

CHAPTER 10

The food security-environment nexus in urban agriculture in Harare

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1. Introduction

Perceptions about urban agriculture in Zimbabwe have changed significantly since 1980. Before independence urban agriculture was generally prohibited. In Harare minor concessions were made in relation to land set aside for migrant labour. The main reason for the prohibition was fear of environmental degradation. After independence, land was set aside for a few co-operatives in the capital city, mostly as a means to garner political support (Mbiba, 1995). For example, in the 1980s the City Council, at the behest of central government, gave land to co-operatives in some residential areas. During this time, a tension existed between the promotion of urban agriculture for political patronage and its discouragement for more altruistic reasons relating to protection of the environment (Mushayavanhu, 2003). In time, urban agriculture became *de facto* government policy due to increasing urban poverty. It is estimated that between 1995 and 2001 incomes in Harare decreased by 28% (Zimbabwe Human Development Report, 2003). Critics of the City Council point out that the authorities only accepted the reality of urban agriculture two decades after independence because of its potential relating to poverty reduction, local economic development and sustainable urban development (UCAZ, 2002).

Urban agriculture is said to be a significant means of supplementing the food needs of poor households. Its credentials were boosted by the failure of the Economic Structural Adjustment Programme (ESAP), in place from 1991 to 2000, to create jobs and improve urban incomes. It was also encouraged by the non-governmental organisation (NGO) sector, especially in a project entitled 'Improving Access to Land for Urban Agriculture by the Urban Poor in Harare' (Mudimu et al, 2004). This project emphasised the need for the poor to have fair access to land and to set aside land for the purpose during planning. However, no environmental aspects were incorporated within the project. This meant that the initiative, aimed at swinging the pendulum from prohibition of urban agriculture to its wide adoption as a viable coping strategy, did not contain adequate environmental safeguards.

Urban agriculture is reported to be increasing in Harare

(Mudimu, 1996; Mbiba, 1995). Between 1990 and 1994 the area under cultivation almost doubled to 9 300 hectares, representing a 93% increase and accounting for 16.7% of Harare's surface area. However, the number of people involved in urban farming has not been accurately determined. This chapter examines how urban agriculture is perceived by those people who are involved in it and focusses not just on the short-term benefits but also on the sustainability of the land resource base and the livelihoods that are dependent on it. To this end, we analyse the emerging environmental question relating to urban agriculture in Harare.

2. The food security-environment nexus

The benefits of urban agriculture mainly relate to the food security of poor urban households as it provides a supplementary source of food, augments household income, creates employment, and contributes to improved health and nutrition of the participating households as well as to improved economies of urban areas (Okpala, 2002). It also makes effective use of land that may not be suitable for housing or road-building projects.

But the concomitant environmental degradation, due to poor agricultural and environmental practices, should not be underestimated. Urban agriculture tends to be poorly regulated, through, for example, the absence of a robust legal framework. It is also poorly serviced by research and extension services. These oversights have grave consequences. Agricultural activities may cause loosening of soils. The eroded soil finds its way into rivers, which results in siltation of water bodies. Algae blooms in urban water sources due to the washing away of agricultural chemical substances, create another problem. These environmental concerns underline the importance of considering the long-term impacts of urban agriculture and stress the need for sound environmental governance.

The objective of sound environmental governance is to ensure environmental human security. Barnett (2001) defines this as the process of peacefully reducing human vulnerability to human-induced environmental degradation by addressing its root causes. Sound environmental governance includes (among other factors) water, ecological and food security. Water security refers to a situation in which water is of adequate quantity and quality for domestic and productive uses. Indicators of water security include such parameters as quality, quantity and prevalence of water-borne diseases. Ecological security refers to a condition in which the physical surroundings of a community provide for the needs of its inhabitants without diminishing its natural stock. Indicators of ecological security include aspects of environmental water flows, presence of chemical pollution, physical land degradation and the ecological health of water bodies. Food security exists when all people, at all times, have physical and eco-

conomic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The indicators of food security include an income (for purchasing food items), levels of agricultural production, agricultural water productivity and cases of malnutrition. For there to be environmental human security it follows that there should be good environmental governance.

Without effective environmental governance, urban agriculture is guaranteed to have a negative impact on the livelihoods of the people dependant on it and the society at large. This study sought to assess the status of urban agriculture in the City of Harare in relation to the impacts it poses for the different components of environmental human security. The study was exploratory. As such we do not comprehensively assess the various aspects of environmental human security, but rather highlight the various issues on the basis of the perceptions of the people involved.

3. Methodology of the study

3.1 The study area

The area that was studied is shown in Figure 10.1. For purposes of this study it is important to note the location of these in relation to the layout of the City and its water source.

3.2 Data collection

The study was conducted in selected residential areas (see Table 10.1). These are classified into high-density (low-income) and low-density (high-income) areas. High-density areas, with small stands ($150\text{m}^2 - 300\text{m}^2$ in size), are characterised by 'off-plot' agricultural production (i.e. land set aside for future development or unsuitable for building purposes, wetlands or green belts). Low-density

areas with stand sizes of at least $1\,000\text{m}^2$ are usually characterised by 'on-plot' agricultural production (i.e. within private residential properties). There is, therefore, limited scope for studying environmental impacts of urban agriculture in low-density areas as it assumes the status of private land. Mabelreign was the only low-density area studied although it is important to note that some of the people who cultivate the land in these areas do not reside in the area of cultivation but commute to their plots. (Table 10.1 gives the sample size in each area studied.)

TABLE 10.1: SAMPLE SIZE IN THE VARIOUS RESIDENTIAL AREAS

Study area	Number of respondents
Budiriro	12
Hatcliffe	12
Highfield	10
Mabvuku	14
Rugare	8
Tafara	10
Warren Park	10
Mabelreign	9
TOTAL	85

A questionnaire was administered to respondents in the study areas. A total of 85 questionnaires was administered. As the study was exploratory, the questionnaire covered general issues of access to land, security of access, agricultural practices and environmental aspects of urban agriculture. The questionnaires were analysed using the Statistical Package for Social Sciences (SPSS version 10).

FIGURE 10.1: DIAGRAMMATIC MAP OF CITY OF HARARE SHOWING LOCATION OF STUDY SITES IN RELATION TO CITY'S WATER SOURCE

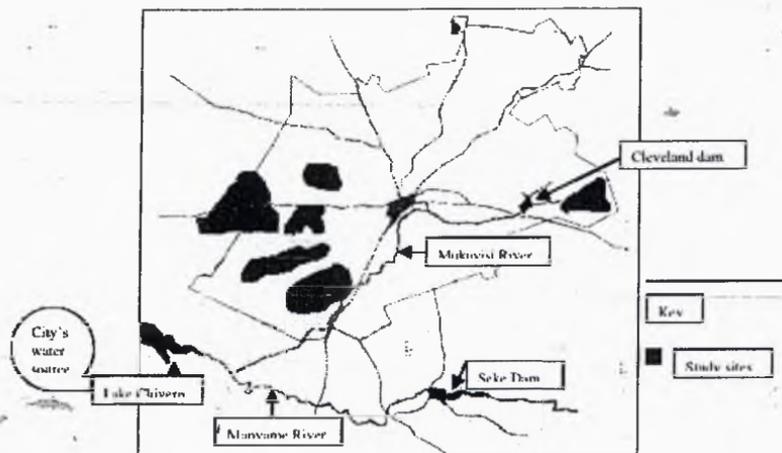


FIGURE 10.2: DISTRIBUTION OF CULTIVATORS BY SEX AND AGE

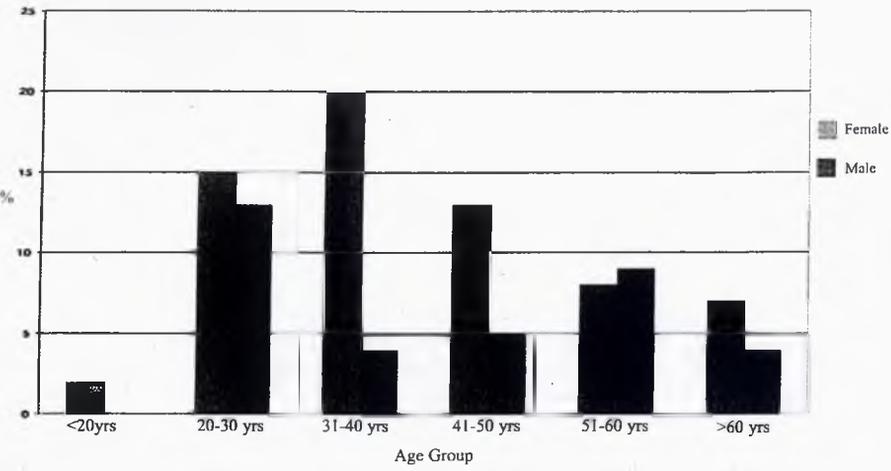


FIGURE 10.3: METHODS OF ACCESSING LAND FOR URBAN AGRICULTURE

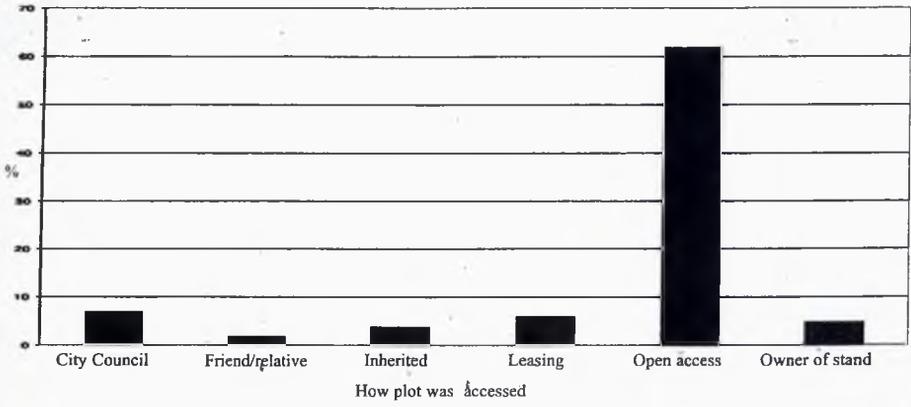
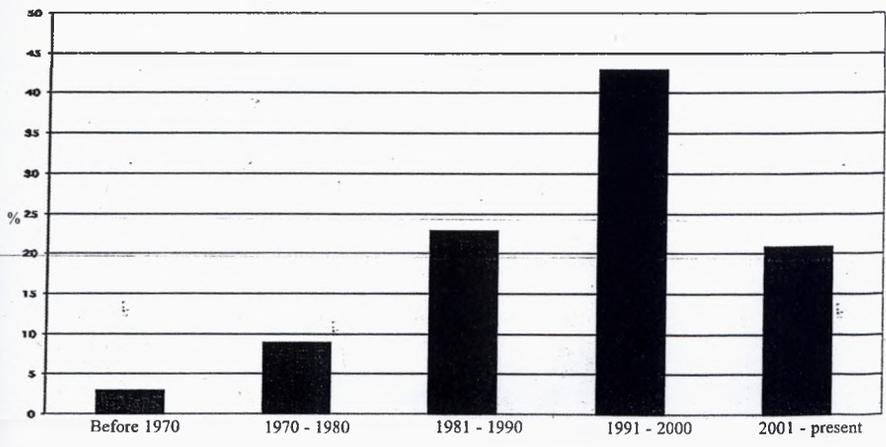


FIGURE 10.4: PERIOD OF ACQUISITION OF PLOT



4. Results

4.1 Profiles of cultivators

Of the cultivators who were interviewed in this study, 64% were female and the remainder (36%) were male (Figure 10.2). In all the residential areas there were more female than male cultivators.

The majority of cultivators were aged between 20 and 50 years of age, which happens to be the most economically active age group. This illustrated the importance of urban agriculture as a source of employment (this is the age group that, in normal circumstances, would either be formally employed or be engaged in educational pursuits). Urban agriculture was apparently being practised by all ages; the oldest farmer was 75 years old and the youngest 17.

4.2 Access to land

Cultivators acquired access to land by different means (Figure 10.3). The most common method was what respondents called 'open access' where individuals claimed pieces of land without the sanction of the land authority. The other frequently cited method was by allocation by the City Council as a co-operative.

Land was also leased from 'land owners' who may have acquired the land through 'open access', which in reality is land that belongs to the City of Harare. An assessment of the period in which the plots were acquired is presented in Figure 10.3. Most plots were acquired in the 1990s, the period in which ESAP was introduced in Zimbabwe, and worsened poverty among the population. Figure 10.4 shows the period of acquisition.

Figure 10.5 shows that the majority of the respondents felt that they were secure on the land they tilled. There were some, however, who indicated that the only way for them to feel secure would be if they had title deeds to the land they were tilling.

4.3 Agricultural practices

The majority of cultivators did not perceive any environmental problems as a result of their land preparation activities (Table 10.2). Usage of hoes and tractors among respondents was 78% and 12% respectively, with the remainder using both tractors and hoes.

Lack of or inadequate training in agronomic practices

also contributed to environmental problems. Some 71% of the respondents said that they had never received any training in proper agronomic practices. Of the 22% who claimed to have been trained, 33% said they were trained by the national extension department, 43% at secondary school and 19% through the media. Well over half of respondents (63%) said they had never received any training on the environmental aspects of their agricultural activities.

The most popular crop grown was maize, followed by beans, sweet potatoes and vegetables. Food was apparently the most important benefit (Figure 10.6). Cultivators usually measured benefits of urban agriculture in terms of yield (Figure 10.7). Most cultivators produced between 0 – 5 bags of maize yield perhaps because of the small plot sizes.

4.4 Environmental issues

Forty-two percent of the respondents said that they had conservation works on their plots, 48% did not have while the remainder did not give a response. The conservation works included drains, ridges and trenches. The reasons were given as: to conserve water, control water flow, improve and control drainage and prevent soil erosion. While 42% of the respondents felt that these works were adequate for addressing their conservation needs, 15% felt that they were not adequate because they continuously had to add stones to keep the works in place.

Of the cultivators, 66% said that they used chemicals to control pests and diseases in their plots. Eighty-two percent of the farmers who used chemicals did not know if the chemicals they used affected the environment while 18% were not sure. Responses to how the chemicals affected the environment showed that farmers did not know much about the effect of agricultural chemical substances on the environment. Answers given had to do with the effect of the chemicals on the pests, such as killing weeds and insects. Cultivators did not know who was responsible for environmental protection and made guesses as to who should be (Figure 10.8).

Cultivators did not know the exact roles of the different people or institutions. It was suggested that the costs associated with environmental protection should be borne by the City Council and the government. Fifty-nine percent of the cultivators did not perceive themselves as having a role to play in, or contributing to the protection of the environment. While cultivators felt that the City Council should be responsible for environmental protection, 58% of respondents did not know the role of the City Council in urban agriculture. At least 70% of the respondents did not know the roles of, for example, the Ministry of Local Government, Catchment Councils and Zimbabwe National Water Authority (ZINWA).

TABLE 10.2: PERCEPTIONS OF RELATIONSHIP BETWEEN LAND PREPARATION METHOD AND ENVIRONMENT

How do you prepare your land?	Does cultivation method cause environmental problems?	
	Yes (%)	No (%)
Hoe	29	71
Tractor	25	75

FIGURE 10.5: SECURITY OF ACCESS TO PLOT

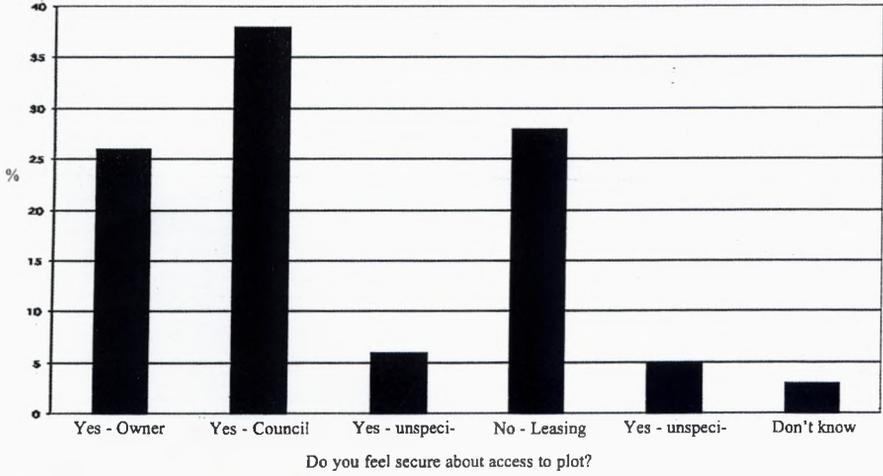


FIGURE 10.6: BENEFITS OF URBAN AGRICULTURE ACCORDING TO CULTIVATOR

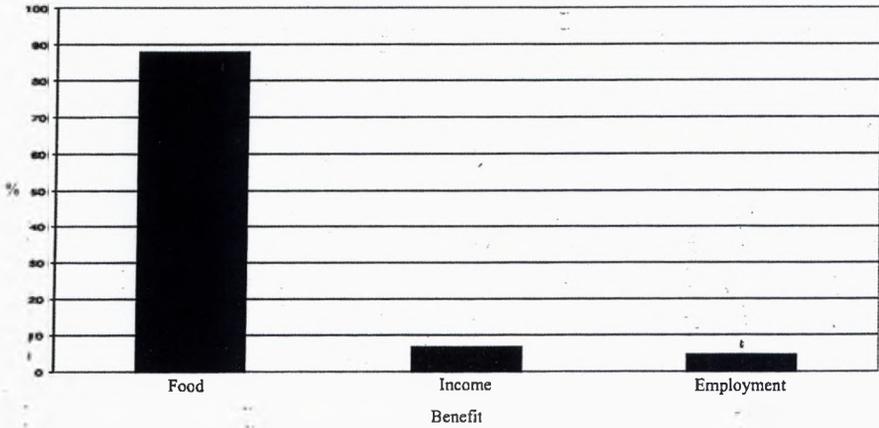
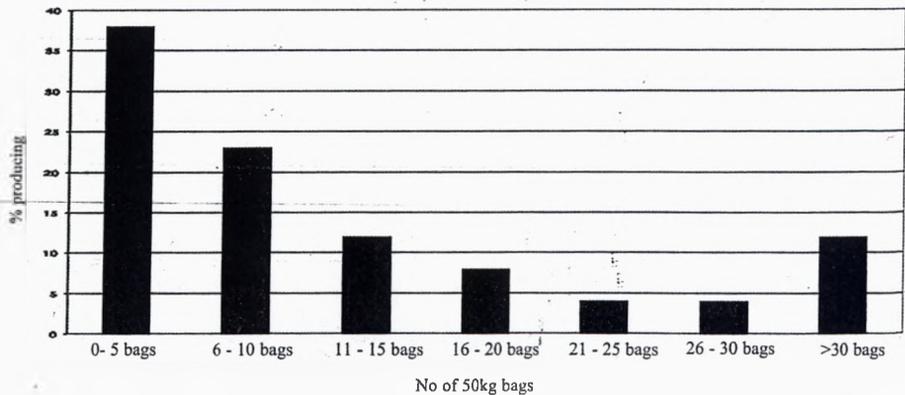


FIGURE 10.7: QUANTIFICATION OF BENEFITS BY CULTIVATORS



Seventy percent of respondents did not think it was possible to stop urban agriculture as it was an important livelihood activity with benefits relating to food security and employment. Cultivators suggested that they should be trained in minimising environmental impacts of their activities rather than being asked to abandon the practice.

TABLE 10.3: NEED FOR WATER ON PLOTS

Water requirement on plot	Reason
No (39%)	<ul style="list-style-type: none"> - There is sufficient water on the plot - Costly to connect water supply - Thefts of equipment - No permanent access to plot - Plot too small to justify cost - Only produce in the rain season
Yes (61%)	<ul style="list-style-type: none"> - For drinking - For supplementing rain water

4.5 Water availability and sanitation

Table 10.3 shows the responses relating to the water needs on the plots.

For drinking purposes some farmers carried water from their homes while some drank water from unprotected wells. These claimed that the water was not safe for them but they had no choice, as they lived some distance from their plots. There were no sanitary facilities on the plots. As a result, cultivators relieved themselves on the plots. Eighty-one percent of the respondents did not perceive any problems with this practice. According to them, they buried the waste. They, therefore, neither saw nor smelt it

5. Discussion

The evidence presented in this study has shown that there is a breakdown of regulations relating to access and control of the practice of urban agriculture in Harare. Mudimu et al (2004) report that, in the 1980s, the Council allocated land for urban agriculture in the Mabvuku and Tafara suburbs. However, this study revealed that more cultivators had acquired land through open access, indicating the absence of regulations relating to access to land. This was due to two main factors. Urban agriculture was tolerated as a ploy to gain political mileage. Secondly, the economic reality, reflected in increasing poverty, means that urban agriculture has become an important coping mechanism. This explains why the number peaked in the 1990s, which was the period of the Economic Structural Adjustment Programme (ESAP). Unfortunately, the environment was no longer an issue.

The study also showed that there are more women than men engaged in urban agricultural activities. According to Mudimu et al (2004), this was because the responsibility

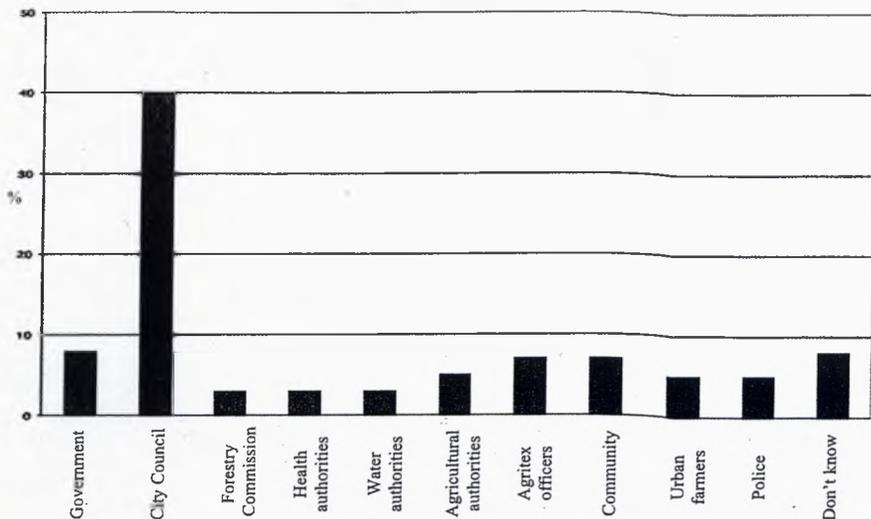
of meeting household food-consumption needs rests on women. This was borne out by the fact that food was the most common reason for people entering into urban agriculture. Another reason was that more females than males were formally unemployed. Clearly governance of urban agriculture should take into account the gender dimension because women may eventually be pushed out of urban agriculture. This would be a tragedy for household food security.

A study of the map of Harare (Figure 10.1) shows that those areas where urban agriculture is practised lie relatively close to the city's water source. The slope of the land facilitates the flow of polluted water into the water source downstream. The print media has also reported similar stories. It was reported that 'erosion had reached unacceptable levels and ... in addition at least 90% of the farmers were using chemical fertilisers and nearly a third of the 'off-plot' cultivation was taking place near streams and swamps leading to water pollution through run-off and leaching' (*Zimbabwe Standard*, 18 January, 2004). This was corroborated by academic studies. For example Moyo (1997) and Nhapi et al (2002) reported that the City's water source was heavily polluted. There was proliferation of the water hyacinth weed (*Eichhornia crassipes*), which made water purification costly. From a water security perspectives this means that the quality of the water for human consumption is compromised. The media reported the inadequacy of chemicals for purification of water (*Financial Gazette*, 8 January, 2004). The quantity of the water was also affected. In addition, the City Council could not deliver as much water as it should have done because some of the water was used for cleaning up the pumping units. Faced with these issues, it is unfortunate that the people engaging in urban agriculture did not see it as posing an environmental problem.

Even when people engage in some form of environmental protection, for example through terracing, the attempts were made on the basis of inadequate knowledge. The absence of training in appropriate agricultural practices and the environmental impacts of urban agriculture contributes to environmental degradation. The absence of serious environmental protection measures was worsened by institutional weaknesses in the local governance system. This was exemplified in 1985/86 by crop slashing where destruction of stream bank crops, was assigned to different departments (see Mudimu et al, 2004). Cultivators, therefore, do not know whom to approach in matters relating to urban agriculture.

The pressing issue then is about improving the (environmental) governance of urban agriculture. Governance has been defined by Arriens and Alejandrino (2003) as 'the range of political, social, economic and administrative systems that are in place to regulate the development and

FIGURE 10.8: RESPONSIBILITY FOR ENVIRONMENTAL PROTECTION



management of resources and the provision of services at different levels of society'. Based on the knowledge of cultivators, there is very little that has been done to provide for the practice of urban agriculture, as evidenced in the means of accessing land, on environmental impact of land use, and of educational support to the cultivators.

The impacts of urban agriculture on the environment considered in this paper should be addressed in the context of environmental human security. Protection of the environment for the benefit of the society is dependent on the maintenance and development of the physical environment. Food security should not be addressed outside the system in which food production takes place. Water and ecological security are also important. The activities that cultivators engage in should not diminish the 'natural stock' of the environment. Degradation of the environment (land and water sources) implies that, over time, the environment will no longer support urban agricultural activities to the detriment of this valuable livelihood activity.

6. Conclusion

While access to land is a significant aspect of promoting urban agriculture, it is vital to consider the environmental governance of urban agriculture in order to ensure sustainability. Planning for urban agriculture should include ecological and water security, for long-term sustainability.

ENDNOTE

1 Acknowledgement is made of the assistance of Mr. C. Chimedza from the University of Zimbabwe's Statistics

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