

# Urban Agriculture in Gweru

Household nutrition, economic costs and benefits



Results of household monitoring interviews conducted between September 1996 and April 1997.



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## TABLE OF CONTENTS

List of Tables .....	iii
List of Figures .....	iv
Acronyms .....	v
Acknowledgements .....	vi
Executive summary .....	vii
 CHAPTER ONE: BACKGROUND AND INTRODUCTION TO THE STUDY .....	 1
1.1 Global Perspective of Urban Agriculture .....	1
1.2 Gender implications in urban farming .....	2
1.3 Urban Agriculture in Zimbabwe .....	3
1.3 Study Objectives .....	5
1.4 Research Methodology .....	5
 CHAPTER TWO: URBAN FARMING AND HOUSEHOLD MANAGEMENT PATTERNS ..	 8
2.1 Agricultural activities .....	8
2.1.1 Gardening .....	9
2.1.2 Cropping .....	11
 CHAPTER THREE: URBAN FARMING AND HOUSEHOLD NUTRITION .....	 13
3.1 Introduction .....	13
3.2 Food consumption by total household income .....	13
3.2.1 Main foodstuffs consumed .....	15
3.2.2 Growth rate of children by household participation in urban agriculture .....	17
 CHAPTER FOUR: URBAN FARMING & HOUSEHOLD ECONOMY .....	 20
4.1 Introduction .....	20
4.2 Household expenditure .....	20
4.2.1 Income expenditure on basic household needs .....	20

4.2.2 Gardening expenses .....	23
4.2.3 Cropping expenses .....	24
4.3 Household income and savings from urban farming .....	26
4.3.1 Gardening income and savings .....	26
4.3.2 Income and savings from crop production .....	26
4.3.3 Income generated from vegetable and crop vending (marketing activities) .....	27
4.3.4 Income and savings from urban livestock rearing .....	28
4.4 Summary of the costs and benefits of urban agriculture .....	28
 CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS .....	30
5.1 Conclusions .....	30
5.2 Recommendations .....	31
BIBLIOGRAPHY AND REFERENCES .....	33
APPENDICES .....	34



## LIST OF TABLES

Table 3.1	Number of meals per day by total household income .....	14
Table 4.1	Input expenditure on gardening .....	23
Table 4.2	Monthly average and total average time spent on gardening activities .....	24
Table 4.3	Input expenditure on urban cropping .....	24
Table 4.4	Average time spent on cropping activities per month .....	25
Table 4.5	Expected crop harvest .....	26
Table 4.6	Number of chickens consumed and sold. ....	28
Table 4.7	Household costs and benefits of urban agriculture .....	28

## LIST OF FIGURES

Figure 1.	Monthly proportion of gardening and cropping participants . . . . .	8
Figure 2.	Proportion of respondents engaged in particular gardening activities per month. .	10
Figure 3	Proportion of households taking three or more meals per day . . . . .	15
Figure 4	Consumption of protein- rich foodstuffs by household income . . . . .	16
Figure 5a	Average age and height of male children of farming and non farming households..	18
Figure 5b	Average age and weight of male children of farming and non farming households..	18
Figure 6a	Average age and height of female children of farming and non farming households. . . . .	19
Figure 6b	Average age and weight of female children of farming and non farming households. . . . .	19
Figure 7a	Average monthly household expenditure on food (Income: Below Z\$840). . . . .	20
Figure 7b	Average monthly household expenditure on food (Income: Z\$840 - Z\$3 000). . .	21

## ACRONYMS

cm	centimetres
DDT	Dichlordiphenyl-Trichloethane
ENDA	Environment and Development Activities
ESAP	Economic Structural Adjustment Programme
g	gramme
ha	hectares
IDRC	International Development and Research Centre
kg	Kilogram
l	Litre
n	Sample
m <sup>2</sup>	metre squared
UA	Urban Agriculture
Z\$	Zimbabwe Dollar

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## EXECUTIVE SUMMARY

### 1.1 Introduction

Work on urban agriculture in Gweru began in January 1996. The City of Gweru was chosen to provide a comparative study of urban agriculture within a smaller city. This is the second report on the IDRC-funded programme on urban agriculture in Gweru. Findings presented in this report are the result of a household monitoring exercise conducted in Gweru during the period September 1996 and April 1997.

Urban agriculture in Gweru consists of the production of vegetables, crops and livestock by urban households for home consumption and the urban market. This activity is largely practised on a small-scale on land around the homesteads and open spaces and infrastructural servitudes within the city.

The harsh economic conditions, due to structural adjustment policies, prominently feature as the main driving force behind the activity. The economic structural adjustment programme (ESAP) started in Zimbabwe around 1991 has worsened the plight of the urban households, mostly the poor. Removal of subsidies, the consequent increase in prices of basic foodstuffs and retrenchments, meant that the urban populations are increasingly becoming poorer. Urban agriculture emerged under such a scenario as a coping strategy for poor households to sustain their livelihoods. Thus, the primary benefits of urban farming are viewed as household food security, employment, income generation and savings on purchases.

The household monitoring study set out to address in more detail the following objectives:

- a) Determine the economic impact of urban agriculture on urban households (farming versus non-farming).
- b) Assess the overall nutritional impact of urban agriculture products on urban households (farming versus non-farming) and health implications of the urban agriculture products.
- c) Identify crop types of on and off plot urban cultivation and activities during the cropping season.

The understanding of the actual value and potential of urban agriculture in feeding urban populations is an important first step in defining the future of urban agriculture in Zimbabwe. Furthermore, how urban agriculture can be practised in a more orderly manner, is an issue that needs to be considered seriously for the sustainability of the city environment.

The monitoring study showed that women are the main participants in all the activities in urban cropping and vegetable production. Apart from women being economically disadvantaged, this could also be due to the African cultural views of women as the principal actors in the provision and preparation of household food.

Gardening activities are carried throughout all seasons whereas cropping is only practised during the rainy season. As cropping activities begin to take off in October, the practice of gardening begins to decline proportionally up to the month of February. Besides shortage of land, this trend could be due to increased workload for women.

Gardening relies heavily on organic manure as compared to cropping where chemical fertilisers are used. However, due to problems of pests and diseases, there is a higher rate of pesticide utilization in the garden than the fields. Although no case of any health problems associated with the use of pesticides was identified, this is potentially hazardous especially where children were found to assist with the application of such pesticides.

Low income urban farmers tend to have more meals per day than the non-farmers. This is largely due to the availability of foodstuffs from the home gardens and open space fields. Although, this can be seen as a coping strategy, some households delay breakfast time to coincide with the afternoon meal.

The low income urban farmers (below \$840 per month), due to the availability of self-produced starchy foodstuffs, can afford to purchase protein rich foodstuffs such as meat and fish for their lunch or dinner meals. The non farmers in the same income category cannot afford to purchase the costly protein rich foodstuffs. Consequently, the overall health performance of the farmers is higher than the non-farming households. This is demonstrated by the high growth rate of children under the age of five in farming households. Children of urban farmers are generally taller and heavier than those from non-farming households.

On an eight-month period, a gardening household spends an average of \$110.49 on the purchase of inputs (seeds and fertilizers). One household member could work in the garden for an average time of 28.07 hours per month. Much of the time spent in the garden is on watering. However, due to the prevalence of fixed household water charges the actual value of the amount of water lost through gardening could not be computed.

The average expenditure on cropping inputs is \$125.62. This excludes the cost of labour which is not a direct expense to the household as the household would make use of the otherwise 'idle' labour force. Although cropping expenditure may be low, the activity is labour demanding. About two persons can be employed on a part time basis to look after a cropping field. Land preparation and weeding are the main labour demanding activities.

Due to a household's reliance on own gardening produce, approximately Z\$1 287.00 can be saved per annum. A maize producing household would have an annual minimum saving of Z\$896.44 per year on the purchase of roller meal.

Households involved in the informal marketing of agricultural products would accrue an average income of \$5 951.4 within a period of eight months. Households producing and selling chickens within the same period had a net average income of \$4 982.76



## **1.2 Recommendations and the way forward**

Urban agriculture benefits a significant proportion of the households in Gweru. The following recommendations were made for the formalisation and improvement of the activity.

- a) Inorder to ensure security and improve management in the urban fields, enabling policies for urban agriculture should be developed.
- b) Urban planners and policy makers should incorporate gender considerations in the layout design and planning of urban infrastructural services. This also entails that more gender focused research and workshops on gender sensitisation ought to be carried out.
- c) Environmental and nutritional education programmes should be carried out for the low income urban residents (farmers and non farmers).
- d) Environmentally sound farming models for sustainable urban agriculture should be devised.
- e) Extension services, which were only accessible to rural farmers should also be made accessible to urban farmers.
- f) The availability and accessibility of farming inputs to the urban poor farmers should be ensured to increase productivity.
- g) Alternative technology for the utilisation and recycling of urban waste should be developed.

## **1.3 Chapter synopsis**

Chapter 1 gives a global and national overview of urban agriculture and its significance to household food security. Background to urban agriculture in Zimbabwe is highlighted. Research objectives and methodology used in the monitoring exercise are also outlined in this chapter.

Chapter 2 describes household agricultural management patterns during the period between September 1996 and April 1997. Agro-chemical use patterns and gender involvement in particular urban agricultural activities are also examined. A monthly examination of household activities is presented. Focus is largely on gardening and cropping activities. The main problems encountered during the period are also outlined.

Chapter 3 assesses the nutritional significance of UA. Comparison is made of the well-being of farming households and non-farming households. Children under the age of five are specifically targeted to measure their growth rates and draw any correlation with participation in urban agriculture. Expenditure on food purchases by both farming and non farming households is also examined.

Chapter 4 focuses on the general household economies of the respondents. Average expenditures on household necessities by different income groups are also presented. The direct benefits and costs that accrue to farming households are presented in this chapter. The benefits are mainly in the form of income savings generated through households consuming their own food and direct income generated from the sale of agricultural produce. The main costs incurred are in terms of expenses incurred mainly on input purchases and the time spent on the activities.

Chapter 5, Conclusion and Recommendations, brings together the major issues of the economic and nutritional sections of the report. The implications of UA to urban households and environments are assessed and the future of UA and the sustainability of city economies is critically examined. The way forward for UA in Gweru is also tentatively outlined.

## CHAPTER ONE: BACKGROUND AND INTRODUCTION TO THE STUDY

### 1.1 Global Perspective of Urban Agriculture

Urban agriculture is not just a feature of developing countries, but is also prevalent in developed countries. The main difference is in the nature of the practice, extent, management strategies and the driving force behind the activity. Whereas city dwellers in the North view UA as a backyard activity and a hobby, most urban farmers in the Southern cities take it as a source of livelihood. It is estimated that about 200 million urban residents worldwide are engaged in urban farming thereby providing food and income to about 700 million people (Mougeot, 1994).

Rees (1997) postulates that the future of most urban areas will be characterised by 'external shocks' amongst which changes in the global climate characterised by increased occurrence and magnitude of extreme weather events, such as the recurrent droughts in Southern Africa, are threatening the sustenance of urban economies. Faced with such a bleak future, urban households are forced not to continue relying on external food sources when there is great potential for cities feeding themselves. Rees argues that the urban food production system is one significant way of reducing the vulnerability of urban populations to global ecological changes.

The Brundtland Commission also pointed out that UA could actually become a vital component of urban development especially as more food will be made available to the urban poor at minimum cost (World Commission on Environment and Development, 1987). Besides serving as an important source of food, urban agriculture is also widely viewed as amounting to significant income savings on household food expenditures. Despite such perceived dietary and socio-economic benefits, both central and local governments in the developing countries do not actively support urban agriculture.

A study by the International Food Policy Institute (von Braun *et al*, 1993) on urban food security argued that inadequate information base on UA activities, is the main obstacle towards the formulation of enabling policies and programs by central governments and local authorities. In Zimbabwe, most local authorities have been exposed to the realities of UA. Besides limited exposure to empirical examples of successful models on how UA can be integrated in the existing land-uses, there is also a shortage of more measurable costs and benefits of the activity. Most of the imputed costs and benefits are based on conjecture rather than fact.

Those against urban cultivation view the activity as causing environmental degradation mainly in the form of siltation and eutrophication of the rivers (Enda-Zimbabwe, 1996a). Besides being taken as an aspect of rural life UA, particularly livestock keeping, is also regarded as a public health nuisance.

The Gweru urban agriculture household monitoring survey conducted between the period September 1996 and April 1997 was an in-depth analysis of issues raised in earlier studies (Enda-Zimbabwe, 1994 and 1996b).

## 1.2 Gender implications in urban farming

The activity of urban agriculture can be viewed in terms of gender relations within a society. In Zimbabwe, as in most other African countries, crop and vegetable farming is culturally viewed as the domain of the women. Farming was historically practised in the rural areas. As most of the men migrated into urban areas in search of off-farm formal employment, this meant that farming in the rural areas was entirely left at the hands of the women. This also may have significant impact on the land use practices within the urban environments. Agriculture was never seen as a viable land-use option for the open spaces in the cities and towns.

Conventional urban planning practice has been characterised by cities being divided into zones such as residential locations, industrial zones, commercial zones and recreational areas. With the increase in urban populations, due to rural-urban migrations and natural increase, and the harsh economic environment brought about by the Economic Structural Adjustment Programme (ESAP), the shortcomings of urban planning practices have been manifested. Cities in Zimbabwe, designed along these lines, no longer conform to the reality of peoples lives, both women and men.

As most of the rural areas in Zimbabwe suffered periods of devastating droughts especially in the 90s, this also meant that there was a dramatic influx of rural peoples into towns where prospects looked brighter. Unfortunately the conditions in urban areas were not better off due to the economic problems associated with ESAP. Elson (1989) argues that the brunt of structural adjustment policies is largely borne by the urban poor women who do most to compensate for declining real wages.

In studies carried out in Harare, the most common form of urban poverty is expressed as shortage of household food (Matshalaga, 1997). Besides the fact that the participation of women in urban agriculture may be viewed as a cultural norm, it is largely the need to meet household food requirements that pushes women to violate urban planning by-laws. Matshalaga (1997) pointed out that women are the principal actors in the aspects of household food security. Their roles in this aspect includes actual food production, acquisition, preparation and management of food stores. As food purchases became more expensive due to removal of subsidies and the concurrent decline in real wages, the women had to devise coping strategies in order to ensure food security within the household.

However, urban agriculture should not be solely viewed as a mechanism to ensure the availability of sufficient food to the household. Urban farming also amounts to saving on income that could be used on food purchases. Maxwell (1995) argues that urban farming can be a means of protecting other sources of women's income especially where allocation from husbands to meet household needs may be insufficient.

In a study conducted by Mudimu (1996) it was pointed out that women are the main participants in urban agriculture as they are not formally employed as men. The women farmers spend an average of five to six hours in the fields usually at peak periods of land preparation and weeding. Most women gain the support of their husbands whereas few men are found against the activity as they view agriculture as the image of poverty. Men also view urban agriculture as having marginal returns. The conflicts that arise between policy makers and urban farmers could therefore be viewed as the

result of rigid environmental and planning policies which impedes rather than create an enabling environment to sustain the livelihoods of the urban poor in a changing socio-economic environment. Moser (1989) argues that there is a need for gender considerations in the planning of human settlements and housing, especially given that women are primary users of space around them.

Wilson argues that,

“ historically, gender stereotyping has profoundly affected urban planning and urban institutions. Cities are spatial and organisational expressions of social relations, which are based as much on power and conflict as on cooperation and consensus. This has meant that the needs of urban women have often been ignored.” (In *Gender and Development*; 4 (1) 1996 pp10)

This underlines the fact that urban planning and management should conform to emerging socio-economic challenges to ensure the sustainability of the urban environment. Planners should consider gender implications in the design of urban settlements. Most of the cultivation activities take place within the homesteads and on open spaces adjacent to the residential areas. As women are the main practitioners in these agricultural activities the issue of distance becomes important as they are also involved in other household chores which include child care.

### **1.3 Urban Agriculture in Zimbabwe**

The rapid rate of urbanization coupled with economic adjustment policies and harsh climatic environments, is a cause of great concern for urban managers, particularly in the Third World cities. Urban areas have been generally viewed as centres which build diversified and dynamic economies raise productivity, create jobs and wealth and provide essential services for the urban populations. Thus, cities are thereby viewed as key engines of economic and social development. With the advent of economic structural adjustment programmes in the developing countries over the last decade of the twentieth century, pressure on urban scarce resources has been rising spontaneously. This poses serious questions on the sustainability of the city system. In Gweru, like most other developing cities, this has been exacerbated by increasing rates of rural to urban migration.

Under the economic structural adjustment programme some companies have either been liquidated or have engaged in massive retrenchment programmes. Consequently, many employees have lost their jobs which were their major source of livelihoods. To date, since January 1997, seven firms in the textile industry have been liquidated with sixty others experiencing serious problems. (Herald, 4 August, 1997). These activities and the general rise in the cost of living, have led most urban households to engage in informal activities to meet basic household requirements. Urban agriculture is one such informal activity.

The rise in urban agricultural activities in Zimbabwe is largely attributed to economic hardships (Enda-Zimbabwe, 1994). It is viewed as a coping strategy by urban households to sustain their livelihoods (Enda-Zimbabwe, 1996b; Matshalaga, 1997; Mudimu, 1996). It is considered as a spontaneous haphazard activity which is not planned for and hence not supported. Thus, the practice is widely viewed as an illegal activity as it is not backed by any statutory instrument.



Urban agricultural activities take place on home fronts or backyards and open public spaces around the city's built environment. The other form of agricultural activities is the marketing of agricultural produce. This is usually carried out on street corners and some council designated marketing stalls. Urban farming on home fronts and backyards (on-plot) is mainly confined to vegetable production of which the *brassica* species of green leaf vegetables are common. Small livestock rearing, mainly poultry, is also an on-plot activity mostly practised by the middle income households (Enda-Zimbabwe, 1996b).

Open space cultivation (off-plot) largely involves the production of cereal crops such as maize, sweet sorghum and root tubers mainly sweet potatoes. Such crop cultivation is usually on undeveloped land, land not suitable for buildings, infrastructural servitudes and idle public land.

Off-plot crop cultivation causes most of the problems in urban agriculture in which the practitioners have often clashed with the local authorities over the management of urban environments. Whereas orthodox planning principles view such open spaces as green wedges or 'ecological lungs' of the city the urban agricultural practitioners view such lands as 'idle' and therefore should be put to productive use. The usual response to such practices by city authorities has been the slashing of the semi-mature crops as a deterrent measure to curb the activity. Most urban farmers view such responses as a manifestation of colonial practices whereby the policies that were in place were designed to serve a minority. As a result, the practitioners have been unyielding and continued with their practices until the local authorities had to exercise a certain degree of leniency.

Rees (1997) attempted to explain the reason why urban farming is not seriously considered as a possible urban land-use option. He argues that the industrial approach of short term economic efficiency which takes precedence over most public and private life values has resulted in urban farming in some cities being underrated. With the emphasis on the open market economy urban farming land has been viewed as a tradable commodity which should compete with other land-uses. Agricultural uses constitute the least land values in an urban area and therefore uneconomic.

Most urban managers and planners take little regard of the concept of cities producing their own food as opposed to reliance on external sources. Urban farming may be viewed largely as a transitory activity which will soon be wiped out of the city environment. This perception shows that the importance of urban agricultural activities to household food security is little understood.

Recent studies and workshops confirm that urban agriculture (UA) is a recurrent feature of the urban environment and therefore strategies on how to integrate this activity with existing urban land-use systems should be considered seriously (Enda-Zimbabwe, 1996a; 1996b; Mbiba, 1995).

Air surveys conducted in 1996, showed that a total of 2 257ha of land was under crop cultivation. This represents 8.5% of the total land area in Gweru. Open space cultivation is common in the high density areas where most of the low income urban residents dwell. Appendix A shows the area under cultivation in Gweru in 1996.



### **1.3 Study Objectives**

The main objective of this study is to document and analyse household socio-economic, nutritional, and environmental benefits and problems of urban agriculture. The more specific objectives are;

- a) To determine the economic impact of urban agriculture on urban households (farming versus non-farming).
- b) To assess the overall nutritional impact of urban agriculture products on urban households (farming versus non-farming) and the health implications of the urban agriculture products.
- c) To identify crop types of on- and off-plot urban cultivation and activities during the year.

### **1.4 Research Methodology**

#### **Aerial Photography**

An aerial survey was conducted over the City of Gweru by Air Survey company. The photographs were digitised using the Geographical Information Systems (G.I.S) ArcInfo software package. This enabled the measurement of the actual land area under crop cultivation.

#### **Household Survey**

A preliminary household survey which led to identification of monitoring households was carried out in August 1996. It was considered important for household monitoring to take place in areas where field environmental monitoring was being conducted. The assumption was that activities within the household are related to the environment in the cropping fields. The preliminary survey was conducted across the suburbs to identify and select monitoring households. A street by street random number sampling procedure was used in the process.

In Gweru, four suburbs were initially selected to conduct the eight month long monitoring exercise. All the suburbs were from the high density residential areas (Mkoba, Senga, Mtapu and Mambo).

The preliminary survey was targeted towards assessing the general characteristics of the households within the suburbs. Assessment was in terms of household socio-economic characteristics and demographic compositions and patterns. Issues that were looked at comprised household economic activities and income levels, household agricultural practices and tenure systems. These factors are vital in assessing the impact of urban agriculture on urban households.

The average household size in Gweru was 6.25. Due to movements of household members, the number of people per household may change periodically. The proportion of landlords to lodgers interviewed does not necessarily reflect the overall housing ownership patterns in Gweru. Landlords when available at the premises do not allow lodgers the first option to participate in such surveys. Similarly lodgers prefer landlords to be interviewed as their tenure is not always guaranteed and binding. Thus a few lodgers were interviewed.

The survey also showed that more than half (87.86%) of the respondents have total household

incomes below \$3 000 per month. Generally there is very little income differentiation in the types of activities (particularly gardening and cropping) undertaken by different households.

The survey also intended to capture the non participants in urban agricultural activities. These would offer a basis of comparison between the agricultural and non agricultural households with similar demographic and socio-economic characteristics.

### **Selection of Monitoring Households**

The monitoring households were selected from the preliminary survey conducted in August 1996. The following criteria was used in the selection of the households.

- a) Household head consent to participate in the monitoring exercise.
- b) Participation in agricultural activities.
- c) Family size and composition.
- d) Tenure system (landlord / lodger).

The full understanding and agreement by the households to participate in the whole process was an important first step in selecting monitoring households.

The nature of agricultural activities a household was engaged in was also a fundamental consideration in household selection. This would ensure extensive coverage of all urban agricultural activities. Non-participants were also selected to facilitate comparison of any incremental benefits or costs between them and the participants.

The range of agricultural activities a household was involved in played a significant part in the selection. The presumption is that a household involved in more than one activity is more likely to have more benefits than a household engaged solely in one activity with all the other factors constant. All this could have a bearing on the health status of the household.

The family composition and size influences the allocation and distribution of the total household income. A large family size implies a heavy burden on the household consumption base. It is generally assumed that babies and children are more responsive to dietary deficiencies than adults. Thus families with at least one child under the age of five years with similar income levels were selected to facilitate assessment of the contribution of urban agriculture to household nutrition. Comparisons were therefore made between families participating in agricultural activities and the non-farming households.

Tenure system affects the length of residence for most of the urban residents. Lodgers comprise the most mobile group of urban residents who can move untimely from one house to the other or from suburb to suburb. As such, very few lodgers were selected for the monitoring exercise.

## **Household monitoring process**

The household monitoring for socio-economic, nutritional and environmental aspects of urban agriculture started in September 1996. Household monitoring was specifically targeted to coincide with the busy agricultural season. The monitoring was conducted on a monthly basis for a period of eight months up to April 1997.

Monitoring households were selected in the four high density suburbs of Gweru namely Mkoba, Senga, Mtapu and Mambo. A total of 50 households per survey site were initially selected. However due to the periodic movements of the household heads, the number of respondents could vary monthly. During the course of monitoring some targeted households decided to have no part in the study as they did not envision any immediate benefits. Constant feedback on progress of the project and other notable scenarios on the activity, ensured that a minimum acceptable number of households be maintained till the end of the monitoring exercise.

The monitoring process was done with the aid of research assistants who were resident in the respective suburbs. The research assistants had to be trained on methods of conducting the monitoring using urban participatory approaches. A questionnaire which could be reviewed and updated every month was used by the enumerators as a monitoring aide.

## **Rationale for monthly monitoring**

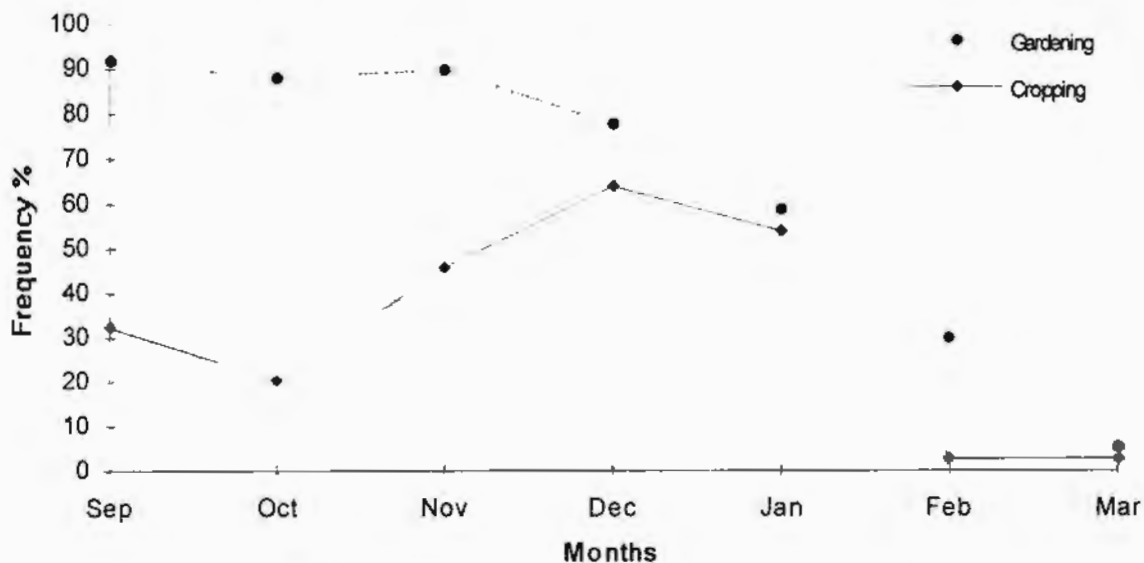
The monitoring exercise had to be done once every month for a period of eight months. This was done in order to achieve a high degree of accuracy in recollection of household activities within each month. With a longer period respondents are likely to forget some of the events that may have occurred. A shorter recall period ensures a higher degree of accuracy in computing the real household costs and benefits of urban agriculture. Furthermore, activities and inputs used over the month can easily be identified.

## CHAPTER TWO: URBAN FARMING AND HOUSEHOLD MANAGEMENT PATTERNS

### 2.1 Agricultural activities

Gardening and cropping activities are usually affected by changes in the agricultural season. Although gardening is carried out throughout the whole year cropping is mainly confined to the rainy season. Figure 1. below shows the proportion of respondents carrying out gardening and cropping activities during the monitoring period.

Figure 1. Monthly proportion of gardening and cropping participants



Gardening and cropping are the main activities carried out by the urban agriculturalists throughout the year. However, the coming of the cropping season often has a direct impact on gardening activities in terms of competition on the land resource for crop and vegetable production. Usually part of the land used for vegetable production is set aside for crops in the cropping season. This does not necessarily mean that there will be a scarcity of vegetables for the household. Instead, the cropping season also leads to diversification of vegetables that are available to the household. For instance, instead of continuous reliance on rape, the household can also consume pumpkins that are often produced on the same piece of land as the maize crop.

Besides competition on land, farming households often experience shortage of manpower to enable equal participation in all necessary farming activities. Urban vegetable and crop production are activities mainly carried out by women. Children when not at school often assist their mothers in land preparation, planting, weeding and watering.

Figure 1 shows that most cropping activities are carried out between October and January. As the cropping season takes off, less time is devoted to gardening activities. Although participation in

gardening activities continues to decline as the cropping season comes to an end, this trend is expected to be momentary whereby the farmers take a rest from the busy cropping season.

### **2.1.1 Gardening**

This is the most common agricultural activity carried out by the urban residents throughout the whole year. According to the preliminary household study about 91% of urban households practise gardening. Unlike other agricultural activities such as cropping which are affected by seasonal changes, gardening can be practised across all seasons as it is largely dependent on tap water for irrigation. Besides the availability of gardening land, accessibility and affordability of irrigation water are important considerations for a household's participation in urban gardening.

Figure 2 shows the variation in frequency of activities carried out by the gardening households during the monitoring period. Planting of vegetable seeds and seedlings is done concurrently with the activity of land preparation. The figure shows that land preparation and planting are activities that are carried throughout all the months. At the end of the cropping season in February and March most gardening households are engaged in land preparation activities. This is largely due to the fact that the early maize crop planted on the gardening land during the months of September and October would be ready for harvesting by January and February. The increase in land preparation is also largely due to households changing the old vegetables for new ones. Maize on gardening plots is usually harvested whilst green. After harvesting most households revert to vegetable production.

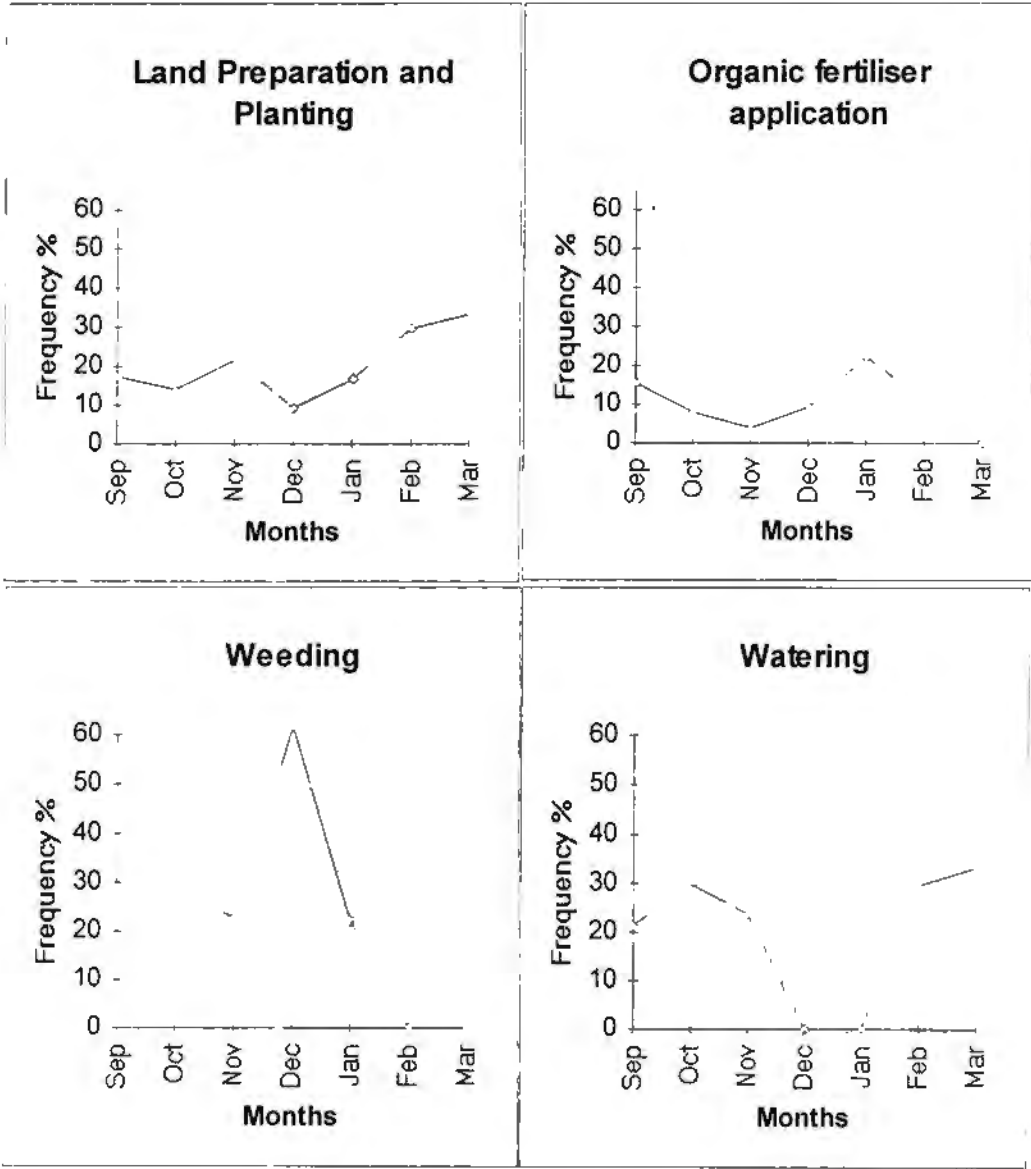
Organic and chemical fertilisers are applied at initial planting and as top dressing. In December and January there is an increased utilisation of chemical and organic fertilisers which may have been necessitated by the loss of fertility due to leaching of plant nutrients. The graph shows that organic fertilisers are also applied almost every month. This is mainly in the form of compost manure, mulch and poultry manure. The use of chemical fertilisers is very limited. This may be due to the relative cost of such fertilisers as compared to organic fertilisers.

Weeding is also practised almost throughout all the months. The activity intensifies in December. This is a time when there are continuous rains which encourage the growth of weeds. During the same period, there is also an increase in the problem of pests, mostly aphids. Consequently, the use of pesticides by the gardeners also increases. Pesticides are used by some gardeners almost every month. This may lead to abuse of such pesticides especially when households are ill-informed about the negative consequences of such pesticides. ENDA (1997) household survey showed that some gardening households are still using the banned pesticides such as DDT.

Gardening is an activity largely dependent on irrigation. The use of tap water usually amounts to households paying large water bills at the end of the month. Although the resultant high water bills may be seen as a form of constraint to the poor households, the continuous use of such water may be a demonstration of the benefits the urban households derive from gardening.

During the months of December and January, gardening households do not engage in irrigation activities as there are abundant rains.

Figure 2 Proportion of respondents engaged in particular gardening activities per month.





### 2.1.2 Cropping

Urban cropping is largely confined to the rainy season. Maize cultivation comprises the single most important crop in terms of its spatial coverage and contribution to household food requirements. Other crops grown are sweet potatoes and sweet reeds although at very small proportions (Enda, 1996b). Beans, cowpeas, sweet reeds and pumpkins are often intercropped with maize. As in vegetable production, women comprise the dominant participants in all cropping activities. However, during the school holidays, such as in December, most children assist their mothers in weeding.

Appendix B shows the maize cropping calendar for most urban households during the 1996/97 season.

Some households started land preparation as early as September. Land preparation is also practised in the month of October. The early start was a strategy by some households to avoid rushing for land when the cropping season is due. Some farmers gained initial access to farming land through council officials. The interested farmers had to pay one dollar to the council as a fee. The scheme only benefited the landlords whilst neglecting the lodgers. Other farmers had to pay leasing fees to some land 'owners' of up to Z\$150 per acre for a season.

Land preparation was carried out using picks and mattocks (41.5%), hoes (35.6%) and tractors (21.2%). One resident identified hiring out tractors in Mambo charged a price of Z\$140 per hectare. The use of tractors suggest that some households had larger pieces of land. Farmers usually group themselves to facilitate economic utilisation of hired tractors when ploughing the land.

In Senga during the months of September and October there were limited off plot land preparation activities as most of the open spaces were earmarked for housing construction. Thus, the council had to restrict any form of off plot cultivation. However, as there was no progress towards such plans up until the end of October, land preparation was intensified in the month of November. As the first rains had come, land preparation coincided with the sowing of seeds. Chemical fertilisers are also commonly used at this stage. Organic fertilisers are seldom used in the fields mainly due to their bulky nature. However, some very poor households never used any fertilisers.

In December and January most households were engaged in weeding (30.28% and 25.6% respectively). In January the rate of chemical fertiliser application rises significantly. About 28.2% of the activities conducted in January pertain to chemical fertiliser application. Fertiliser application was carried out at two levels, initially compound D was applied mostly at the sowing of seeds and Ammonium Nitrate was used later by those whose plants were almost knee high.

The month of January was also characterised by heavy downpours leading to waterlogging of most fields. In this way most of the plant nutrients were lost. This may also explain the increased rate of chemical fertilisers as an effort to enrich the soils. Some households could not afford to purchase chemical fertiliser application.

The advent of heavy rains was an indication of a good cropping season for some households. This meant that land under cropping was increased in order to acquire maximum benefits from the rains. Most of the changes experienced during the monitoring period relate to increased use of chemical fertilisers and

extension of land under cultivation. Such extension also has negative environmental implications as this may lead to cultivation of environmentally sensitive areas such as hillslopes and stream banks. This may suggest that the need to meet immediate household consumption and income requirements often outweigh restrictive environmental considerations for the poor households.

About 31.2% of the problems pointed out were due to lack of financial resources by the cultivators. This may be an indication of the need by farmers to improve productivity by applying suitable inputs. The increasing amount of rainfall in January was accompanied by the rapid growth of weeds which threatened the survival of the crops. Some farmers could not cope up with the problem of weeds and as a result the plants were further deprived of the necessary nutrients.

Some farmers viewed the poor performance of their crops as an indication of barren soils. This could also be attributed to high rates of leaching. Too much rain water constituted 37.5% of the problems identified.

In February, the main activity was harvesting of the green maize cobs. However, for some households who started their planting earlier, green maize harvesting started as early as January.

In the off-plot fields very few activities were carried out. The continuous rains from the end of January to mid February hampered most of the activities in the fields particularly chemical fertilizer application and weeding. This also led to extensive loss of soil due to run-off.

Land preparation and planting activities at the end of January and February were mainly for the sweet potatoes. Farmers who had no hope of harvesting anything from their maize crop began to substitute the crop with sweet potato mounds.

The main activity in the fields in March and April were mainly harvesting. Most of the crops such as maize, cucumbers, sweet reeds, groundnuts, pumpkins and roundnuts were ripe for consumption. Besides manually transporting the harvest to the homesteads, some households used vehicles and wheelbarrows. Some used hired labour in the process. The harvest was stored in bags mainly in the kitchens, on rooftops and in temporary shacks.

## **CHAPTER THREE: URBAN FARMING AND HOUSEHOLD NUTRITION**

### **3.1 Introduction**

Access to adequate supply of food is the most basic human need and right. Yet this is an underrated or neglected aspect of city life. Urban food security is dependent on four main factors; availability, accessibility, affordability and stability of such food supplies. Due to the removal of subsidies on foodstuffs, most poor urban households could not afford to purchase the expensive retail food on the competitive market. A viable alternative is for households to grow their own food requirements which would ensure a stable supply of food throughout the year.

According to the Brundtland Commission Report (1987) “ Officially sanctioned and promoted urban agriculture could become an important component of urban development and make more food available to the urban poor.” Despite the importance of cities feeding themselves, local authorities have often thwarted food production activities by the urban households. The main reason for lack of support by local authorities may be lack of adequate data on the contribution of urban agriculture to household food security.

In the urban agriculture household monitoring exercise, an attempt was made to measure the impact of urban farming on the household food security. Both urban farmers and non-farmers were interviewed. The main hypothesis was that there is a nutritional difference between farming households and non farming households. In order to assess this, questions pertaining to the average number of meals per month and the normal composition of the meals were asked. Apart from current farming benefits, household reliance on some last season’s produce, was also taken into consideration.

The food security of the households was assumed to reflect on the growth and health of children under the age of five years. The age, height and weight of the children were used to assess the impact of U/A on the growth of children. The issue of total household income was also taken into consideration when computing the measurements. Households with high income levels per month (\$3000 and above) have high purchasing powers and are most likely to meet all their food requirements in spite of participation in U/A. Therefore, focus in this section is mainly on lower income households who are more vulnerable to market increases in food prices.

### **3.2 Food consumption by total household income**

Table 3.1 shows a comparison of the number of meals per day by urban agriculturalists and non-agriculturalists. The majority of the farmers earning below \$840 and \$3000 per month (83.1% and 91.1% respectively) eat three meals per day. The non farmers in the same income categories also have on average three meals per day although the proportion of such households taking three meals per day is less than that of the agriculturalists. Due to the availability of self produced food, the farmers are expected to have more meals than the non farmers who depend solely on food purchases from the market.

**Table 3.1 Number of meals per day by total household income**

Number of Meals	Agriculturalists		Non-agriculturalists	
	Below Z \$840 (n=142)	\$840-\$3000 (n=270)	Below Z \$840 (n=66)	\$840-\$3000 (n=49)
1	0.7	0.4	0	2.0
2	12.7	6.3	25.8	6.1
3	83.1	91.8	69.7	87.8
4	3.5	1.5	4.5	4.1
<b>Total</b>	100	100	100	100

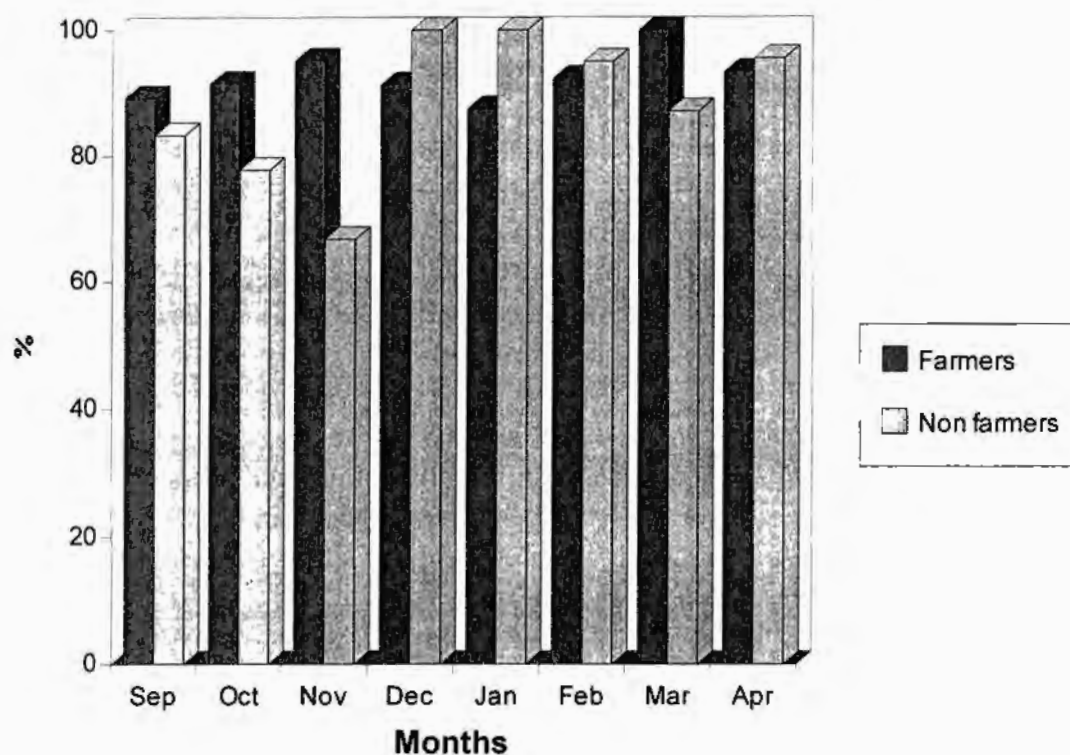
One meal per day is a very rare situation but two meals per day may be viewed as a household coping strategy to deal with food insecurity. According to a study conducted in Dzivarasekwa (Matshalaga, 1997) most urban households delay the morning breakfast and have it towards the afternoon. In doing so breakfast and lunch would have been combined although this does not mean that more food will be available to cater for the two meal times. However, the monitoring survey did not attempt to measure the average daily quantity of all foodstuffs consumed by a household. The main foodstuffs taken at each meal time (breakfast, lunch and supper) regardless of the actual quantity consumed have been measured.

Figure 3 shows the proportion of households earning below Z\$3 000 per month having, on average, three or more meals a day .

The figure shows that more urban farmers consume at least three meals per day than non farmers in the months of September, October, November and March. The rate for non farmers to have at least three meals more than their counterparts is high in the months of December and January. These two months, which mark the festive season in Zimbabwe, are generally characterised by households having more income at their disposal as most of those formally employed are awarded bonuses by their employees. The consumption of three meals by non farmers is more erratic than farming households' consumption pattern. The proportion of farming households taking three or more meals per day is almost constant throughout the season. This could be due to the readily available and affordable foodstuffs from own production. For the non farmers number of meals consumed at a given time may be affected by a change in the household income, for instance, due to the payment of school fees in the month of September, income that can be spend on food is significantly reduced for the following month.



**Figure 3 Proportion of households taking three or more meals per day**



### **3.2.1 Main foodstuffs consumed**

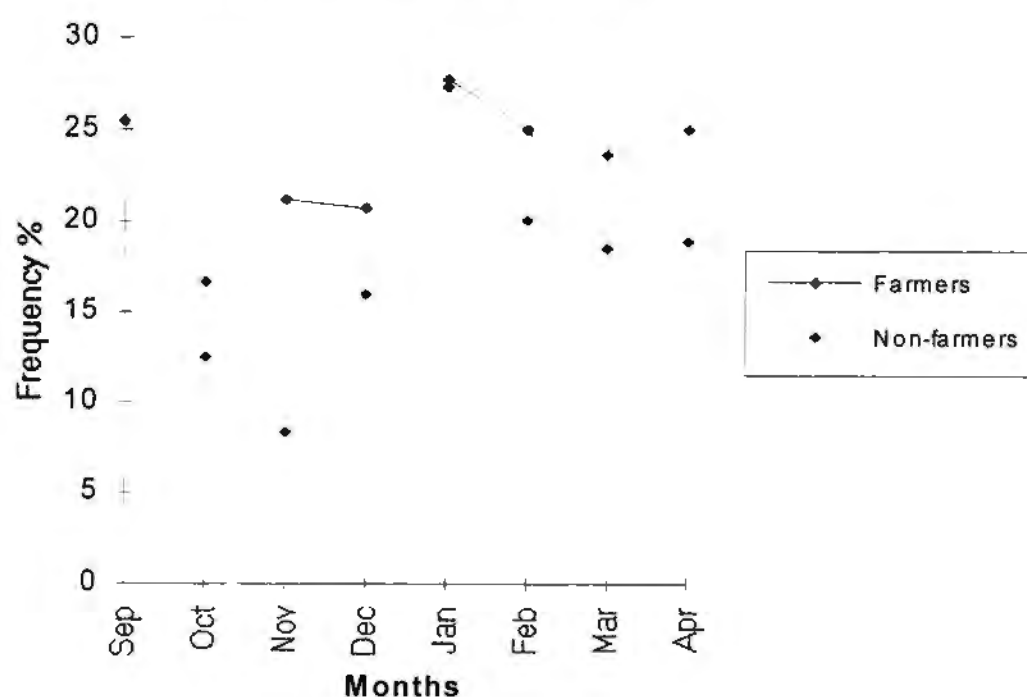
At breakfast time, most households consume bread, tea and porridge. For the poor households the tea may be without milk and the bread without margarine or butter. Some households who cannot afford any of these basic breakfast ingredients may take sadza (a staple maize meal) and some vegetables. These households often end up having two meals a day. In some cases the sadza is often left-over from the previous day's supper. For the non-farming poor households (below \$840 per month) there are very few substitutes to bread and tea for breakfast. As these are not producers of any of their daily food requirements, breakfast is often confined to food purchases from retailers and other producers.

For households whose incomes fall between \$840 and \$3000 per month, more food varieties are added to the breakfast basket. The farming households drop sadza from their morning meal and add rice, milk and eggs for breakfast. Non farming households may add sadza to the list. In the afternoon, lunch is often neglected by most non farming households. Only households that do not take heavy breakfast prepare lunch comprising sadza and vegetables. Some households combine breakfast and lunch by pushing the time for breakfast to the afternoon and as a result tea and bread also constitute part of the meal taken at lunch time.

At supper, sadza, vegetables and meat are the main foodstuffs. As meat is quite expensive, few low income households are able to constantly have this in their meals. Although it is expected that when urban farmers begin to consume produce from their own fields, the resultant income savings could be used to purchase other foodstuffs rich in proteins such as meat and fish. This may not be the case always. Figure 4 below shows the proportion of protein rich foodstuffs consumed by households at lunch time or dinner on a monthly basis during the monitoring period.

Protein rich foodstuffs such as meat and fish are relatively expensive as compared to vegetables. In almost all the months, the lowest income farming households have more opportunities per month to consume foodstuffs rich in proteins than the non farming households.

**Figure 4. Consumption of protein rich foodstuffs by month (Income: Below Z\$840)**



This scenario may be as a result of income savings derived from the consumption of self produced vegetables and crops. The resultant savings are used to purchase other foodstuffs missing from their daily diets. This may also suggest that farmers produce enough vegetables and crops to last them for a season.

However, as total household income increases, such disparity becomes less pronounced. The frequency of food purchases between farmers and non farmers is almost similar. This situation may not be the same in all the households. Some farmers tend to purchase less of protein rich foodstuffs than the non farmers in the same income categories. Despite the fact that there will be plenty of food coming from the fields



for the urban farmers, the decline of the proportion of households consuming foodstuffs rich in proteins, may be a reflection of lack of knowledge on the importance of a nutritionally balanced diet. Some households rely heavily on the self produced starchy foodstuffs at the expense of other nutritionally significant foods. The quantity of food and its palatability are more significant considerations for some households than its nutritional composition. Thus savings accrued by households' consumption of self produced food are often diverted to cater for other household necessities such as clothing.

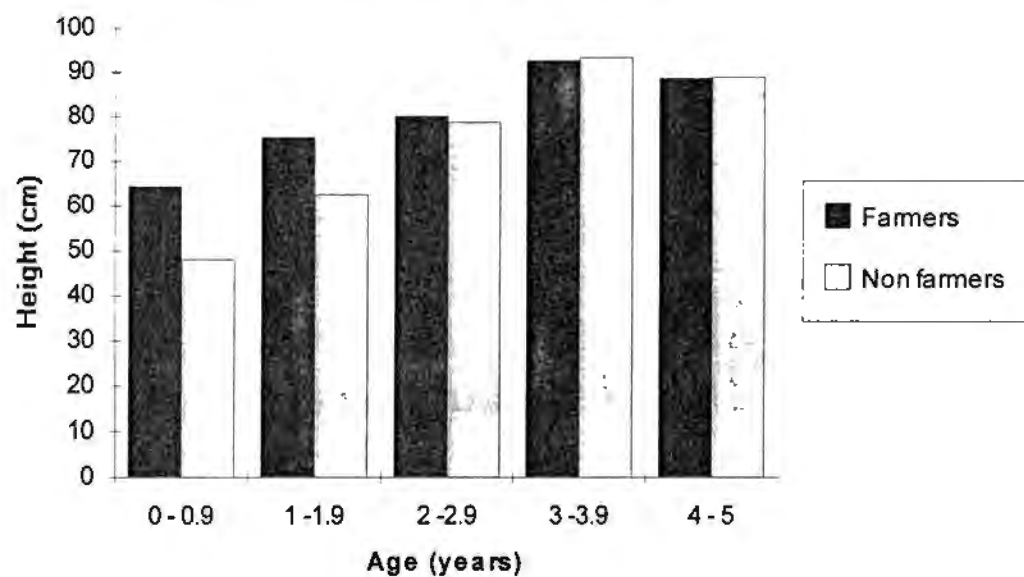
### **3.2.2 Growth rate of children by household participation in urban agriculture**

The pattern in household food consumption does not vary significantly as pertains to children under the age of five. Children in low income households feed on almost the same type of food available to older members of the household. In other households, besides sticking to regular meal times, children consume left-overs from the previous meals at irregular times. Some children have access to dairy milk.

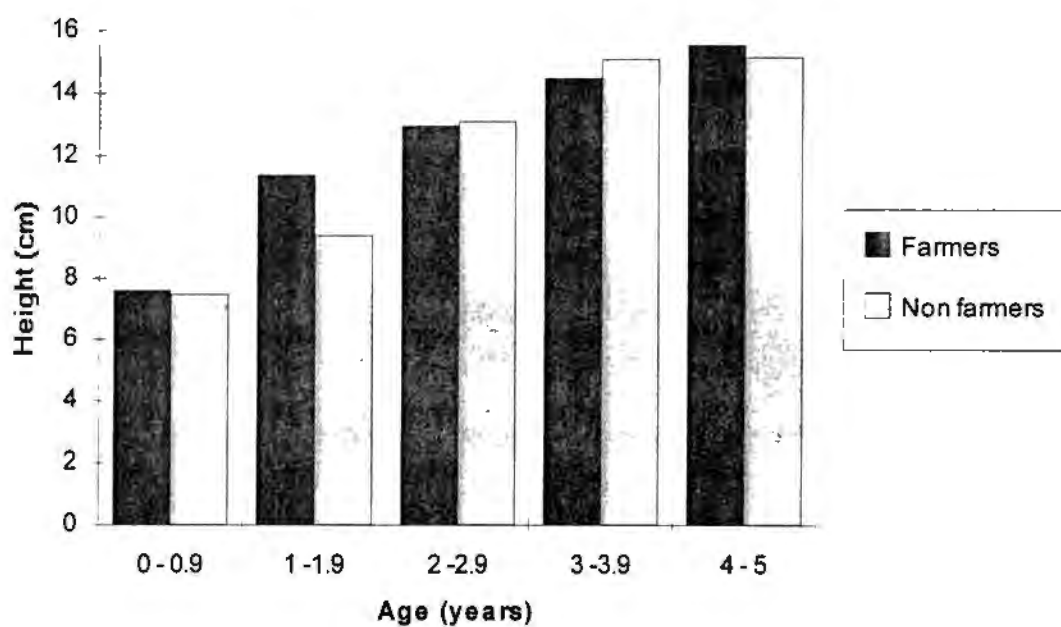
Figures 5 and 6 describe the average heights and weights of male and female children under the age of five years of both urban agriculturalists and non-agriculturalists with monthly total household incomes below Z\$3 000.

The data reveals that children of urban farmers have a higher growth rate in terms of height and weight as compared to children from non farming households. Thus, it could be argued that urban agriculture has a significant impact on household nutrition. If this activity could be supported and improved there is great potential for urban poor households to meet one of the basic human need; household food security. Besides relying heavily on starchy foodstuffs from urban gardens and fields the farmers are able to sell excess produce and purchase other foodstuffs necessary for the household.

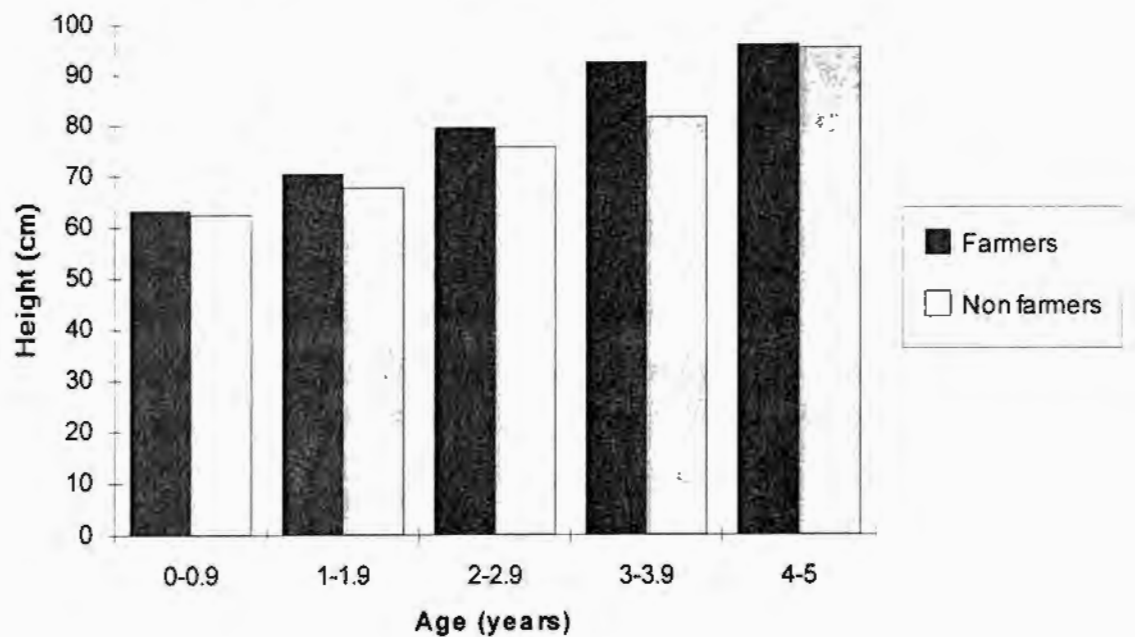
**Figure 5a Average age and height of male children of farming and non farming households**



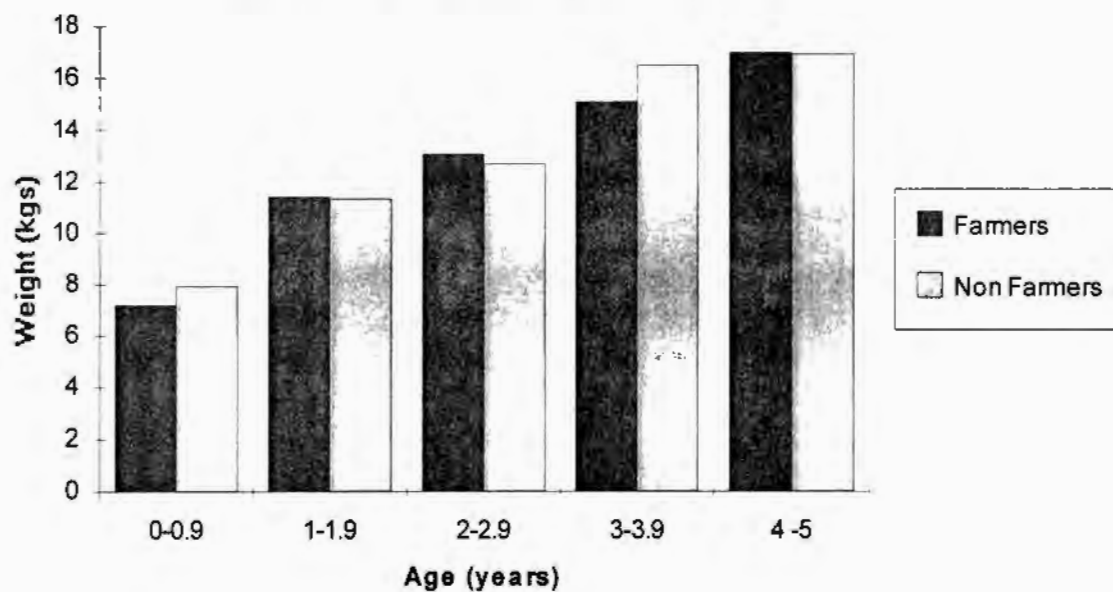
**Figure 5b Average age and height of male children of farming and non farming households**



**Figure 6a Average age and height of female children of farming and non farming households**



**Figure 6b Average age and weight of female children of farming and non farming households**



## **CHAPTER FOUR: URBAN FARMING & HOUSEHOLD ECONOMY**

### **4.1 Introduction**

The practice of urban farming (gardening, cropping, livestock keeping and agricultural marketing) is widely viewed by many farming households as contributing significantly to household income savings and generation. The use of own production to meet household consumption requirements leads to income savings generated mainly from formal employment. Such savings are usually used to provide for other household requirements other than food. Besides producing for consumption, urban households also produce a surplus that could be sold to the urban market.

With the escalating costs of basic food stuffs such as maize-meal the need for own production has risen tremendously and many urban families process their own raw-food stuffs to cut costs in food expenditure. Such a consumer shift in demand from commercially processed food stuffs to reliance on own production has had its own positive externalities on the urban food market. In Harare, for instance, there has been a rapid increase in hammer mills over the past five years (Mbiba 1995). This has helped curtail the retail prices of maize-meal. Due to the opening of the food market, more actors have entered this field thereby increasing the competition of food firms. However, it should be noted that not all the maize processed at the hammer mills is produced by the urban farmers. A significant proportion also comes from the rural homes to cover the gap not supplied by the urban producers.

In this section the monetary benefits and costs that accrue to the urban farmer will be computed. A comparison will be drawn between the urban farmers and non-farmers.

### **4.2 Household expenditure**

#### **4.2.1 Income expenditure on basic household needs**

The amount of expenditure on basic household items was computed on a monthly basis for the monitoring period. The assumption was that amount spent on some specific items during the year has a direct relationship with events surrounding the household. For instance the availability of 'own' food crops to the household would significantly influence amount spent on food and this in turn would be reflected on the nutritional and health performance of household members. An increase in expenditure on one line item such as school fees has an adverse impact on the amount that is set aside for other household necessities.

Six main household expenditure items were identified. These are expenses on school fees, food, clothing, rent and rates, transport expenses and expenditure on hired labour. Hired labour is not very common to every urban household. In fact, this mainly relates to the more affluent households that can afford paying for such services. The low income households have rarely use hired labour in urban cropping activities. This may be due to the fact that there are some unemployed household members who can participate in farming activities.

Expenditure on rent, rates (water and electricity), transport are rather fixed. There is very little a household can do to change the existing situation. However, where one resides may be seen as an

expression of the amount of money that can be devoted to housing. For the low income households, low or poor housing standards may be the norm.

In all income groups, expenditure on food items constitutes more than one quarter of the total household expenditure. Food expenditure is also the highest expenditure item in all households with the exception of high income households (above 5 000 per month). Income distribution among school fees, food and clothing, may also be viewed as a measure of the well-being of a household. A household that maintains a balance in income distribution among these three items can be seen as better -off than one where the bulk of the income is spent on food purchases.

Figures 7a and 7b show average monthly expenditure levels on food by farming and non farming households.

**Figure 7a Average monthly household expenditure on food (Income: Below Z\$ 840)**

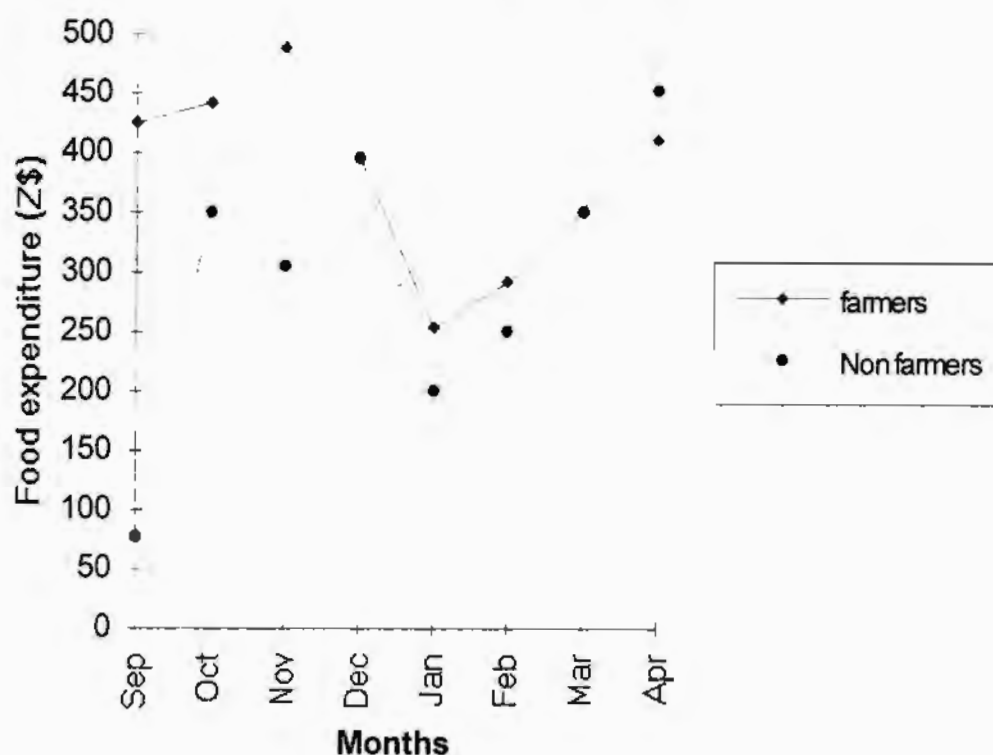
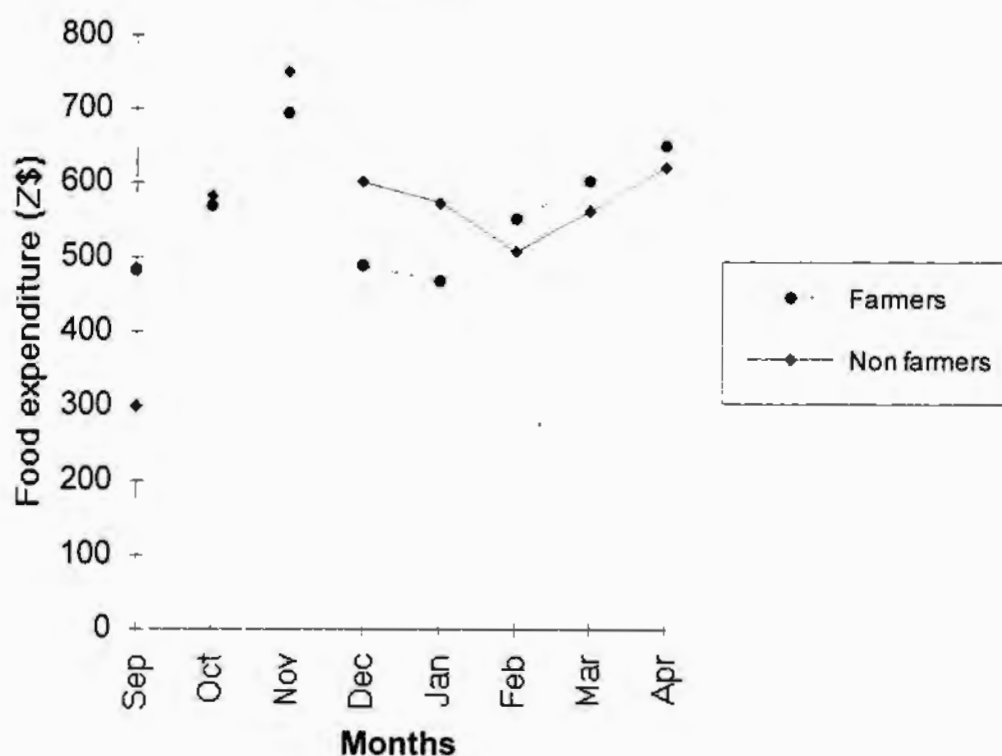


Figure 7a shows that farming households with total household income below Z\$840 per month spend more money on food purchases throughout all the months than the non farming households. This may be due to farmers having a high purchasing power derived from the sale of agricultural produce. Such income is spent in the purchase of other foodstuffs such as beef. However, in the season when farmers have more food available from their fields (December, January, February and March) farmers incur relatively lower expenses on food purchases. The low expenditure on food purchases by non farmers is largely due to the absence of such disposable income and as a result their diets may be deficient in other vital food elements.

The rise in total household income affects slightly the expenditure patterns of both farming and non farming households. Figure 7b shows that farming households within the income bracket Z\$840 to Z\$3000, have the least expenditure in the month of September. This may be due to a substantial amount of income being channeled to the purchase of agricultural inputs in preparation of the farming season.

**Figure 7b. Average monthly household expenditure on food (Income: Z\$840 - Z\$3 000)**



However, trends in expenditure patterns are also similar between farming and non farming households



of both income groups. For instance, the period between November and December is marked by high expenses on food by all urban households whereas in the following months of January and February, there is a notable reduction in the amount allocated to food purchases. The months of December and January are crucial festive seasons in Zimbabwe. Thus, they are characterised by high expenses. The months of January can be viewed as adjustment periods for households which may have over spent in the preceding months.

#### 4.2.2 Gardening expenses

##### Input expenditure

Table 4.1 shows the total and average quantities and cost price of gardening inputs used by some respondents.

**Table 4.1 Input expenditure on gardening**

Input	Quantity(kg )	Mean	N	Cost Price (Z\$)	Mean (Z\$)	N
Chemical fertilizer	460	35.39	13	247	27.46	9
Organic fertilizer	4507*	64.39	70	568.4	12.92	44
Pesticides	10.34	0.175	59	2498	49.96	50
Seeds	8048.2	99.36	81	1430.35	20.15	71
Total				4743.75	110.49	

\*Organic fertilizer quantity was estimated using 20 litre buckets.

Organic fertiliser is mainly derived from individual compost heaps (53%) made up of household waste and poultry manure (24.8%). Therefore, there are few households purchasing such manure from local dealers. About 48.9% of the seeds used in the garden are from shops and seed suppliers whereas 51.1% of the seed is retained or acquired from friends and relatives free of charge. On average, a gardening household spends \$110.49 per annum on seeds, chemicals and organic inputs. Input expenditure is very low due to the fact that most gardening participants use organic fertilisers in the form of home-made compost manure. As such limited expenditure is incurred on enriching the soil.

The largest expenditure is incurred on purchasing pesticides. Due to the problem of pests households rely heavily on pesticides from the shops to control the damage on their vegetables. Besides purchasing vegetable seeds from the shops, some households rely on cuttings from such vegetables as covo or rugare, which can be propagated easily using the cuttings.

##### Labour Expenses

Table 4.2 depicts the monthly average and total average time a gardening household may spend on particular gardening activities. Land preparation, weeding and watering are the main time consuming activities in the garden. The number of people who work in the garden per given month ranges from one to four. Given a total average of 28.07 hours of work in the garden, an individual household member would be employed for at least three and a half days per month. Given a minimum wage of Z\$24.00 per day, the cost of gardening would therefore be approximately Z\$1 008 per year.

**Table 4.2 Monthly average and total average time spent on gardening activities**

Activity	Average Time (hours)	Total Average Time (hours)	Average No. of Participants
Land Preparation	1.73	3.34	1.93
Planting seeds	0.67	1.24	1.85
Applying organic fertilisers	0.96	1.59	1.66
Applying chemical fertilisers	0.39	0.54	1.38
Applying pesticides	0.58	0.71	1.23
Weeding	4.34	7.16	1.65
Watering	7.98	13.49	1.69
Total	16.65	28.07	11.39

It should also be noted that time spent in gardening activities is relative to the size of the gardening plot. According to a study by ENDA (1996b) the average size of gardens in the high density areas is 42m<sup>2</sup>. Most of the gardening activities are carried out on the residential plot.

### Water charges

The main source of household water in Gweru is tap water. About 98.9% of the respondents indicated that they rely on tap water and only two households had access to borehole water. Although there are a number of streams that flow across the residential suburbs, no gardening households pointed out using this water for irrigating their vegetables. On a monthly average, vegetable watering takes about 14 hours of the time committed to gardening activities.

The prevalence of fixed household water charges made it difficult to delineate the actual amount of water lost through gardening activities. This means that some gardening households do not pay higher water bills than the non gardening households. During the eight months monitoring, gardening households paid on average a water bill of Z\$47.58 and non gardening households paid Z\$47.36.

### 4.2.3 Cropping expenses

#### Expenditure on cropping inputs

Table 4.3 shows total and average quantities and cost price of the main input expenditure items on urban cropping activities.

**Table 4.3 Input expenditure on urban cropping**

Inputs	Quantity (kg)	Mean (kg)	N	Cost Price (Z\$)	Mean (Z\$)	N
Chemical fertilizer	951	21.13	45	1403.2	70.2	20
Seeds	599.5	8.33	72	2826.3	55.42	51
Total				4229.5	125.62	

On average a household engaged in urban cropping spends at least \$125.62 per annum on cropping inputs. However, some poor households do not use any fertilisers in cropping activities and therefore

would incur low costs but may have low yields at harvest time. Apart from purchasing chemical fertilizers from the shops, some informal exchange of inputs also occur among the urban farmers. This exchange may result in the underestimation of the actual input costs as these are not monetarised. About 8.9% of the respondents obtained some of their chemical fertilisers from friends, relatives or neighbours. As regards seeds, about 6.6% obtained these from the same sources. However a smaller proportion (1.1%), used retained seed.

Organic fertilisers and pesticides are seldom used in open space crop cultivation. As open space fields are relatively larger, acquisition of bulky organic fertilisers for extensive coverage, may be a strenuous activity. Only two households indicated use of organic fertilisers in the cropping fields.

### Labour

Urban crop farming is a labour demanding activity, especially for some households with larger pieces of land. The most labour intensive activities are land preparation and weeding as depicted in Table 4.4. Most of the cropping activities are dependent on rain water. Amount of time spent on irrigation usually pertains to on-plot crop cultivation, which is mostly at a small scale.

**Table 4.4 Average time spent on cropping activities per month**

Activity	Average time (days)	Total Average time (days)	Average number of participants
Land preparation	6.6	21.12	3.2
Planting seeds	3.2	9.6	3
Applying organic fertilizers	2.8	10.08	3.6
Applying chemical fertilizer	1.8	4.68	2.6
Weeding	6.4	21.12	3.3
Watering	0.175	0.49	2.8
<b>Total</b>		67.09	

Urban cropping is largely practised between November and February. For those who start earlier than November, there is large dependence on irrigation water due to scarce rainfall. The application of organic fertilizers is mainly confined to on-plot crop production. Organic fertilizers are bulky and are not easily transported to the off-plot fields.

During the peak periods of the cropping seasons, some cropping households make use of hired labour mainly for land preparation and weeding activities. However, only households which are better off could afford engaging external labour when the need arises. For the poorest households, hired labour is not affordable. Consequently, most fields of such households were destroyed by the weeds.

Using a minimum wage of \$480.00 per month, the cost of labour for one person over eight months will therefore be \$3 840.00. However, it should be noted that time spent in the fields is directly related to the size of the field. Households with larger plots would definitely spend more time in the field than households with small fields. According to the ENDA study (1996b) the average size of off-plot fields in the high density suburbs ranges from 1098m<sup>2</sup> to 2830m<sup>2</sup> for households with income levels below Z\$3 000 per month.

### 4.3 Household income and savings from urban farming

Urban farmers view their activities as economic ventures that generate household income and also leads to substantial savings of incomes generated from formal employment. In this section real monetary benefits from agricultural activities, and the income saved by households consuming their own self-produced food, are computed. Focus is mainly on income or savings derived from gardening, cropping, marketing and livestock keeping activities.

#### 4.3.1 Gardening income and savings

Gardening income is derived from direct sales of home-grown vegetables. The sale could be conducted from the point of production or at street corners and council marketing stalls (ENDA, 1996b). However, amount generated from on-plot sales was not computed as such sales are usually on smaller proportions and on an ad-hoc basis.

Income savings due to gardening practice were computed on the basis of the number of times a household relied on garden produce. The main vegetable used to compute such savings is rape which is mainly combined with the staple food crop maize for an individual household's main meal per day. An average household of 6 persons can consume \$4.50 worthy of vegetables per day. (This would comprise rape, and either onions or tomatoes). On a weekly basis, a gardening household can consume vegetables for 5.5 days on average. If this is extrapolated to a yearly household dependance on garden produce, with all the other factors constant, a household would consume garden produce for about 286 days. The total income savings a household could accrue from reliance on garden produce would therefore be Z\$1 287 per annum.

#### 4.3.2 Income and savings from crop production

The main crops grown off-plot are maize, sweet potatoes and groundnuts. For the 1996/97 season, due to heavy rains accompanied with the outbreak of diseases and weeds, the maize yield was adversely affected. Thus the forecast yield may be significantly lower than in a good season.

Table 4.5 below shows the average, minimum and maximum yields of some urban cropping households.

**Table 4.5 Expected crop harvest**

Crop type	Yield (kgs)		
	Minimum	Maximum	Mean
Maize	100	500	212.5
Sweet-potatoes*	30	80	63.3

\*The estimate yield of sweet-potatoes was computed using 20 litre buckets.

The above maize yield estimates do not take into consideration the total quantity harvested whilst green. This is however reflected on the nutritional well-being of the households especially on periods where



such green maize is ready for harvest. The dried maize is often processed at urban hammer mills to make maize-meal. The milling costs of such hammer mills ranges from \$2.50 to \$4.00 per 20 litre bucket.

The consumers of the hammer meal processed maize (mugaiwa), argue that a bucket of such maize meal actually lasts longer than a 20kg bag of roller meal. Using a retail price of \$62 per 20kg bag of maize meal, farming households with an average yield of 212.5 kg of maize would save about Z\$626.86 per year on the purchase of roller meal (i.e if the processing costs are computed using a charge of \$3 per bucket).

A bucket of maize on the street market costs about \$30.00. Therefore if non farmers would purchase such maize, instead of roller meal, they would make a substantial saving of \$29.00 per bucket of maize bought. Thus urban farming does not only benefit the practitioners but also benefits the non farmers.

Sweet potatoes are commonly used as an important substitute for bread. Assuming that a family of six would take at least 10 days to consume a bucket of sweet potatoes, and the same household, without sweet-potatoes would consume \$9.00 worthy of bread per day (one loaf of bread costs \$4.50), then for an average of three buckets of sweet potatoes, the household would save about \$270.

#### **4.3.3 Income generated from vegetable and crop vending (marketing activities)**

This section focuses on those households which take their agricultural products to some marketing points around the suburbs. The products may be coming directly from their own plots or they may be sourced from external larger markets such as Kombayi Market (ENDA, 1996b). For most vending households, the profit margin from agricultural sales is usually 100% or more.

The average income generated from marketing activities ranges from \$150 to \$3 500 per month. Using the monthly average income of households derived from marketing activities, an individual household would accrue as much as \$5 951.4 per year. Assuming that 50% of product sales is generated from own produced crops and vegetables, would be about \$2 975.7 per year.

Agricultural vending can be a form of full time employment that contributes significantly to urban economy. However, most of the full time vendors depend to a large extent on products which do not emanate from the activities of the urban agriculturalists. About 76% of leafy vegetables sold by vendors come from their residential plots. On plot onions constitute 46% whereas only 26.6% of tomatoes sold came from individual plots. The other vending products are mainly obtained from larger external markets. This shows that urban agriculture plays an important role in the provision of food to the city consumers.

It is also common that vendors use some of the products acquired for sale to meet household consumption requirements, without directly paying for the products. This also boosts their households' nutritional status. Thus, the stated income derived from marketing activities may actually be an underestimation of the actual value of the activity.

#### 4.3.4 Income and savings from urban livestock rearing.

Chickens and rabbits are the main forms of livestock kept within the urban areas. However, chickens are more common and favoured by most households as they are saleable and provide a special dish to most households. Rabbits, on the other hand, are very few on the market as they are sometimes kept as mere pets and not necessarily for consumption. Table 4.6 below shows the total number of chickens kept, consumed and sold during the monitoring period.

**Table 4.6 Number of chickens consumed and sold**

Consumed		Sold	
Total	Mean	Total	Mean
236	4	590	14

The average selling price of one chicken in Gweru is \$32.00. Thus, on average a household would sell chickens worthy \$5 376.00 per annum. The average value of chickens consumed by a household is \$1 536.00 per annum. The average cost of stockfeed per annum is \$1 929.24. If the cost of stockfeeds and other direct expenses are subtracted the household would therefore have a net benefit of \$4 982.76 per year.

#### 4.4 Summary of the costs and benefits of urban agriculture

Costs and benefits of urban agriculture are those directly related to the farming household. The indirect external costs and benefits are beyond the scope of this report. Table 4.7 shows the costs and benefits of urban agricultural activities at the household level.

**Table 4.7 Household costs and benefits of urban agriculture**

##### Gardening and vending

Inputs	Estimated Cost (Z\$)	Direct Benefits	Amount (Z\$)
Fertilisers, pesticides, seeds	110.49	Revenue from direct sales	2 975.70
Labour	1008.00	Savings	1 287.00
<b>Total Costs</b>	<b>1118.49</b>	<b>Total Benefits</b>	<b>4 262.00</b>
<b>Net Benefit/Cost</b>	<b>3 143.51</b>		



**Cropping**

<b>Inputs</b>	<b>Estimated Cost (Z\$)</b>	<b>Direct Benefits</b>	<b>Amount (Z\$)</b>
Fertilisers, pesticides, seeds	125.62	Revenue from direct sales	-
Labour	3840.00	Savings	896.86
<b>Total Costs</b>	3965.62	<b>Total Benefits</b>	
<b>Net Benefit/Cost</b>	<b>-3 068.76</b>		

**Livestock**

<b>Expenses</b>	<b>Estimated Cost (Z\$)</b>	<b>Direct Benefits</b>	<b>Amount (Z\$)</b>
Stockfeeds	1 929.24	Revenue from direct sales	5 376
		Savings	1 536
<b>Total Costs</b>	1 929.24	<b>Total Benefits</b>	6 912
<b>Net Benefit/Cost</b>	<b>4 982.76</b>		

Gardening, marketing and livestock production accrue positive net benefits. Crop production has a negative cost which is largely due to labour expenses. However, for most of the farming households they do not engage any hired labour for cropping activities but utilise 'idle' labour force within the home. Therefore labour is not a real cost to the households. The low yield was also due to the attack on crops by pests and excessive rainfall.

The benefits of all the agricultural activities would be maximised if there is support for the urban farmers in terms of farming education and improved technology.

## CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

The practice of urban agriculture in Gweru threatens to reach uncontrollable limits especially as the situation becomes more desperate for the urban poor, both unemployed and underemployed. The activity is predominantly practised by women who comprise the majority of the urban unemployed. The adverse economic and climatic conditions, apart from mere population increase, are largely accountable to the phenomenal increase in urban farming activities. The main driving force has often been seen as the escalating costs of basic foodstuffs. Food security is a basic human need and women being, culturally, the overseers of household food provisions, have ventured into informal coping strategies to sustain their family livelihoods. Urban agriculture in Gweru has emerged as the main adaptive strategy by the urban households. However, city managers and outsiders view the gains from urban farming as just marginal and consequently the activity has been despicably underrated.

From the monitoring exercise, it is apparent that the household benefits from urban farming outweigh the costs of undertaking such activities. The main direct benefits of urban agriculture on the household point of view can be summed up as;

- (a) Supplement household income
- (b) Encourages household savings
- (c) Ensures household food security
- (d) A source of employment

Urban agriculture can also be seen as fostering social ties of the civil society as households share and pool resources together especially cropping inputs and during land preparation activities.

The results of the monitoring exercise also demonstrate that low income urban farmers are economically and nutritionally better off than their counterparts. This is also reflected in the growth performance of the children under the age of five years. Children from non farming households show aspects of stunted growth and loss of weight as compared to children from farming households. Even though the availability of own home grown food for the farming households tends to militate against the purchase of other nutritionally rich foodstuffs from the shops, this does not significantly affect their growth performance to levels beyond that of children from non farming families.

The common argument against urban agriculture relates to environmental degradation as a result of soil erosion and siltation and eutrophication of the rivers. Although there is a high rate of chemical fertiliser application in the fields and pesticides utilisation in the gardens, the impact of such practices as industrial pollution of the city's environments is tremendous. The environmental impact of urban agriculture, conducted during the same period, is documented in a separate environmental report. However, the costs of fertilisers and pesticides are prohibitive especially to the poorest of the urban farmers who cannot afford to incur higher expenditure levels in the activities. Furthermore, those who use chemicals apply them in the fields whereas gardening is largely dependent on organic manure.

The main problems associated with urban agriculture at the household level, can be summed up as;

- (a) insecure land tenure
- (b) lack of farming knowledge
- (c) crop/vegetable pests and diseases
- (d) crop theft
- (e) lack of inputs; labour, capital and tools
- (f) high water charges

Despite such problems the practitioners see urban farming as a lucrative venture. If these could be addressed high productivity levels will be achieved.

## **5.2 Recommendations**

In spite of the current obstacles encountered by farming households, urban agriculture should be an integral component of urban land use systems and an element of social planning for sustainable city development. In the face of recurrent national droughts and uncertain global climatic conditions, the survival of the urban system depends on cities meeting some of their food requirements. Efforts should therefore be directed towards developing mechanisms and policies that enhance sustainable urban agricultural development, rather than seeking ways of eradicating the practice. The following recommendations derived from discussions with urban farmers and experiences elsewhere, would assist in the realisation of such an objective.

### **1. Development of enabling policies for urban agriculture**

The practice of urban farming, particularly open space cultivation, in Zimbabwe an towns and cities, is not backed by statutory provisions. This makes the activity illegal and therefore unsupported. The initial step towards recognition of urban cultivation in Gweru and in Zimbabwe as a whole, may be the review of existing policies and formulation of an enabling policy for the practice of urban agriculture. NGOs involved in community work and lobbying activities should spearhead this process which should also bring together planners, researchers, local authorities and central government officials.

### **2. Gender sensitivity in the design and planning of urban infrastructural services**

Although women comprise the majority of practitioners engaged in urban agriculture, their needs have so often been neglected in the planning of urban settlements. This phenomenon is not only found in Zimbabwe an cities, but also in other Third World cities. Moser (1995) in an attempt to explain why most urban policy remains 'essentially gender-blind' argues that policy makers are much concerned with development control mechanisms rather than empowerment of the urban women.

Planners and policy makers therefore need to consider and incorporate the needs of all the sectors of the urban population in the layout and design of urban settlements. An important consideration is the concept of agro-residential planning whereby residential locations are designed with space provided for agricultural activities. Participatory approaches often promulgated in the design and implementation of urban local and master plans are not adequate in ensuring public participation as these are mainly

accessible to the more affluent sectors of the society.

However, more gender focused research still need to be done whereby issues of resource allocation and distribution will be explored.

### **3. Provision of extension services**

With the growing practice of urban farming, the availability of extension services becomes crucial. In Zimbabwe, agricultural extension has often been viewed as a service for the communal farmers. The necessity of such services in urban areas is little understood by policy makers.

The household study revealed that urban farmers are in need of extension advice to improve their productivity. Specific areas which need extension advice include;

- (a) environmentally sound vegetable and crop production techniques
- (b) improvements in crop and vegetable species diversity and composition with a view to cater for household and local demand.
- (c) alternative methods of improving soil fertility and eradication of vegetable/crop pests and diseases. This would involve natural and traditional ways of pest control and improved technology in compost production.
- (d) education on family nutritional requirements for healthy urban households.

For efficient delivery of extension services farming groups should be formed. NGOs and extension officers should also help in the design of alternative farming models for the existing open land parcels in the urban areas. These models can later be replicated in other parts of the city.

### **4. Improve access to farming inputs**

Mechanisms should be developed which would ensure that improved urban agriculture would benefit the most disadvantaged sectors of the urban population. The initial step therefore is the identification of needy households to have first priority in resource allocation. NGOs and local authorities would assist in the identification and provision of farming land. A leasing mechanism can be devised.

### **5. Urban waste utilisation and recycling**

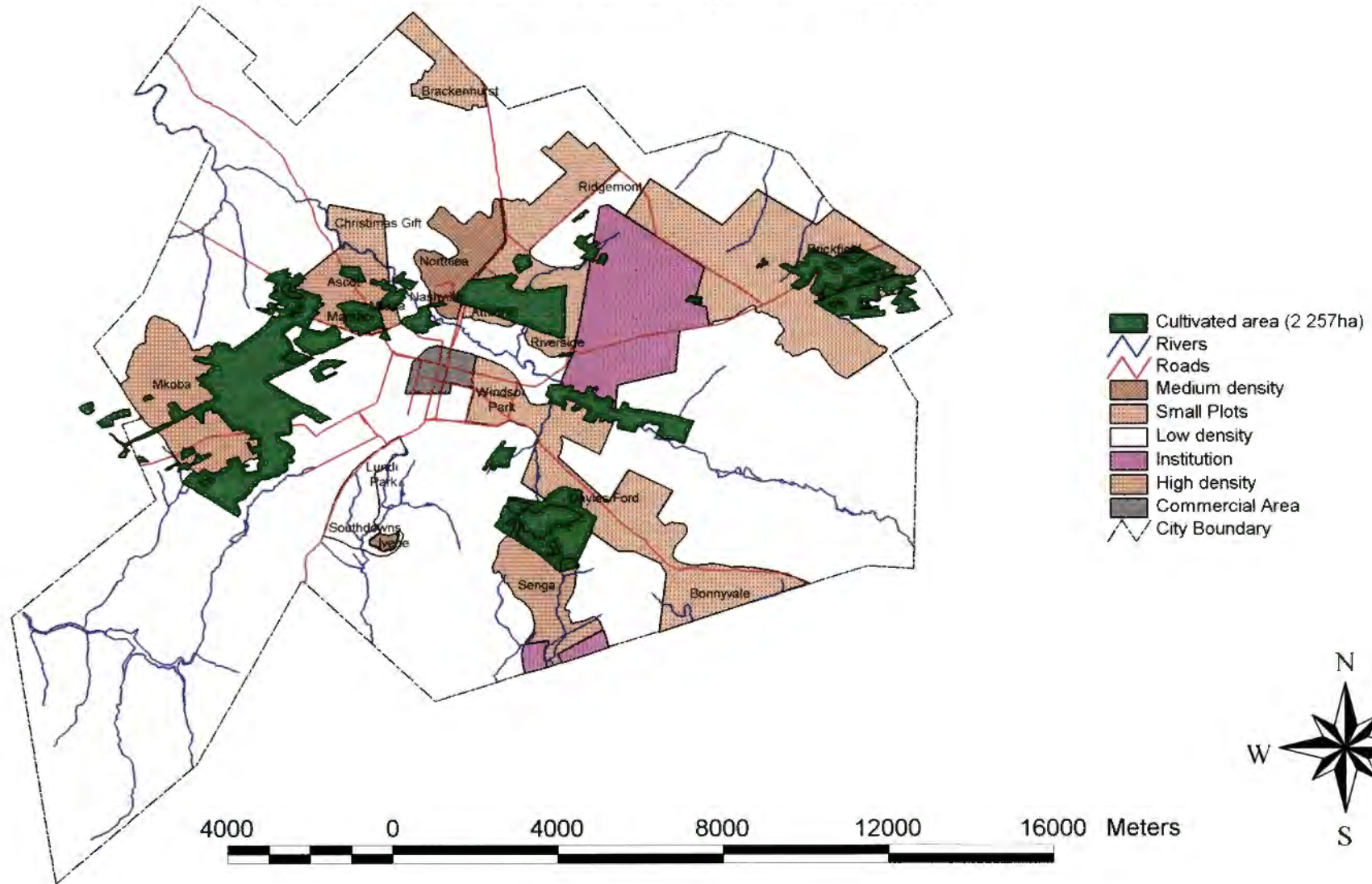
Urban agriculture can make significant use of waste material found in the city. This would also result in the creation of cleaner urban environments. Household waste may be used for compost production and consequently this would reduce the utilisation of chemical fertilisers. Systems to recycle sewage water should also be developed. On the other hand, technology for collecting rainwater that can be used for gardening purposes could be developed. This would result in low costs incurred in the use of tap water.



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# City of Gweru Area Under Cultivation (June 1996)





## APPENDIX B

## GWERU CROPPING CALENDER : 1996/97 SEASON

ACTIVITIES	MONTH							
	September	October	November	December	January	February	March	April
Land Preparation								
Planting								
Apply Organic Fertilisers								
Apply Chemical Fertilisers								
Apply Pesticides								
Weeding								
Watering								
Harvesting								