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Urban agriculture and poverty reduction: Evaluating how food production in cities contributes to livelihood entitlements in Malawi

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Urban agriculture and poverty reduction: Evaluating how food production in cities contributes to livelihood entitlements in Malawi

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Contents

Abstract

Urban agriculture (UA) can reduce poverty but there is need for more precise analyses on how it contributes to food security. A study in Malawi, revealed two predominant 'types' of urban farmers: (i) poor, less educated, often female-headed households, who use UA as an insurance against income losses but employ skilled workers to support their livestock activities; and (ii) wealthier, often male-headed households that undertake UA for personal consumption and hire significant numbers of unskilled workers. This suggests a need for a two-pronged policy approach; to target low-income women with extension support for food security and involve high-income farmers to increase employment opportunities and promote agro-industry.

Key words: Africa, Malawi, urban agriculture, entitlements, food security, income status and poverty.

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1 Introduction

Despite persistent economic growth around the world, food insecurity and unemployment remain pressing problems in many parts of Africa (UN Habitat, 2006; Mougeot, 2005), especially in and around the major urban centres (Satterthwaite, 1999). For example, urban statistics from the Food and Agriculture Organisation (FAO, 2001; 2004) estimate that approximately 800 million people are unable to obtain an adequate and secure supply of food year round. The FAO (2002) suggest about 33% of people in sub-Saharan Africa are undernourished and United Nations (United Nations, 2005; UN-Habitat, 2006) reports that the percentage of urban residents in Sub-Saharan Africa is expected to rise from 39.7 to 53.5% between 2005 and 2030. This will bring new and severe challenges for assuring household food security and access to basic services (Klemesu, 2000; Haddad *et al*., 1998).

Against this backdrop, urban agriculture (UA), or food production conducted in or around urban regions, seems to provide a realistic and pragmatic solution (Mougeot, 2001; 2005; Pothukuchi and Kaufman, 1999). For example, reports indicate that urban agriculture is an important source of food throughout developing-country food systems and a critical food security strategy for poor urban households (Mougeot, 2000; Nugent, 2000; Klemesu and Maxwell, 2000). Urban agriculture may improve household nutrition as it provides a source of fresh, locally grown crops that increase the micronutrients in poor households' diets (Maxwell, 2001; FAO, 2001) and it can increase household incomes (see Smit, 1996; Sanyal, 1985; Sabates *et al*., 2001; Henn, 2002; IFPRI, 2002). Nowhere are these issues more pressing than in Malawi where persistent poverty and rapid urbanization have brought huge numbers of poor and hungry people into the cities (Kwapata *et al*., 2001).

Currently, over 55 % of the population is living on less than $1 per day (USAID, 2005; Government of Malawi, 2005) and from this alarming statistic, it seems fair to assume that increased food production in Malawi's cities could help the chronic problems like child malnutrition as well as reducing the risks of famine-associated mortality like that witnessed in 2001-2002. Despite the promise offered by urban agriculture, however, there is a real gap in Malawian policy and urban agriculture is not seriously considered by the Malawian government as a viable livelihood option. For example, despite urban agriculture being mentioned within the *Town and Country Planning Act* (Government of Malawi, 1998), there are still no practical regulations to guide and support urban food production.

This is typical of the region and Malawi, as one of the poorest and least developed countries in Sub- Saharan Africa, is not unique in failing to promote food production within cities. In Kenya, urban and peri-urban agriculture is not a recognised urban land use and there is no category for it in land use zoning in Nairobi (Musoga, 2004). This gap flies in the face of some international donor community promoting UA. For example, Development programmes such as Cities Farming for the Future (CFF), and the International Development Research Council (IDRC)'s AGROPOLIS programme, are currently trying to put urban agriculture onto the policy agenda through the development of policy sheets and planning guidelines.

One problem is that despite these programmes, there is still a relative dearth of information and analyses available on who is conducting urban agriculture and the

extent to which different groups within African cities use urban agriculture. As a result, the purpose of this paper is to empirically evaluate the role that urban agriculture plays in urban households in two Malawian cities in order to help inform the sort of policy that could promote it as a viable contribution to future poverty reduction strategies.

2 Literature, concepts, and objectives

The definition of food security by the Food and Agriculture Organisation (FAO, 1996; 2002) has been applied using a sustainable livelihoods approach that is itself based on the idea that poor households use a portfolio of assets (e.g. Chambers, 1989; Chambers and Conway, 1992) 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). As a result, the literature generally agrees that the 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) have identified at least one area, however, where the sustainable livelihood framework needs to be treated with caution as urban food insecurity and malnutrition may be different from rural food insecurity because most urban dwellers depend almost entirely on incomes to purchase their food. Consequently, traditional livelihoods approaches, which often explore factors like the link between land tenure and food security (Maxwell and Wiebe, 1999) may be less relevant. This relatively recent discussion links back to discussions on Sen's (1991) approach that 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. Richard 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 in the city can provide direct entitlement for those urban farmers who consume the food they produce. If urban agriculture is used by charities, community and faith based organisations (CBOs and FBOs); it could be used as the basis for transfer entitlements.

It 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 larger-scale urban farms. The extent to which urban agriculture can actually make a difference in terms of entitlement bundles for the poor

and impoverished of Malawi is currently unknown and forms the initial basis of this study.

3 Research methods

3.1 Study locations

Research was undertaken with urban communities in Malawi's two main cities of Lilongwe and Blantyre. These two cities are useful for the purposes of this research as they are considerably different in terms of economic, geographical and demographic structure and, therefore, capture many of the problems faced in African cities more widely. Blantyre City, with a population of 711,233 in 2005, is the largest commercial and industrial centre in Malawi.

It is located in the centre of the southern part of the country and covers a total area of 228 km^2 of hilly ground, and has a more temperate climate. The majority (71 per cent) of the city's residents live in unplanned settlements characterised by poor living conditions and the poverty rate in 2005 was 23.6 per cent (Government of Malawi, 2005). Lilongwe lies on the Lilongwe-Kasungu plain in the central fertile region of the country at an altitude of 1100m above sea level. The capital of Malawi since 1975, Lilongwe is an administrative and commercial center with vast amounts of arable land and a low population density. Currently, Lilongwe has 669,114 residents, about 24.6 per cent of whom live below the nationally assessed poverty line[1] (Government of Malawi, 2005).

Within these two cities is a range of low, medium and high-income neighbourhoods where a total of 330 households were sampled. In Lilongwe, 165 households (131 male-headed and 34 female-headed) were sampled while 112 male headed households and 53 female headed households came from Blantyre. The sample was then stratified into high-income (n = 70; 68 males and 2 females) medium-income (n= 140; 127 males and 13 females) and low-income households (n = 120; 72 females and 48 males). Sampling was done in households where government census (Government of Malawi, 1998; 2005) identified as being low-income (average annual income was MK 73,600) medium-income (MK554, 206.00) or high income (MK 653,357.00). Due to several similarities in medium and high-income households, results have been presented for two groups only (low and high).

3.2 Research design

To assess UA's total contribution to food security, surveys were undertaken between September and December 2005 within each of these 330 households. During the survey, informants – the household heads – were asked to quantify the amount of land they cultivated within the city, what crops they produced, how much harvest they typically obtained, and how these crops were used. To determine urban agriculture's

[1] The poverty line is a subsistence minimum expressed in Malawi Kwacha based on the cost-of-basic-needs methodology. It is comprised of two parts: minimum food expenditure based on the food requirements of individual and critical non-food consumption. Food needs are tied to the recommended daily calorie requirement. Non-food needs are estimated based on the expenditure patterns of households whose total expenditure is close to the minimum food expenditure. (Government of Malawi, 2005).

contribution to direct entitlements, informants were asked what proportion of their harvest was consumed by the family. Two strategies were then used to determine indirect entitlements.

First, informants were asked how much of the harvest was sold in the previous year and this was converted into a financial figure by using average 2005 market prices. Second, informants were asked whether household members had engaged in paid work on other people's urban agricultural plots and whether they engaged labour to support their urban agriculture activity. If they had, the informants were asked the period of time they were engaged, the type of work and season engaged.

Where necessary to allow for comparison, harvest data from all different crops were converted into a cereal equivalent (e.g. crops like sweet potato and cassava are considered to be worth 25 per cent of their weight in grain. This was based on published guidelines (see: GOM/FAW/WFP, 2004; 2005) and this figure was then compared with the governments' recommendation that everyone should consume 181 kg of cereal each year. Chi-square tests and independent sample t-test were used to determine which groups (based on income, gender, education and location) benefited the most in terms of direct and indirect food entitlements from UA.

It should be noted that when asking for household incomes and expenditures, many respondents were not able to provide actual numbers. This was particularly true amongst low-income households with less education. It was even a challenge to quantify the amount of money realised from market participation and other sources such as remittances because some groups did not regard this as an important source of income. In addition, most of the marketing channels were informal and poorly developed. This required a detailed analysis of the marketing system to help in determining the actual monetary value and importance of urban agriculture. It was necessary then to give all households a pre-designed form and discuss this at length with these respondents, to enable income and expenditure data to be collected by the households on a daily basis throughout the research period.

4 Findings

4.1 Direct entitlements-harvests from urban farms

Overall, the households surveyed produced an average of 228 kg/capita of cereal/year (or cereal equivalents), which is above the 181 kg/capita that the Government of Malawi recommends as a typical food budget (Table 1). This suggests that, on average, the households surveyed could support themselves entirely on the food they produce on urban agricultural plots. However, Table 1 also reveals considerable variation between groups, with more educated, wealthier and male-headed households consistently obtaining larger harvests than poorer, less educated and female-headed households. For example, the 17 households where the household head did not attend any formal education harvested only 68 kg per household member from urban agriculture meaning that several livelihoods strategies are being employed to meet food entitlements.

Table 1: Urban agriculture harvests and proportion of harvest sold on the market for the 2004/05 seasons

Parameter	N	Total average harvests kgs/household member	Total average kg/household consumed	% of harvests consumed	Total average kg/household sold	% of harvest sold on market
Lilongwe	165	217.9	152.9	70.2	65.0	29.8
Blantyre	165	239.9	164.5	68.2	76.4	31.8
Male- headed households	243	265.1	209.9	79.2	55.2	20.8
Female- headed households	87	127.8	13.4	10.5	114.4	89.5
Low-income households	120	92.3	31.7	34.3	60.6	65.7
High- income households	210	306.9	230.4	75.1	76.5	24.9
No education	17	68.8	19.2	27.9	49.6	72.1
Pre-school	4	90.9	53.0	58.3	37.9	41.7
Primary education	86	153.3	111.0	72.4	42.3	27.6
Secondary education	92	167.2	95.5	72.4	71.7	42.9
Post- secondary education	131	346.8	262.9	57.1	83.9	24.2
All households	330	228.9	158.2	69.1	70.7	30.9

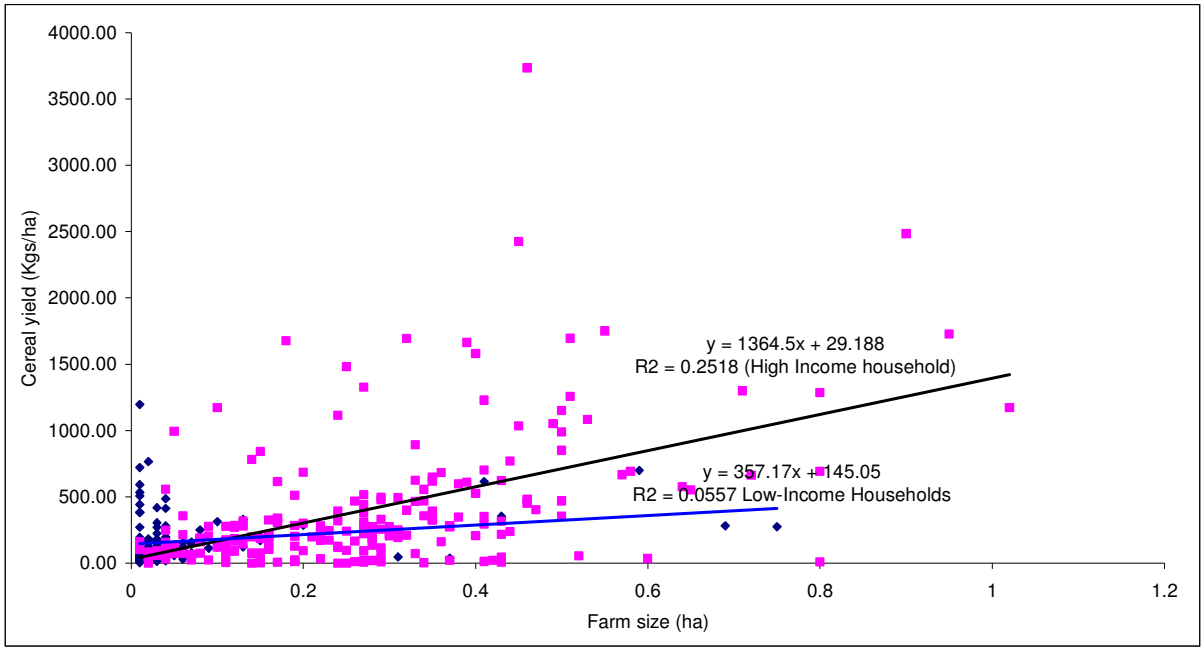
Note: expressed as kg of cereal equivalent per household member; N=330

This is considerably below what they would need to survive, while high income households harvested 306kgs per household member from their plots (differences in harvests between these groups were statistically significant ($p<0.05$). There were also significantly lower crop harvests recorded ($p< 0.05$) among the respondents who had a primary education as compared to those with post-secondary education.

Individuals from female-headed households harvested only half (127kgs/capita/year) of what male-headed households obtained (265kgs/capita/year) and the results were again significantly different ($p<0.05$). These differences in harvest existed because elite households had access to large plots of land and better agricultural technology. For example, the average plot size for male-headed households was 0.24 ha while women had access to 0.08 ha sized plots. High-income households had an average of 0.27 ha, compared to 0.06 ha for low-income households.

In terms of the proportion of these harvests consumed directly by the family, the study found that low-income and female headed households consumed 34.3 % of the total harvest which was less than the high income and male headed households who consumed over 75 % of their total harvests ($p<0.01$). There was a direct relationship between amount of food consumed from urban farms and education level with more food consumed by more educated people ($p<0.01$). Not only did high-income households have larger harvests and consumed more of these harvests, they were more efficient in terms of harvest per hectare (Figure 1) and became more efficient as plot sizes grew (Figure 1, $p<0.05$). This was because higher income urban farmers had better access to inputs and were able to capture economies of scale better than their low-income neighbours.

Figure 1: Average maize yield (kgs/ha) on low-income (N=120)and high-income (N=210) in urban Malawi.



4.2 Indirect entitlements- sales from urban farms

Although female-headed households consumed less of the food they produced, they obtain significantly more income (MK2723.79) per capita per year from urban agriculture. These were followed by individuals from high-income households who had an average annual per capita income of MK2381.17. These incomes are significantly higher ($p<0.05$) than those generated by individuals from male-headed households (MK 1828.28) and low-income households (MK 1509.99). Notably, higher

incomes have been generated from households involved in livestock and poultry sectors, but these are not widely practiced by many in urban Malawi ($p<0.05$). In this study, only 6% kept cattle, 15% were raising poultry and only 2% were raising goats or sheep (shoats). These differences were confirmed to be statistically significant ($p<0.05$, see Table 2 for details).

Maize was found to be the main food crop, and was the most common crop sold to market, contributing almost 30% of the total income from urban agriculture. Detailed analysis found that maize was mostly sold while green, when prices were higher. But this strategy has implications for food security since it reduces the total yield. The study found that most crops, including maize, were processed before selling either as flour, roasted or cooked, especially cassava and sweet potatoes. This improved the market price compared to unprocessed farm produce but cooked food presented several health and sanitation problems (Mkwambisi, 2005). The results show that male-headed households are most likely to sell horticultural crops, followed by high-income households and female-headed households. Income from vegetables ranks among the top four cash earners after maize, poultry and cattle for urban farmers. This study found that many households have resorted to growing root crops not only as a supplement to maize as the main food crop, but because they do not require expensive plant nutrient inputs because of their potential to withstand the impact of drought, which has been common in Malawi.

The study revealed that households obtain a higher income from livestock than crop enterprises with women leading in both cattle and poultry sectors. There were a larger number of low-income households keeping livestock because their location in peri-urban areas increased the land available to them and they have lived in the cities for a long period, allowing them to maintain their pastoral livelihoods. In addition women, especially those from high-income locations, have started livestock farming since they are not in formal employment and have resources to purchase expensive inputs associated with livestock production.

4.3 Indirect entitlements – employment

In terms of urban agriculture's contribution to wage employment, results show that 17% of all households interviewed had worked for a wage on some sort of urban agriculture enterprise in subsequent years. This makes urban agriculture the second most important source of income of all households surveyed after formal employment. Indeed, 42.5% of low-income groups and 55.2% of female-headed households used urban agriculture as a source of employment.

The evaluation of urban agriculture's contribution to employment found that poor people in general, and particularly women, are supplying unskilled labour while the rich, mainly men, tend to provide managerial skills. Survey results show that over 70% of the households who were employed by urban agriculture supplied their labour throughout the year, with only 20% supplying labour during the agricultural season (December to March). Many low-income and female-headed households tended to work seasonally on less regular, lower-paid, unskilled jobs within the urban agriculture sector. Finally, it is interesting to note that poor and female-headed households tended to hire more help than better off households. Table 2 illustrates that 68% of female-headed households hired help to raise horticulture crops, while

53% of male-headed households hired this sort of help ($p < 0.05$). Similarly, low-income households reported hiring more help to produce horticultural crops than higher income groups (78% versus 49%, $p < 0.01$).

Table 2: Proportion of households who hired labour to support horticulture, arable crop and livestock enterprises during 2004/05 season

Variables	N	Horticulture production % (n)	Horticulture marketing % (n)	Arable crop production % (n)	Arable crop marketing % (n)	Livestock production % (n)	Livestock marketing % (n)
Lilongwe	78	46.2 (36)	17.9 (14)	26.9 (21)	5.1 (4)	2.6 (2)	1.3 (1)
Blantyre	63	68.3 (43)	17.5 (11)	9.5 (6)	1.6 (1)	3.2 (2)	0.0 (0)
Low-income	33	78.8 (26)	1.2 (4)	9.1 (3)	0.0 (0)	0.0 (0)	0.0 (0)
High-income	108	9.1 (53)	19.4 (21)	22.2 (24)	4.6 (4)	3.7 (4)	0.9 (1)
Male-headed	116	53.4 (62)	19.0 (22)	20.7 (24)	3.4 (3)	2.6 (3)	0.9 (1)
Female-headed	25	68.0 (17)	12.0 (3)	12.0 (3)	4.0 (1)	4.0 (1)	0.0 (0)
All households	141	56.0 (79)	17.9 (25)	19.1 (27)	3.5 (5)	2.8 (4)	0.7 (1)

Note: Proportions given in %; n = 141

5 Discussions

5.1 General themes

This study suggests that urban agriculture is mainly undertaken by two 'types' of farmers. Firstly, there are the wealthy (and usually male) farmers who dominate agricultural activities and generate a moderate proportion of their income by selling produce from relatively large plots of land. These farmers, however, consume the majority of their crop themselves, and tend to employ people to help with a range of tasks including marketing whatever produce the family does not need. These farmers are more efficient in terms of yields (kg/ha). The second group of urban farmers are poorer, have much smaller plots, and are often run by female-headed households. These two 'typical' farmers are summarized in table three.

Table 3 Summary of key results showing two different "types" of urban farmers in Malawi

Characteristics	*High-income farmers*	*Low-income farmers*
Gender	Usually male	Usually female
Literacy and food production	Low-levels of illiteracy with high crop production	High levels of illiteracy with low crop production
Plot size (ha)	Approximately 0.27	Approximately 0.06
Reasons for urban agriculture	Mainly as a hobby and for personal consumption	As household insurance and for income
Urban agriculture sector supplying labour	Agricultural marketing	Agricultural production
Labour supplied	Mostly permanent and skilled	Mostly temporary and unskilled
Type of labour hired	Mainly casual and unskilled in crop sector	Mainly skilled labour in livestock sector
Urban agriculture sector where labour was hired	Agricultural production	Livestock production
Season supplying labour in urban agriculture	All year round	All year round
Main constraints to urban agriculture	Lack of institutional support	Agricultural land and inputs
Main livelihoods	Mainly in formal employment	Mainly in urban agriculture and informal income generating businesses
Main average food crop yield/ha	1364 kgs/ha	357.17 kgs/ha
Harvests (expressed as kgs of cereal equivalent) per capita	306.93kgs/year/capita	92.31kgs/year/capita
Income/capita from urban agriculture	MK 2381.17	MK 1,509.00

Results, therefore, suggest that in terms of access to land, the use of inputs and the participation in other livelihood activities, urban agricultural activities favour educated,

middle and/or upper class families who produce far more food than poor and female-headed households but who use it mainly for their own purposes. This observation extends the results of already published work (e.g. Maxwell, 1999; Machethe, *et al*., 1997) that more powerful urban interests have realised the value of under-utilised urban land and converted it for agricultural purposes.

The dominance of 'elite' urban farmers echoes one of the most consistent findings from the literature on land tenure and nutritional status that households who own more land are better off than those that do not (Walker and Ryan, 1990; Maxwell and Wiebe, 1999). Land ownership for both rural and urban households can be used as a proxy for household wealth, and, therefore, its relationship with favourable nutritional status proves that land enhances food security (Maxwell and Wiebe, 1999). Recent studies have revealed that changes in land tenure systems bring about winners and losers (Cotula, 2007) because as land competition increases, as resource access relations become more monetarised. Another implication of high-income households dominating urban agriculture is that the farmers who produce the majority of Malawi's urban crops do not consider urban agriculture as an important tool in terms of the urban food supply systems.

For example, most agricultural land in these two cities is used for maize production (Kwapata *et al*., 2001) as this is the staple crop in Malawi. However, national level research has shown this dependence on maize precludes a more diverse and nutritious diet and is a significant contributor to malnourishment. Urban agriculture could be used as a way of addressing this problem, and become a source for fresh vegetables and other crops with valuable micro-nutrients. However, as it is currently organized, a considerable amount of agricultural land in the city is devoted to producing maize for relative well off households. Again, this result provides an obvious opportunity for policy that could specifically support and promote the production of vegetables.

In cases where female and low-income urban farmers were observed to produce vegetables, the quality of the product was of a low grade and these products fetched low prices as compared to products from high-income households. For example, vegetables were harvested before fully ripe, and often grown without proper management. This study revealed that poor farmers were exploited by middlemen especially those who purchased products while in the field and lack of access to city and high value markets such as chain store. The poor lacked storage facilities and space for their produce, forcing them to sale during harvesting time where prices were low due to over supply. On the other hand, the rich who produced more staple food than their needs were reluctant to getting more of their food surplus into the market in time. Products were withheld to be sold in time of short supply for higher prices affecting the urban food supply system.

This discussion highlights a major discrepancy in Malawian policy. The current food security and nutrition policy of the Ministry of Agriculture (Government of Malawi, 2005a) advocates the production of root crops because of their drought resistance, ability to grow in relatively poor quality soil, and relatively high nutritional value. While this policy may have helped in rural areas, ironically, in Malawi's cities it is the rich households who seem to have taken on this advice more quickly than the poor. There are two possible reasons. First, the rich, being more educated, literate and

mobile are much more likely to change their practices in response to educational programmes and adopt new agricultural technologies or management practices.

Second, results of this study suggest that poor urban families do not engage in urban agriculture to increase their direct entitlements, but rather manage their plots as a way of increasing incomes. Since there is little in the way of a market for tubers and root crops, the government's strategy of promoting tuber production is really focused on direct entitlements and therefore fails to recognize the reason that the poor are engaged in food production. Through policies like this, the government has failed to address the needs of the poor, and a more appropriate response would be to create more opportunities in terms of marketable products that can in turn create employment opportunities for poorer households.

It must be noted, however, that women and poor people have access to different sorts of jobs in the urban agricultural sector than their richer male counterparts. Following trends common throughout the world, (e.g. see Tzannatos, 1999) the salaries associated with the jobs women do are on average inferior to those enjoyed by men. Furthermore, women were more likely to be in part-time, temporary and casual work than men. The results presented here show that the poor and women do not earn as much money as casual and temporary workers compared to those who supply skilled labour.

Women are mainly engaged in the production side of agriculture, which has a low wage rate compared to the marketing sector. This labour was mainly supplies during the agricultural season when labour supply is high and cheap due to the shortage of food in most households. Most casual work is done on a daily basis and there is no government intervention or regulation in terms of minimum wage or number of hours worked.

By supplying labour during the agricultural season, the poor and women are denied the opportunity to work on their own farm plots, perhaps compounding the problems of poor crop management and perpetual hunger in these poor households. The extent to which poor families used the economic opportunities presented by urban agriculture (either by selling food or through working for other urban farms) demonstrates that urban agriculture provides an important livelihood diversification strategy in a country with relatively few formal sector opportunities even in an economy based on formal-sector wage employment. However, its role is being restricted because poor communities have diversified more into other informal strategies such as small businesses which give them cash on daily basis.

The poor and women who supply casual labour are not offered security in terms of guaranteed cash availability for food since casual work can be terminated at any time without notice. Atkinson (1995) suggests that the best way for individuals and households to achieve sustainable food security is by securing a reliable source of income relative to food prices. Casual work does not offer this security and is a temporary means of surviving in the urban market.

5.2 The urban livestock sector

One result stands out in opposition to the general observation that there are rich male farmers who consume their food and poorer female farmers who sell the products of their urban agricultural plots. Despite previous findings that suggest physical assets are limited in female-headed households and the poor (Scanlan, 2004), this study has revealed that a small proportion of women (3% of the sample size) obtained relatively good incomes through livestock production because of external support. In the programme, Small-scale Livestock Promotion Programme (SSLPP) and Land O Lakes provided goats and dairy animals respectively to poor women and backed them with extension services. However, the majority of women have no access to this sort of support and are still hiring help to manage and market their livestock.

This case shows two things. First, given the necessary support, women in general, and particularly those involved with livestock production, can use urban agriculture as a strategy to generate decent amounts of income. However, it is important that income generating strategies are not tied to owning land. In this way livestock production, which does not require much land, is ideal. The second point is that since this group finds it necessary to hire marketing help, there is a clear policy opportunity in that government or international programmes could target this sector and engage in marketing training specifically for women involved in urban livestock production. Hence, projects that provide the right support can contribute to poverty reduction and help meet governmental and international targets.

It is evident that poor and female-headed households require practical programmes that will yield results in a short period while providing long-term support. Evidence presented here suggests that livestock production is a realistic way of achieving this. In Malawi, however, raising small stock like goats and sheep is not taken seriously as a way of reducing poverty and improving nutritional assets, yet they breed quickly, provide milk, do not require much space and do not spread zoonotic diseases. In this study over 70% of farmers indicated that they would not want to receive more land, but that they want to be employed. This shows that there is need to create employment through high-income farmers who can raise goats at commercial level. Currently, many people in the peri-urban areas of Lilongwe city have sold their agricultural land, suggesting that land has not solved their poverty situation (see also Cotula, 2007). In Malawi, and common in Africa, producing livestock in the city is generally forbidden by municipal by-laws. For example, Schiere *et al*. (2006) found that in many countries livestock husbandry in cities is an activity that does not have official status and is often banned in countries where poor people depend on it for their livelihoods. Schiere *et al.* further observed that when there is lack of official acknowledgement, research, policy and development agencies can neither address the risks, nor use the potential benefits of animal keeping in and around cities.

As a result, the potential for livestock production to improve livelihoods is under-realized and an appropriate policy response might be to allow livestock production in urban areas to both increase the incomes of urban poor communities to create employment. The fact that urban livestock continues to be found in and around African cities implies advantages for local ‘stakeholders’ to embark on some form of urban livestock keeping. These advantages could be in one or more of factors such as food supply, income, tradition, savings, ecological functions (like scavenging) and social coherence (Schiere, *et al.,* 2006).

Of course, this industry would have to be carefully regulated and inspected especially due to the health and safety implications of raising animals in close proximity with human settlements. However, since the poor are producing livestock, these inspections and regulations are probably necessary anyway. The challenge is to come up with alternatives to current land use and policy that can encourage more intensive, and more diversified, urban agriculture including support for the livestock sector or crop varieties that will mature in very short periods and give more yields. Diversification of livelihoods will entail off-farm activities by the poor households that might even be detrimental to the environment such as deforestation; clay mining, brick moulding and sale of fuel wood as compared to those by high income households (see Cotula and Neves, 2007).

6 Policy recommendations

Firstly, if policy goals were to maximise the amount of food a city produces, then the government could create incentives for these 'elite' farmers to expand operations. This could involve subsidies to intensify agricultural production as well as providing extension and agronomic advice. This sort of strategy would likely help make Malawi's (relatively) wealthy urban farmer to be commercially oriented, and would provide the opportunity for more locally produced food to enter the market in urban and rural Malawi. This strategy would have to go hand in hand with food marketing and distribution strategies to help ensure that this extra food ended up with those that needed it the most.

Linking this to commercial companies might not only create employment, but could make new food products available throughout the year. To address the negative externalities associated with agriculture, policy should promote wastewater utilisation, better labour standards and promote high-value, fruit, vegetables and value-added products. In this case, Governments could learn from strategies promoted in Cuba (Chaplowe, 1996) whereby urban, peri-urban and rural farmers are all considered essential participants in the food production system and supported accordingly.

A second policy strategy would be to focus on pro-poor poverty reduction measures that target marginal producers who use urban agriculture as a source of income rather than as a supply of food. In this case, policy would not necessarily emphasise increasing on yields, but would start with capacity building exercises amongst poorer urban farmers, specifically those led by women, and work by establishing co-operative groups to help them better manage, distribute and market their agricultural produce. The issue of land tenure system should be considered seriously especially knowing that land management institutions are not clear in urban economies as compared to rural settings (see Delville, 2007) and most land is privately owned, managed by government institutions, thus restricting access to main livelihood assets (Meikle, 2003).

This policy strategy should target women who, from an economic point of view, have shown that given the necessary support they can do better in cattle and poultry production. The policy could address constraints in the livestock sector such as the high cost of inputs (feed and drugs), availability, cost and quality of concentrated feed

and grass hay, improving marketing structures and poor availability of technical support.

The way that policy could support female livestock producers should be carefully considered. Enhancing the status of women in urban livestock production, strengthening their decision-making power and leadership, recognition of their role and creation of favourable policy are essential pre-conditions. Animal distribution or credit schemes should be accompanied by adequate technical training for maximum success. Miller (2001) noted that technical training helps women ensure that their rights to livestock lead to increased food, income and decision-making power. Within this "pro-poor" approach African governments should consider providing land and technical support to co-operatives/agricultural associations. Urban poverty and gender should be at the centre of this sort of initiative and this research highlights the importance of explicitly targeting women and less well-educated households (Scanlan, 2004).

A third policy option would be for governments to twin poor and rich farmers together through extension workers to increase local food production as well as promoting the employment opportunities associated with urban agriculture. Low-income farmers would not only be in a position to supply labour and earn money, but this sort of capacity building exercise could help to technically empower poor farmers and make them more financially independent. High-income farmers would benefit through Government supplied fertilizers, land, cheap labour, tax incentives and on long-term global markets.

Fourthly, in terms of employment policy, the Government should consider introducing vocational training to improve the skills of the poor and women, specifically in issues regarding high value-added activities such as the livestock industry, food marketing and post harvest technologies. These should not only empower the poor and women, but should create more job opportunities and improve product availability at local level. This strategy could reduce the need to import food products thereby saving much-required foreign exchange and increasing the availability of fresh and nutritious food at household level.

In Havana, Cuba, training and technical assistance provided to urban producers, together with the recovery of traditional agricultural experiences led to a progressive increase in the yields of crops such as tubers, grains and vegetables (Cruz and Medina, 2003). Policy makers should consider projects that can create jobs in urban areas without jeopardizing natural resources or competing with urban planning. Garret (2004) pointed out that understanding urban employment is critical to designing policies and programmes to reduce urban poverty and hunger. Governments should promote technologies that require simple inputs in terms of energy and labour.

There is need to have a detailed marketing and economic analyses urban scale that will include crop supply-use details of major crops produced, commodity price and on-farm income details, annual production forecasts. This should be able to provide urban food marketing systems in terms of efficiency to satisfy the need of city dwellers. Emphasis should be on urban channels of distribution and marketing, facilities and services through which the food needs of consumers are satisfied.

Finally, provision of micro credit facilities to all groups of urban farmers can transform this livelihood strategy from informal to the formal sector. Good examples from Gaborone, Botswana; Nairobi, Kenya; Texcoco, Mexico; Kathmandu, Nepal and other cities have been well covered in the Urban Agriculture Magazine issue number 9 (RUAF, 2003).

Livestock farmers, especially those from low-income and female-headed households, should be given financial support and demonstration projects could be introduced whereby women could work in groups to create more job opportunities. This type of instrument that provides technical assistance to women can contribute substantially to the household agricultural diversification strategy and reduce the risk of food entitlement failure in most vulnerable households. Alternatively, projects could pursue solid collaboration with other specialised agencies and NGOs, in order to target those households in particular need.

7 Conclusions

The results from this study reveal that at the current level of practice, urban agriculture is not acting as a realistic strategy for improving food security in Malawi. Richer households who undertake it mostly as a 'hobby' and who have no incentives to expand activities to promote either direct or indirect food entitlements which dominate urban production. The results seem to agree with previous findings whereby coping/food security strategies among poor urban households are always diversified (Rakodi, 1995).

The evidence suggests that policy makers are not considering urban agriculture as a tool that can reduce poverty and create employment in developing countries. Currently, there are different and competing views on urban agriculture from NGOs, donors and governments. Even though aid agencies are justifying the need to promote food production for domestic and international markets from cities, governments are not utilising the advantage of high income farmers, existing markets, and availability of labour and open spaces to meet food entitlements of local people.

Governments should advocate a policy environment that will place urban agriculture on the economic development agenda through financial incentives that will promote utilisation of idle land, waste water resources, waste recycling and land restoration for agriculture. There is need to enhance awareness regarding the potential and risks of urban agriculture and to facilitate its recognition as an area of government intervention that can provide both environmental and food security benefits. Facilitating the establishment of multi-stakeholder platforms on urban agriculture and food security and guiding participatory processes of policy formulation and action planning will allow policy-makers to make choices among powerful competing policy agendas surrounding urban agriculture.

There is need to undertake an economic analysis of urban agriculture for purposes of better decision-making especially using trend analysis (Nugent, 2001). Conducting a detailed economic analysis using market-based quantifiable measures and indicators, identifying the indirect impacts of urban agriculture is required to demonstrate the unrecognised benefits of urban agriculture to urban poor and policy

makers wanting to address urban environmental and food security agendas. Currently, the results of this study point to a number of key areas where Governments and donor agencies can implement policies and projects to promote urban agriculture as a food security tool. For example, the potential opportunities for high-income farmers to benefit from marketing produce to 'long-term global markets' are unknown and require further investigation within Malawi and Southern Africa more generally.

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