .et al., 2005). This is however usually very specific to concerned study areas. Existence of in depth information on the practice with regard to contribution to food security and income of low income groups in Eldoret Municipality is inadequate hence the need for the study.

Specific activities during production, processing and marketing will be looked at in detail in order to establish and ascertain the practice of UA by low income residents of Eldoret. Such

important information on UA is critical in such situations where clear policy on UA does not exist since findings are necessary in order to inform the sort of policy that could promote UA as a viable contribution to future poverty and food security reduction strategies. Eldoret town is also among the towns growing fast in Kenya but still with many undeveloped grounds which can be utilized for urban Agriculture.

Objectives of the Study

The main objective of this study was to investigate the role of Urban Agriculture in contributing to the food security of low income residents of Eldoret Municipality, Kenya.

THEORETICAL FRAMEWORK

The study used the sustainable livelihoods approach (Scoones, 1998) and Sen's (1991) entitlement framework. Sustainable livelihoods approach is based on the idea that poor households use a portfolio of assets that are made up of both tangible resources such as land, cash or stores of food, as well as intangible assets like skills and social networks (Rakodi, 2002).

Applying sustainable livelihoods approach tangible resources such as land (ownership) or cash from sales of UA produce were examined to see how their availability and access affect food security and income of the farmers. Available literature agrees that sustainable livelihoods analysis, which was originally applied in a rural context (Scoones, 1998), can also be applied in Urban areas (Rakodi, 2002; Ellis, 1998). Garrett (2000) and World Bank (1986) cited in Nutrition Bulletin, (2007), had earlier identified at least one area where the sustainable livelihood framework needed to be treated with caution as Urban food insecurity and malnutrition may be different from rural food insecurity because most Urban dwellers depended almost entirely on incomes to purchase their food, a scenario that is changing with the advent of UA.

Sen's approach considers food security as a function of a household's bundle of 'food entitlements'. According to this argument, entitlements are the set of commodity bundles that a person can command in society using the totality of rights and opportunities that they have (Sen, 1991). Broadly speaking, Sen identifies four types of entitlement: direct or production-based entitlement, which occurs when a person consumes the food they directly produce and eat or sell; labour-based entitlement, which is obtained through working for a wage and purchasing food from the market; trade-based entitlements obtained through sale or barter of assets; and transfer-based entitlement where entitlement is transferred through charity or food aid. It thus describes the sum of the possible methods through which access to food is facilitated. Pearce (1997) indicated that the possibility of entitlement is created through household production, or through other income-generating activities such as the sale of labour or participation in trading.

Seen in this light, Sen's entitlement framework can help explore the complexity of urban agriculture. Food grown and livestock kept in urban centers can provide direct entitlement for those urban farmers who consume the food they produce. If UA is used by charities, community Based Organizations (CBOs) and NGOs it could be used as the basis for transfer entitlements. The labour-based entitlement can provide two different types of indirect entitlement, first by providing marketable produce that a poor family could sell for income. Second, it may provide a source of paid employment for workers on urban farms.

The extent to which AU can actually make a difference in terms of entitlement bundles for the poor urban livestock and crop farmers of Eldoret is currently unknown and forms the basis of this study.

LITERATURE REVIEW

The Practice of Urban Agriculture

Urban Agriculture is an industry that produces, processes and markets food and fuel grew largely in response to daily demand of consumers within towns, cities or metropolitan areas. Practiced on land and water dispersed throughout the urban and peri- urban areas, it utilizes intensive production methods, using and recycling natural resources and urban wastes, to yield a diversity of crops and livestock. Although UA it is practiced differently in different countries, it revolves around four broadly defined farming systems: aquaculture, horticulture, animal husbandry, agro-forestry (UNDP, 1996).

Urban Agriculture is carried out on sites of various types. Madden & Chaplowe (1997) found out that UA commonly occurs in spaces in and around homesteads as well as in large tracts of public or private land that remain underdeveloped for landscaping, urban extension, or because they are unsuitable for development. Lado (in IDRC 1994) shows that UA in Kenya is practiced mainly on private residential land (32 per cent), followed by roadside verges (29 per cent), river banks (16 per cent) and other public lands. Similar sites have been observed in Dar es Salaam in Tanzania and in Kampala in Uganda (Mwangi, and Foeken, 1996; Sawio, 1993; and Smith et al., 1996). According to the above data, Urban Agricultural produce from roadside and river bank sites are highly prone to risks of pollution from pollutants commonly found on these sites and may predispose consumers to health risks.

Women seem to play a central role in UA in most countries where it is practiced. According to Mireri (2002), most urban farmers in Kenya are women (56 per cent), with the proportion of women being higher in the larger towns (62 per cent in Nairobi). Among household heads engaged in urban farming, women form an even higher proportion (64 per cent), whereas men were the majority among hired farm workers (82 per cent).

In most developing countries, urban farming is undertaken by two groups, the traditional farmers, who have been engulfed by urban development, and recent migrants. For example, during the last two decades, Kenyan urban centres have witnessed haphazard changes of boundaries. The boundary changes have included areas that are predominantly rural in character with agriculture as the dominant land use. The second major group of urban farmers comprises urban migrants and their families. Although these urban farmers come from all income groups, the poor dominate. The majority of urban households in Kenya are unable to feed themselves adequately from their earnings, and those who are able cultivate land in backyard spaces near their dwelling, on roadside verges, or on other publicly owned vacant land. Subsistence farming is an economic imperative for them. Hence, satisfaction of basic needs is the primary motivating factor governing their behavior, rather than profit making and capital accumulation. In contrast with better-off households who tend to farm on private land mostly their backyards, the very low-income groups tend to use public land (Mireri, 2002).

According to FAO (2007), UA make important contributions to social, economic and ecological urban development. This development is strongly influenced by the dynamics of the urban social, economic, political, ecological and spatial systems with which it is

connected. Consequently, there is a great variety in Urban Food Supply and the people involved. It is estimated that 200 million urban residents produce food for the urban market, providing 15 to 20 percent of the world's food (Armar-Klemesu, 2000). These systems adapt to the city's continuously changing local conditions and UA takes on new functions.

Findings by Ayaga, .et al., (2005), indicate that most of the Kenyan urban farmers (77 per cent) produce mostly for household consumption. In Nairobi, over 50 per cent used the entire amount harvested to feed their families or dependants. The pattern that emerges is of a relatively simple self-sufficient peasant economy, based on petty commodity exchange existing in the larger urban centres (IDRC, 1994). Freeman (1991) found that most of the food produced on urban plots is reserved mostly for the cultivator's immediate family and/or dependants. Since most of the produce is for domestic consumption, it does exemplify the important role of UA in meeting food security needs of the farmers.

UA must therefore be understood as a permanent and dynamic part of the urban socio-economic and ecological system, using typical urban resources, competing for land and water with other urban functions, influenced by urban policies and plans, and contributing to urban social and economic development. The integration of UA into the urban land use system and the creation of a favorable policy environment are critical steps in the development of the sector (FAO, 2007).

Urban Agriculture as it relates to food security of urban farmers

Food and Agriculture Organization (FAO, 1996) in its definition of food security highlights availability, accessibility of food at all times to all members of a household as the key factors in food security. Food production in cities is in many cases a response of the urban poor to inadequate, unreliable and irregular accesses to food and the lack of purchasing power. Strategies that increase access and availability of food in households are important in ensuring food security in households. Urban Agriculture is now an important livelihood option in urban settings.

The contribution of urban agriculture to food security and nutrition is probably its most important asset (Rene Van Veenhuizen, 2000). Renewed interest in looking at alternative strategies for improving urban livelihoods, for income generation and for urban food security and nutrition among others has arisen with the increase in urban poverty, food insecurity and malnutrition now seen as shifting from rural to urban areas. Many urbanites have turned to UA as a livelihood strategy and source of income and in most countries complements rural agriculture and increases the efficiency of national food system (FAO, 2007).

Experiences gained from many cities of the world where urban and peri – urban agriculture is legalized and is better regulated indicate the beneficial effect of farming in cities towards the provision of better nutrition, poverty alleviation and employment creation (Mougeot, 2000). Urban conditions are conducive to intensive production of perishable foods (fruits, vegetables, fish, meat and dairy products), according to local ecological conditions and habitat. These foods, which are rich in essential nutrients, are consumed by urban dwellers. Some are consumed by the households involved in production, processing and distribution and therefore contribute directly to their food security. However, in order to improve household food security and nutrition, it is important that this food is safe and adequately selected, prepared and distributed within the family (Ayaga, .et al., 2005).

Employment and income provided by UA also offers the potential to relieve food insecurity. The primary effect is through non-wage employment of urban farmers themselves and family members and neighbours in the busy season as well as food processors and distributors, mostly in the informal sector. It appears that relatively few paid jobs exist in UA beyond the intensive, commercial sector that exists around many cities - producing livestock and dairy products as well as horticultural and floricultural products (Ayaga, .et al., 2005). According to the World Bank (2002), most cities in developing countries are not able to generate sufficient (formal or informal) income opportunities for the rapidly growing population. It's further estimated that approximately 50% of the poor lived in rural areas compared to 25% 1998, who were in the urban setting, yet lack of income translates more directly into lack of food in urban settings than in the rural. Aurgents (2002) observed that the costs of supplying and distributing food from rural areas or to import food for the cities were rising continuously and it was expected that urban food insecurity would increase.

Urban agriculture, up to the present has offered households the means of survival while relying almost exclusively on underutilized urban land and under employed urban labour, while at the same time making contribution towards food self reliance for Africa's cities (Maxwell and Zziwa, 1992). According to Margaret Armar-Klemesu (2002), urban farmers produce substantial amounts of food for urban consumers. In the late 90s it was estimated (UNDP, 1996; FAO, 1989) about 800 millions urban dwellers were actively engaged in urban agriculture in one way or another.

Urban families can improve both food intakes (improved access to cheap source of protein) and quality of food (poor urban families involved in farming eat more fresh vegetables than other families in the same category. In addition to production for their – consumption needs, large amount of food are produced for other categories of the population (Rene Van Veenhuizen, 2002).Urban agriculture can have positive and/ or negative consequences for men and women depending on the situations and conditions. Data gathered on urban agriculture has however demonstrated that it generally has a positive impact on households food security; and thus will be beneficial to women, as most often are responsible (Joanna et al, 2004).

Mougeot (2005) noted that countries which are urbanizing most rapidly are least prepared to satisfy their food needs and many precariously depend on food aid and imports. Food security at the individual, national, regional and global levels is achieved when all people, at all times have an economic accessibility to sufficient , safe and enough – nutritious food preferences for active and healthy life. (USAID, 1992)

METHODOLOGY

The study used a cross sectional survey design that entailed use questionnaires with open and closed ended questions. Information from focus group discussions and key informants was sought to gain in depth information and to reinforce the findings from the interviews. The design was intended to have exploratory aspects that could establish insights and derive deeper understanding of urban farming in the study area. The study tools sought to obtain socio - demographic characteristics, farming activities, income, and food security. Problems, coping mechanisms and sustainability prospects of Urban Agriculture under the local prevailing conditions were also investigated. The study sample was made up of urban farmers from low income residential areas who practiced Urban Agriculture in Eldoret Municipality.

Contribution of urban agriculture to food security of urban farmers in Eldoret Municipality

The contribution of urban agriculture to food security and income was a key aspect of this research. This research gives a critical view into how aspects of urban agriculture in Eldoret municipality are currently contributing to food security and income. The findings of this study on this aspect are presented in the form of an entitlements analysis with reporting of the direct entitlements (household food production and use) from across the households in Eldoret municipality interviewed.

Direct entitlements from urban agriculture

Examination of household food production is given in this section. A critical analysis of the data revealed that a substantial production of food crops is produced by the households as shown in table 1 below. These particular food crops produced reveal a dietary diversity. It is important to note that dietary diversity is often used as a food security proxy in nutrition surveys, and has been generally found to be closely correlated to both caloric adequacy (the amount of kilocalories consumed) and anthropometric outcomes . A further take at the results shows that the food crops produced were used for both consumption at the household levels and part of the produce sold. Food produced was used from the household agricultural plots was used for both consumption and for sales.

Table 1: Urban agriculture food produce and consumption

Food group content	% of HH producing these products	% of HH that consume the entire harvest/produce	% of HH selling the entire harvest/produce	% of HH consuming part and selling part of harvest/produce
Eggs	36.3	24.2	6.8	69.0
Vegetables	26.9	15.3	5.6	79.2
Cereals and grain products	21.9	7.7	26.9	65.4
Milk and milk produce	17.1	16.7	0	83.3
Meat and poultry	7.8	17.3	15.5	67.2
Starchy, roots, tubers and legumes	7.3	0	13.3	86.7
Sugar, syrup and sweets	0.5	0	100.0	0
Fish and shellfish	0.5	0	100.0	0
Fruits	0.5	0	100.0	0

Interestingly only a fraction of the produce was used entirely at the family level implying that households could support themselves entirely on the food they produce on urban agricultural plots. A critical examination of this aspect reveals the following:

Education level of the household head: The two tailed Pearson's correlation results between the highest level of education attained by the household head and participation and

production in urban agriculture solely for purposes of home consumption showed a significant positive relationship (r=.127, p=.013, N= 386). This was an indication that respondents with slightly lower education level were highly unlikely to participate in urban agriculture production activities for purposes of production for only home consumption. These findings further imply that given the lack of competitive advantage in the formal 'job market' that some of the lowly academically certified households heads, most of these households engage in urban agriculture production for purposes of producing for both home consumption and the wider market. These findings show that urban agriculture indeed contributes to the food security and social economic status of families whose education prevents them from competitively getting employment opportunities in formal sector

Number of dependants: Pearson correlation showed that a significant negative relationship between number of dependants in a family and participation and production in urban agriculture solely for purposes of home consumption (r=.015, p=.045, N= 386). These results suggest that the number of dependants in a household indeed determined the extent to which urban agriculture production could go. Households with slightly higher number of dependents were highly likely to engage in urban agriculture for both home consumption and income. The results further indicate that, urban agriculture provides an avenue for households with large number of dependants to produce food for both the families and for purposes of income generation.

Socio-economic status of the household: generally, size of the family, ownership of assets, levels of income and where the households were situated formed the basis of socio economic status. The analysis categorized the households as those with a low, moderate and average socio economic status. Pearson correlation showed a significant positive relationship between socio economic status and participation and production in urban agriculture solely for purposes of home consumption (r=.014, p=.007, N= 386). These findings suggest that households with low social economic status are participating in urban agriculture for purposes of producing food products for both their families and revenue collection. This is evidence that indeed urban agriculture ensures households from low socio-economic backgrounds are cushioned from food shortage and are provided with income to sustain them.

CONCLUSION

Urban Agriculture makes important contributions to social, economic and ecological development in urban areas. Seen from this angle, Urban Agriculture is a dynamic part of the urban socio-economic system and its role in the food security of urban dwellers cannot be gainsaid. Since most of the food products are intended for domestic consumption, Urban Agriculture meets the food security needs of urban dwellers significantly. In the case of Eldoret Municipality, Urban Agriculture is seen to play other important roles as well. These include provision of better nutrition, poverty alleviation, employment creation and environmental conservation. However, these aspects were outside the scope of the current study and could be handled in future studies.

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