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The Past, Present and Future of Urban Agriculture in Tanzania

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Abstract

Urban agriculture in Tanzania has been in existence for many decades. Presently urban agriculture is both extensive and intensive. Urban farmers come from all walks of life. From highly placed government civil servants and wealthy businessmen to the most disadvantaged slum dwellers. Urban agriculture is constrained by a number of factors including the legal restrictions which dictate the type of crops to be planted and the number of livestock an urban farmer should keep. This paper highlights the potential of urban agriculture, its constraints and possible solutions.

1. Introduction

Though urban agriculture has been in existence for a long time, its felt significance to urban dwellers is relatively recent. Urban agriculture has all along been taken as a form of recreational activity rather than an economic necessity. Crop and livestock production as a way of living has traditionally been the prerogative of rural dwellers.

Urban areas are not designed to accommodate farming or livestock keeping at any scale of operation. The land that is within urban areas is customarily zoned out to accommodate residential areas, central business districts, industrial sites, road and railway construction, recreational facilities, etc. Any piece of land that is not utilized for the above purposes is ideally supposed to be left out for aesthetic purposes and/or maintaining a green environment.

During the past three decades or more, Tanzania has witnessed the emergence of urban agriculture. If the Asian and Arab communities as well as foreigners are excluded, about 80 percent of the urban population is in one way or another engaged in raising crops such as maize, beans, bananas, various types of vegetables, etc. Amongst these are those engaged in livestock production such as chickens, goats, pigs and dairy cattle (Mvena *et al*, 1991).

Since such activities have not been integrated into the town planning process, there have been a number of infrustructural, social and environmental constraints to urban agriculture despite of its potential in meeting the nutritional and economic needs of town dwellers. This paper highlights the potential of urban agriculture in Tanzania, its constraints, and possible solutions for the betterment of urban agriculture not only in Tanzania but also elsewhere with similar circumstances. Data for this paper are sourced from an IDRC funded research project that covered six towns in Tanzania namely: Dar es Salaam, Dodoma, Kilosa, Makambako, Mbeya and Morogoro.

The six towns were selected on the basis of the following criteria: (a) size, large (Dar es Salaam), medium (Morogoro, Dodoma and Mbeya) and small (Kilosa and Makambako), (b) Climate: wet (all except Dodoma) and dry (Dodoma), (c) economic activities: (agricultural and industrial e.g. Dar es Salaam) and (d) rate of growth: fast (Dar es Salaam) and slow (Kilosa).

Within the town, cluster sampling was done on the basis of high and low density areas up to the ward (administrative unit) level. At this level, sampling was done on the basis of type of enterprise e.g. crop and livestock, farmers and non-farmers, leaders and non-leaders and according to the gender of respondents. The sample size from all the six towns was 1800 respondents and distributed as follows: Dar es Salaam (700), Dodoma, Morogoro and Mbeya (300 each) and Kilosa and Makambako (100 each). After final checks of the questionnaires however valid cases did not exceed 1750.

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Data from the questionnaires were edited, coded and analysed using the Statistical Package for Social Science (SPSS) computer programme. Data from the questionnaires were supplemented by data from interviews with various officials, document surveys, and direct observation.

1. Emergence of Urban Agriculture in Tanzania

During the past three decades, Tanzania has witnessed a sudden emergence of urban agriculture. Not only has urban agriculture become a conspicuous activity in all urban centres, it has also become the backbone of the household economy for both the low and high income groups.

Several factors are said to have contributed towards the emergence and persistence of urban agriculture. These factors include the persistence of the peasant culture, political pressure to increase food production and the declining incomes of urban workers due to the declining value of the Tanzanian shilling (Mvena *et al.*, 1992; Msambichaka, 1982; Barkan and Okumu, 1979). A brief discussion on each of these factors will be used in understanding the circumstances leading to the significant growth of urban agriculture in Tanzania.

a) Persistence of peasant culture

Survey data from six towns in Tanzania indicate that 46 percent of the respondents have lived in the towns no more than ten years and 72 percent for no more than 20 years., Since over 93 percent of our respondents were above 25 years., it implies that most of the present urban population has a rural background (Mvena *et al.* 1991).

Given this background, the current generation of urban dwellers in Tanzania still have remnants of the rural culture. The persistence of the peasant culture explains for example why some urban residents keep some form of livestock for cultural rather than purely economic ends. To them, planting various types of crops or raising some chickens has some cultural utility.

b) The need for food self-sufficiency

Within the first two-post independence decades, Tanzania had from time to time been hit by acute food shortages. Rice and wheat have always been on the deficit side. The worst years of food grain shortfalls in Tanzania were in the second decade after independence in 1961.

According to Msambichaka (1982) the country imported 0.7, 5.6, 15.3 and 7.1 kilograms of food grains per person in 1966, 1972, 1974 and 1975 respectively. Between 1974 and 1976, the country had an average maize (the main staple food) shortfall of about 73,000 tons or 40 percent of the demand, 29,300 tons or 65.7 percent of the demand for rice, and 42,000 tons or 66.0 percent of the demand for wheat.

A number of factors are said to have contributed towards this predicament. Politicians and some agricultural experts have often singled out weather as the major cause of the dismal performance of the agricultural sector.

Incongruency between state policies and the implementation process of these policies has also contributed to the poor performance of the agricultural sector. Policy makers have repeatedly acknowledged that agriculture is the backbone of the economy. The annual government budgetary allocation to the agricultural sector has never reflected this observation. In fact, some policy decisions in the past had negative impact on agriculture. For example, the sharpest decline in food and cash crop production in 1974 was partly the result of the dislocation of the rural masses caused by the accelerated process of villagization during that year and not drought as some policy makers point out (Barkan and Okumu, 1979).

Other factors that have contributed to this poor performance include floods and other natural calamities, the removal of subsidies on agricultural inputs such as fertilisers and pesticides, and the lack of incentives to agricultural production.

Against this background of declining food and cash crop production, policy makers introduced various measures to reverse the trend. The "Siasa ni Kilimo" (Politics is Agriculture) was the outcome of the ruling Party Conference held in May, 1972 reviewing the country's deteriorating performance in the agricultural sector. As a follow up to "Siasa ni Kilimo", the party in 1974 issued another policy statement "Kilimo cha Umwagiliaji" (Irrigated Agriculture) to underscore the need to use irrigation in agriculture.

The "Kilimo cha Kufa na Kupona" (Produce or Perish) campaign launched by the then President Mwalimu Julius Nyerere in 1974/75 aimed at cautioning the masses on the need for increased food production. This campaign was further punctuated by the "Njaa si jambo la mzaha" (hunger cannot be take for granted) public address to Mwanza residents in May, 1981 (Nyerere, 1984).

The drive for increased production and by whatever means available meant that urban dwellers also needed to produce their own food. The policy of self-reliance and education for self-reliance helped to propel urban agriculture to its present status.

c) The plight of the urban worker

According to Barkan and Okumu (1979) the salaries of civil servants in Tanzania are among the lowest in Africa. Yet income tax is rated as being one of the highest. Inflation, which has been compounded by a number of factors including low productivity in both the industrial and the agricultural sector has persistently eroded real wage earnings of urban workers.

The government's inertia in taking drastic measures to counter the shrinking purchasing power of the Tanzanian currency has also made life of the urban worker more difficult. Annual salary increases which are usually announced during the Government Budget sessions are usually accompanied by increases in prices of consumer items.

According to the 21 January, 1995 edition of Mfanyakazi (a Trade Union bi-weekly) an urban worker needed TShs.115,000/= per month to be able to meet the necessities of life such as food, clothing, house rents and various social obligations such as remittances, contributions to weddings, funerals, school fees, etc. By 1996 the minimum wage for government employees was a little over TShs.17,500/= a month. The average salary for an ordinary middle income civil servant was around TShs.30,000/=. This implies a deficit roughly TShs.100,000/= which must be compensated by sources of income outside the official salary. For the majority of the urban residents, the deficit is normally covered by earnings from "miradi" (projects) which are usually related to agricultural projects. Table 1 shows how income from agriculture and/or livestock products is used. From the Table it is evident that urban agriculture, including livestock keeping, is the salvation of many urban workers in Tanzania.

Table 1: Proportional use of income from agricultural and/or livestock products by town in percentages (N = 760)

Use	D' Salaam	Dodoma	Kilosa	Makambako	Mbeya	Morogoro	Total
Buy agric inputs	5.3	10.5	0	0	17.1	7.4	8.0
Suppl income	94.7	89.4	100	100	82.8	92.5	92.0

Source: Survey data

3. Current Status of Urban Agriculture

The three factors briefly discussed above were the motive force behind the persistence of urban agriculture in Tanzania. However, the economic explanation, that is, the plight of the urban workers appears to be the main factor. Urban workers must necessarily engage themselves in either crop or

livestock production or both if they have to meet their basic necessities of life. This position is shared by other researchers such as Streiffeler (1987) Rakodi (1988) and Ledogar (1978) who look at urban agriculture as a survival strategy. The authors identify two major groups of urban farmers. These are those who undertake farming within the tiny interstices that are left after the land has been portioned out to the typical urban facilities such as building spaces for residence, business, office, schools, recreational buildings, etc. The second group of farmers consist of individuals with farms on the peri-urban or far from the towns. The focus of this paper is on the former group of farmers.

Crop cultivation is widespread in the Tanzanian cities. There are farmers who raise crops on tiny spaces that exist around built up areas. In low and medium density areas, which are 40 metres by 50 metres and 30 metres by 40 metres respectively, individuals are in position to own anywhere between 0.25 to 0.75 acre or even less. In high density areas, with an area of 15 metres by 30 metres, crop cultivation is severely limited. These farmers either rent land or may request for land from other individuals or government. In such tiny spaces, crop cultivation is limited to raising amaranthus, tomatoes, cabbage, or onions. Table 2 shows the size of the plot per household by town (in acres).

Table 2: Size of the plot per family by town (acres) (N = 1759)

Size of plot (acres)	DSM	Dodoma	Kilosa	Makambako	Mbeya	Morogoro	Total plot
0-1.0	51.1	40.3	32.2	0.0	45.6	42.5	43.6
1.1-2.0	12.1	17.9	19.6	45.3	14.5	17.2	16.3
3.0-5.0	30.0	38.5	43.1	32.9	35.5	35.4	34.4
Above 5.0	6.3	3.3	5.8	19.7	4.4	14.47	5.7

Source: Survey data

In situations where these potential farmers live in apartment complexes or "flats", only a few of the residents can get a plot. Such plots are usually a source of conflicts as individuals struggle to expand or get facilities such as water for irrigation. Where livestock keeping is also undertaken, these conflicts then escalate as chickens and goats eat up crops from these plots.

For some residents, surveyed but not developed plots constitute an important source of farm land. In an attempt to use every available land, some farmers plant crops in places where only the walls of buildings have been raised. Public land that "appears idle" is also used by farmers. Roadsides, play grounds, river banks and open areas left for aesthetic purposes are often used for agricultural purposes. Only in two out of the six cities included in this study have city authorities established the "green belts" (Morogoro) or "broad acre" (Dodoma) where farmers can freely cultivate or keep livestock.

Food crops such as maize, bananas and sorghum form the major staple food of many Tanzanians and are widely grown in all urban areas included in this study. Inspite of this importance however these crops are discouraged by urban authorities in urban areas. One urban official in Mbeya gave the following reasons for justifying this move (Mvena *et al.*, 1991):

a) these are plants beyond 3 feet which is the upper limit for crops legally acceptable in an urban environment.

b) such crops, it is claimed, act as mosquito breeding grounds (especially for the *Aeges sp*) and resting grounds for the same during daytime.

c) since these crops are beyond three feet, it is claimed that they also harbour criminals and other undesirable elements and behaviours in society (e.g. drug addicts), and

d) as these crops are more than three feet high, they obscure the view of motorists, pedestrians and other road users at crossroads or sharp corners and may be the cause of motor accidents.

Amongst the vegetables, amaranthus or "mchicha" is the most widespread. Amaranthus takes roughly one month from planting to harvest. Urban farmers therefore often divide their land into subplots and plant at weekly intervals. This enables the farmer to harvest every week.

Relay planting seems to be a good option for those with contracts or tenders in hotels or other assured market outlets. Again, some enterprising individuals, are able to harvest everyday from the relay planted plots to meet the tender obligations in hotels which require daily deliveries. Even for home consumption, such techniques enable urban farmers to have a continuous supply vegetables planted in a similar fashion.

In all urban areas in Tanzania, what might be called "urban pastoralism" is a common practice. From the study of the six towns, 68 percent of our respondents indicated that they have at least one form of livestock in their household. The most common types of livestock include cattle (mostly dairy cows), goats, sheep, pigs, rabbits, guinea pigs, poultry which include broilers, layers, local chickens (mainly for meat), pigeons and guinea fowls.

Cattle keeping in urban areas is limited to improved breeds of cattle. Dairy rather than beef production is now a common feature in many urban areas in Tanzania. It is fairly common to find livestock herds grazing in open spaces in urban areas such as playgrounds, golf courses, roadsides, river valleys, plots which are not yet developed.

The survey of the Oysterbay area of Dar es Salaam shows that more than 60 percent of the government and party officials residing in government quarters keep an average of eight dairy animals. This number exceeds the four animals per household allowed by the by-law of the Dar es Salaam City Council (Mvena *et al.*, 1991). Flouting of these by-laws is rampant in all towns included in this study. In general, only the wealthier keep cattle due to the high initial costs.

Goat and sheep raising is also common in all cities included in this study. One of the most irritating tasks to urban motorists and even pedestrians is to avoid the roaming goats in urban streets. Goat or sheep herding is not typical of livestock keeping in cities, rather they are left to roam about scavenging on everything from banana peels to garbage.

Pig raising is one of the upcoming household enterprises in many urban areas. Due to the possibility of raising pigs under intensive management systems and ready market in many towns some families now keep pigs for commercial purposes.

Poultry keeping in Tanzanian towns has become an important economic activity. Poultry keeping is either for broilers or layers. While cattle keeping is confined to the wealthier individuals, poultry production cuts across all economic classes. Lower classes tend to keep small flocks while the wealthy ones can keep as many as 2000 birds or more. The economies of scale dictate how large a poultry unit an urban farmer should start with. Eighty five percent of those interviewed prefer to start with not less than 200 day old chicks. Farmers report that starting with less does not pay very well if one takes into account factors such as costs, feedstuffs, and veterinary drugs.

For instance, the packaging of veterinary drugs also favour farmers with large poultry units. Various vaccines such as Newcastle Disease Vaccine B_1 Type, Lasota strain live virus cannot be administered to less than 1000 birds. Also Newcastle disease with virus vaccines have a dosage for a minimum of 500 birds or multiples of 500. For low income families, these vaccines are used collectively so that several families can use one dosage of the vaccine.

4. Constraints of Urban Agriculture

Inspite of its vast potential, urban agriculture is constrained by a number of factors such as labour, capital, transport, land shortage, weather, diseases, among others. Table 3 shows the major constraints as reported by respondents.

Table 3: Major constraints facing urban farmers by town (percentages) (N = 999)

Constraint	D'Salaam	Dodoma	Kilosa	Makambako	Mbeya	Morogoro	Total
Labour	6.1	0	0	0	19.0	7.7	7.5
Capital	46.7	28.3	21.0	73.4	58.5	52.8	49.5
Transport	17.5	18.8	23.6	3.2	13.6	21.7	16.6
Land	2.3	1.5	2.6	21.2	1.5	1.5	3.7
Weather	6.7	25.2	13.2	2.0	5.4	7.7	8.8
Disease	20.0	26.0	39.4	0.0	2.0	7.8	13.8

Source: Survey data

From Table 4, about 50 percent of the respondents report capital as a constraint while transport is reported as a constraint by 17 percent of the respondents. The latter is being reported as a significant problem in large towns because land is far from residential areas while weather is reported as being a significant problem in Dodoma because the town is located in one of the driest areas in Tanzania. The following is a brief discussion on each of these constraints.

a) Labour

Urban agriculture and livestock production requires a substantial input of labour in such activities as land preparation, planting, weeding, feeding livestock and cleaning livestock housing. For crop production irrigation is a labour intensive activity and absorbs much of the family or hired labour. Yet some parents and their children may be salaried workers who must divide their time between working for their employers and attending to their projects at home.

b) Capital

Capital is frequently reported as a major constraint to urban farmers. In the dairy cattle enterprises for example, the economically disadvantaged families are unable to start them due to the high cost of grade cattle, high cost of feeding and the expensive veterinary drugs. The cost of purchasing a heifer is prohibitive. At the time of doing this research the current Morogoro price of one incalf heifer, for instance was well over one-hundred and eighty thousand Tanzanian Shillings (1 USD = Tshs.600 at the time). That price was equivalent to more than ten times of a month's salary of an average government employee. The alternative would have been to get credit but this is hard to come by.

c) Transport

Transport is a major limitation in urban agriculture. Transport is required in the acquisition of variable inputs such as fertilisers and seeds for crops or feeds for livestock. Without one's own transport, such variable inputs will have to be hauled home using hired transport which is fairly expensive. Families with their own transport (e.g. pick-ups) have an advantage in that they can transport whatever materials much more cheaply than would have been the case if they used hired transport.

d) Land

Land for crop or livestock production is a scarce resource in urban areas. Often, it is the amount of land available that dictates what kind of enterprise one can establish. For low income families such land is only available from the areas far from where they live as they are often in the high density areas. Similar observations are made by Streiffeler (op cit) in Kisangani, Zaire.

Security of tenure is another dimension of the land problem. As Table 4 below shows, about 40 percent of the respondents report that the land on which they cultivate was merely an offer from friends

or allocated by the government. When inherited land is included which constitutes 30 percent, this makes a total of 70 percent of the respondents acquiring land through inheritance or offer. This mode of acquisition is not secure. Land can be taken away any time. Only Dar es Salaam shows that a majority of respondents, 56 percent, bought the land. When land ownership is insecure few are prepared to invest heavily on that land for fear ofit being taken away any time.

Table 4: Mode of acquiring a plot by town (Percentages) (N = 1162)

Mode	DSM	Dodoma	Kilosa	Makambako	Mbeya	Morogoro	Total
Inherited	27.2	39.9	40.5	14.7	32.6	25.0	30.1
Bought	56.0	9.9	8.8	16.2	38.0	8.3	30.9
Offer	16.8	50.4	50.6	69.1	29.2	67.2	38.9

Source: Survey data

Apart from the obvious limitations of labour, capital, transport, etc, urban farmers face several other problems. First air pollution can seriously retard plant development and becomea health hazard to urban residents. Vandalism or theft are major hindrances to urban agriculture. Wade also makes similar observations in his1986 publication.

5. The Future of Urban Agriculture

Predicting the future of urban agriculture in Tanzania is as difficult a task as predicting the future form of the urban society itself. There are just too many variables and social "accidents" that may shape the future of urban agriculture or its very existence. Such variables as policies, environmental changes, diseases, the economy, and cultural factors are likely to influence the future of urban agriculture and livestock keeping.

Several factors discussed earlier are said to have contributed towards the emergence of urban agriculture and livestock keeping in urban areas. These factors, including the political climate, may change in the future.

So far the urban agriculture adds additional stress to the already over-stretched urban environment. As a result of urban agriculture, livestock keeping, industrial growth and other activities, pollution may become a social and environmental issue in many urban areas due to use of agro-chemicals such as sprays, dusts, and aerosols which are applied to control pests and diseases. Some of these chemicals are non-biodegradable and hence may remain in the soil for many years. The carrying capacity of the urban environment for crops or livestock is increasingly declining.

Economic determinism can be used in predicting the demise of urban agriculture and livestock production in their present forms. Ninety-five percent of our respondents however indicated that they would continue with urban agriculture and livestock keeping even if salaries were adequate.

Cultural factors are also likely to influence the future form of urban agriculture. One explanation is that urban agriculture is likely to disappear gradually as the peasant culture wears out amongst city residents. However since the economy has greater influence on the household decision making, the economic explanation will prevail. Moreover as the author has indicated in this paper, most urban dwellers now treat urban agriculture and livestock keeping as an economic enterprise.

6. Conclusion

Urban agriculture and livestock keeping is widespread in Tanzania. The urban population benefits from it due to increased incomes and better nutrition, among others. There are many problems that need to be solved before the practice can be enhanced. There is need for the city/town authorities to

address fundamental issues such as land tenure, availability of credit facilities, and amendment of some of the stringent regulations or by-laws that hinder optional utilization of the urban environment for agricultural purposes. The designation of some land for urban agriculture purpose such as the case with Morogoro's "green belt" and Dodoma's "broad acre" is a step in the right direction.

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