

**BINDURA UNIVERSITY OF SCIENCE EDUCATION**

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**AN ASSESSMENT OF THE EFFECTIVENESS OF URBAN AGRICULTURE AS A  
STRATEGY FOR IMPROVING FOOD SECURITY IN MT DARWIN URBAN**

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**APPROVAL FORM**

The undersigned certify that they have read this project and have approved its submission for marking after confirming that it confirms to the department requirements.

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## DECLARATION

I declare that this project is herein my own and has not been copied or lifted from any source without acknowledgement.

I Ian Chaka do hereby fill in as the source of the data in this research.

Signed ..... Date .....

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## **DEDICATION**

I dedicate this piece of work to Mary Yotamu for her endless love and the whole family for the social and material support.

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## **Abstract**

This study is an analysis of the contribution of urban crop production to household food security in Mt Darwin urban. The major aim of the study was to make an investigation into urban agriculture as a strategy of improving food security in Mt Darwin urban. The study sought to establish the level of contribution of urban crop cultivation to household food security. In-depth interviews, observations and official data are some of the research techniques which were used to gather the relevant data for this study. A total of 88% of the urban farmers confirmed that urban agriculture is a helpful livelihood activity towards improving food security in their households. This confirmed that urban agriculture has a significant contribution to household food security for those who practice it as supported by the key informants. The research was also meant to identify key challenges faced by those engaging in urban agriculture in Mt Darwin. The research came up with recommendations to the government and local authority to fully support urban agriculture through allocation of land, provide farmer input support and development of a clear comprehensive policy framework as well as coming up with relevant legislation concerning urban agriculture.



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## **CHAPTER 1 - INTRODUCTION**

### **1.0. Introduction**

Urban agriculture as defined by Bailkey and Nasr (2000) is the practice of cultivating, processing and distributing food in or around a village, town or a city. Urban agriculture can also involve animal husbandry, aquaculture, agroforestry, urban beekeeping and horticulture and can also be carried out in peri-urban areas as well. Urban agriculture can reflect varying levels of economic and social development.

Richer inhabitants carry out urban agriculture for dietary diversity and a healthier food supply, and entrepreneurs have created thriving agricultural businesses. Urban agriculture is thus an important source of food in many developing countries. It is a critical food security valve for poor urban dwellers. Studies in Harare Zimbabwe, Kampala Uganda, and Nairobi Kenya have found that urban agriculture can improve the nutritional status of household members, as measured by caloric and protein intake, meal quality and children's growth rates. Phiri (2008) states that in Hong Kong China, Harare Zimbabwe, Accra Ghana, Dar es Salaam Tanzania, Blantyre Malawi and Maputo Mozambique, urban agriculture has been practiced to alleviate urban poverty.

Tshuma et al (2010) stated that urban-farming in most African countries is a post-colonial phenomenon. The democratization of institutions of governance saw an influx of immigrants from rural to urban areas. The massive population pressure on urban environments has directed increasing attention towards sustainable urban development. Agricultural activities in and around cities and towns contribute significantly to meeting the needs of these urban areas, providing employment to urban dwellers, especially women, and absorbing city wastes.

According to the United Nations (1974), food security is defined as the availability at all times of adequate world food supplies of basic food stuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices. In 1983, FAO (Food and Agriculture Organization of the United Nations) also expanded the concept implying that the concept should be balanced between the demand and the supply side of the food security

equation ensuring that all people at all times have both physical and economic access to the basic food that they need.

FAO redefined the food security concept in 2002 and further explained it as a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy living. Contrary to food security is food insecurity which is defined by Nugget (2000) as the inability to provide enough for a healthy and activity lifestyle.

### **1.1. Background of the study**

Community wastes were used in ancient Egypt to feed urban agriculture. In Manchu Pinchu water was conserved and reused as part of the stepped architecture of the city, and vegetable beds were designed to gather water in order to prolong the growing season (Vijoen et al, 2005).

Allotment gardens came up in Germany in the early 19<sup>th</sup> century as a response to poverty and food insecurity. Victory gardens sprouted during WW1 and WW11 and were fruit, vegetable and herb gardens in US, Canada and UK. These efforts were undertaken by citizens to reduce the pressure on food production that was to support the war effort. Community gardening in most communities is open to the public and provides space for the citizens to cultivate plans for food and recreation. A community gardening program that is well-established is Seattle's P-Patch. The grassroots permaculture movement has been hugely influential in the renaissance of urban agriculture throughout the world. The idea of food production beyond rural farming operations and distance imports is not new and has been used during war times and the Great depression when food shortage issues arose. As early as 1893, citizens of the depression-struck Detroit were asked to use any vacant lots to grow vegetables. The gardens were intended to produce income, food supply and even to boost self-independence during times of hardship (<http://www2.gtz.de/Dokumente/oe44/ecosan/nl/en-allotment-gardens-cagayan-de-oro-2005.pdf>).

Urban agriculture is as old as urbanization. As Yoshikuni (2007) explains, when black workers were finally allowed to live in African towns after getting independence, most wanted settlements which resembled their rural homes where they could cultivate crops. The colonial administration felt that "the urban African worker ought to be half-ruralist" and thus attempted to

provide model “garden village” suburbs to encourage “positive values such as family, community, peace and order , as against the supposed growing evils of urbanism and “detrribalization “. This vision of neat cottage-style vegetable gardens did not tally with sprawling, unkempt maize fields ([africanarguments.org/2012/07/10/conflicts-over-urban-agriculture-in-harare-zimbabwe/](http://africanarguments.org/2012/07/10/conflicts-over-urban-agriculture-in-harare-zimbabwe/)).

It is estimated that 10% or even more of the land in Harare is being used for urban agriculture (Brazier, 2012). This is land which belongs to the city and private owners but it is undeveloped giving it an interesting psychosocial status. The rich see it as unsightly wasteland. The poor view it as a resource. The areas which can be seen in every town including Mt Darwin are wetlands – stream margins which have been protected by the authorities since colonial times – controlled through legislation because of their ecological vulnerabilities and left undeveloped because of their challenges for construction. As the city expands and as the people desert an increasingly harsh rural lifestyle, this land is becoming a hot spot of urban conflict between farmers, developers (both legal and illegal), conservationists and the authorities (Brazier, 2012).

During the First World War, President Woodrow Wilson called upon all American citizens to utilize any available open space for food growth, seeing this as a way to pull them out of a potentially damaging situation. Because most of Europe was consumed with war, they were unable to produce sufficient food supplies to be shipped to the U.S and even supply the other surplus to the other countries in need. By the year 1919 over 5 million plots were growing food and over 500 million pounds of produce was harvested. In cases like these, these efforts helped to raise spirits socially as well as to boost economic growth.

### **1.2. Aim/Purpose of the research**

The aim of the research was to identify the contributions of urban agriculture as a livelihood activity in improving food security amongst urban farming households in Mt Darwin urban.

### **1.3. Rationale/Justification of the study**

The research intended to further the existing knowledge in the area of urban agriculture. There have not been many researches in the area of urban agriculture in third world countries and this could possibly explain why some governments and local authorities see the sector as unimportant (Rogerson, 2001). Therefore the research findings can provide essential baseline information which can be used by policy makers as a guiding framework to draft more responsive laws and

policies to urban agriculture as a phenomenon in Zimbabwe. The research also investigated the importance of urban agriculture in improving the food security of urban farmers considering that the rural areas where agriculture is the primary industry are failing to support the urban citizens with food. Given that urban agriculture has been practiced since the country's independence, the research also identified and documented the challenges faced by urban farmers in Mt Darwin so that institutions and organizations which seek to provide help to them will do so having some essential baseline information on how they can craft their intervention strategies in a sustainable way.

#### **1.4. Statement of the problem**

The problem of food insecurity in Zimbabwe used to be more prevalent in the rural areas than urban areas. However challenges in the socio-economic and political environment have worsened the situation even in urban areas thereby causing many urban households to try and navigate the problem through urban farming. The level of contribution of urban agriculture in ensuring food security in Mt Darwin and most parts of Zimbabwe has not been thoroughly investigated.

#### **1.5. Research Objectives**

1. To identify the contributions being made by urban agriculture in improving the food security of Mt Darwin urban farmers.
2. To identify the extent of urban agriculture and its level of contribution to household food security in Mt Darwin.
3. To identify common challenges inhibiting urban agriculture as a viable supplemental source of food for Mt Darwin urban farmers.
4. To suggest possible ways of making urban agriculture more helpful and sustainable to the urban farmers in Mt Darwin urban.

##### **1.5.1. Research Questions**

- a) What are the contributions being made by urban agriculture in improving food security in Mt Darwin urban?
- b) To what extent has urban agriculture contributed towards improving food security in Mt Darwin urban?

- c) What are the challenges inhibiting urban agriculture to become a viable supplement source of food for Mt Darwin urban farmers?
- d) In what ways can urban agriculture be made more effective and helpful to Mt Darwin urban farmers?

### **1.6. Limitations of the study**

Some of the urban farming households who had to be interviewed were not available at the place of their residences during the administering of the questionnaires and the interviews. Some of the key informants especially the DA and the Pfura District Council CEO were sometimes busy for the interview and had to make another appointment which at times was not successful they would also be occupied.

On administering questionnaires some respondents suspected that the researcher was a thief and others suspected the research could be for other reasons which could be political and thus it was difficult to interview them. Whilst the research had the option to go to the next household, the impact of this was felt in terms of time. The researcher therefore had to move to those farmers who were willing to cooperate.

A major limitation of this study was its focus on people practicing urban crop production only. This focus excluded the opinions of non-urban farmers whose opinion of urban agriculture would have contributed immensely to the purposes of this study. Moreover, the study also confined itself to households in Mt Darwin only. This excluded many urban farmers in other suburbs whose opinions could definitely be useful for this study.

### **1.7. Summary**

This chapter looked at introducing the research where the background factors that led to this research were explained. The research background of the study, statement of the problem, significance of the study, objectives, limitations, delimitation of the study and organisation of the study were outlined. The next chapter relates to literature review and identifies the existing gap within the study. Reviewing literature provides a link between this study and the existing knowledge in the same field so that concepts of the study can be clarified and defined.

## **Chapter 2**

### **2.1. Literature Review**

Food security can be defined as the access to food, both economically and geographically. The Community Food Security Coalition (CFSC) defines food security as a situation whereby all persons in the community are having access to culturally accepted, nutritionally adequate food through local, non-emergency sources at all times ([www.foodfirst.org/en/node/137](http://www.foodfirst.org/en/node/137)).

The Spotlight Magazine in 2010, published that by 2005 half of the world's population would be living in cities and towns and that supplying them with safe and affordable food will strain the food supply and distribution chain to a breaking point. It is also stated that the challenge is greatest in the developing world cities, where urban poverty rates often exceeded 50 per cent.

Despite continued economic growth around the world, food security remains the pressing problem in many parts of Africa. Cities in the Sub-Saharan Africa (SSA) are growing at an exceptional rate of about 5 per cent annually (Crush et al. 2006). The UN-HABITAT (2006) reports that the percentage of urban residents in SSA is expected to rise from 30 to 47 per cent of the total population during the period lasting from 2005 to 2030. This will bring about new and critical challenges for urban development policy, especially in terms of ensuring household food security, it is acknowledged that as the world's urban population grows, so too does the population of the urban poor. The overall cost of supplying, distributing and accessing food is also likely to increase as the number of the urban households that are food insecure is growing. Unlike in rural areas where most households derive their food requirements from agricultural production, food security in urban areas is market dependant as most households procure their food from the market. Against this backdrop, urban agriculture or food production conducted in or around urban regions seem to provide a realistic and pragmatic solution (Kutiwa et al, 2010).

Urban agriculture does contribute to lowering poverty levels and feeding urban populations. About 200 million urban farmers throughout the world supply food to more than 700 million people. However there are a lot of risks associated with urban food production, especially the risk of contamination from the sewer systems which can cause the emergence of diseases.



In most developing countries, local governments and authorities are responsible for establishing regulations for food hygiene and trade. They build and manage the markets and are responsible for road construction, which is crucial to get food to the market.

The primary driving force behind the continuous increase in urban agriculture is a lethal combination of factors that include failure of the structural adjustment programmes (SAPs) and land reform, worsening poverty, market failures, economic decline and political upheavals that have caused a severe food crisis throughout Zimbabwe. Zimbabwe, the former bread basket of Africa, has become a net importer of food with grave consequences on both the economy and the overall food security of the country. High food prices have drastically reduced people's purchasing power and raised the spectre of food and income disequilibrium at the household level. As stated by FEWS NET (2009), a significant proportion of the low income urban households in Zimbabwe face serious difficulties in accessing adequate basic food stuffs, which are sold at prices beyond what consumers can afford. The crisis is further worsened by population shift from the rural to urban areas. Poor urban households are using coping strategies in order to meet household food entitlements by intensifying urban agriculture.

Regarding availability, urban agriculture has potential to ensure that supply to fresh food is consistently available to urban households. Urban farming households are able to produce their own food for household consumption and for sale. With income earned from the sale of urban agricultural produce; these households are able to mobilize resources to access appropriate foods for a nutritious diet. As regards food utilization, urban agriculture has the potential to ensure nutritional security through dietary diversity and intake of quality food (Kutiwa et al, 2010).

## **2.2. Theoretical Framework**

In this study the livelihoods framework will be used as the guiding theory. Adato and Dick (2002) pointed that the livelihoods framework provides a conceptual base for the socio-economic activities which the local poor in a given situation undertake in their communities to improve their quality of life; therefore the approach is responsive and participatory in nature. Livelihoods framework can also be taken as one way of organizing the complex issues surrounding poverty. Sustainable livelihoods approaches which have been developed over the years have helped in changing perspectives on poverty, how people construct their lives and the importance of structural and institutional issues.

The model mentions that there are transforming structures and processes which are the institutions, organizations, policies and legislation which determine access to the different forms of capital. The different kinds of capital in this approach include human capital, natural capital, the financial capital, the social capital and the physical capital (Phiri, 2008).

While job creation in the formal sector continues to play a pivotal role as one poverty alleviation strategy, the reality of the poor people in the developing countries is that survival and prosperity depends on the simultaneous pursuit of diverse and multiple activities by different family members taking advantage of different opportunities and resources at different times (Adato and Dick, 2002:2).

The sustainable livelihoods framework in Phiri's (2008) view, takes a starting point and an expanded definition of poverty that looks beyond policies, institutions and processes, to how people use their assets in pursuit of different livelihoods options. Livelihoods outcomes provide a variety of impacts of interest to the study on the impact of agriculture on poverty. Potential outcomes include conventional indicators such as income, food security and sustainable use of natural resources. Adato and Dick (2002) add that outcomes can also include a strengthened asset base, reduced vulnerability and improvements in other aspects of wellbeing such as health, self-esteem and sense of control.

Livelihoods approaches are basically people centered frameworks to development and calls upon external support to focus on what matters to the community therefore, there is need to conceptualize livelihoods differently depending on the people being involved. For instance, livelihoods can be composed of year round or seasonal formal employment, informal trading, home gardens, livestock production, cultivation, borrowing, scavenging, stealing and begging (Adato and Dick 2002:6).

In designing poverty alleviation strategies Phiri (2008) noted that it is important to understand the multiple sources of vulnerability of the poor, the multiple ways in which their lives are affected by the structures and institutions and the varied ways in which development interventions may strengthen or weaken these livelihoods activities. Livelihoods approaches also require an understanding of the process that underlie poverty and the social, cultural, political and institutional context in which the poor live. Urban agriculture in Mt Darwin urban is a

livelihood activity that is being carried out to counter the challenge of food insecurity among households.

#### **2.4. A Global Overview of Urban Agriculture**

Globally, about 200 million urban dwellers are now urban farmers, providing food and income to about 700 million people. In Dar es Salaam Tanzania in 1980, 44% of low-income earners had farms, but by 1987, 70% of heads of households engaged in some farming. During the 1980s, 25% of all urban households engaged in food production in the United States of America, compared to 57% in six Kenyan cities, with other city-specific figures ranging from 32.6 to 70% for Kisangani in Democratic Republic of Congo, Kampala in Uganda, Lusaka in Zambia, Moscow in Russia (1991) and Dar es Salaam in Tanzania (International Development Centre 2010). In many countries of the world, urban food production is growing rapidly. In Bangkok in Thailand, 60% of the land is under cultivation, 72% of all urban families are engaged in producing food, mostly on a part-time basis. In Moscow, Russia, the share of families producing food more than tripled between 1972 and 1992, from 20% to 65%.

In Dar es Salaam, Tanzania, the number of households engaged in food production grew from 20% to more than 65% between 1970 and 1990. In Argentine cities the number of participants in the community agriculture programme grew from 50,000 to 550,000 between 1990 and 1994. At the same time the number of supporting urban farming institutions grew from 100 to 1,100, (Cities Feeding People, 2010).

As earlier indicated, in most developing countries, the majority of the people who engage in urban crop production belong to the low income groups (Smit et al 1996; Mougeot, et al., 1998). They are relatively long-term city residents, moderately poor, and frequently females. They exist in all regions of the world, but face vastly different conditions and opportunities. Urban farmers are marginally better off than the absolute poor. They have dwelt in the city long enough to have acquired access to some land and other resources (Nugent, 1999b). A 1991 case study in Nairobi, Kenya, established that about 44% of the urban farmers belonged to the very low income group, and about 16% to the low income bracket. About 85% of these urban farmers had been residing in the city for more than 14 years (International Development Research Centre, 2010).

Urban agriculture is capturing growing attention among international bodies. After the East-West Center's initial survey of the practice in the Pacific Basin, the International Development Research Centre (IDRC) held a seminar in Singapore and commissioned a worldwide literature search from the Urban Resources Centre in 1984. In the late 1980s, UNICEF implemented various projects and the International Development Research Centre (IDRC) funded four studies in Kenya, Uganda and Tanzania. By 1988, the UN University's Food-Energy Nexus Programme had published a series of research reports in selected regions, countries and cities. Related research was carried out by the Cities and Ecology Project of Man and Biosphere/UNESCO. Building on this, the United Nations Development Programme's (UNDP) Urban Agriculture Network surveyed 21 countries in 1991-92 and convened interested agencies to effectively promote urban agriculture development, including wastewater farming and hydroponics (International Development Research Centre 2010). In 1992, the Toronto-based Developing Countries Farm Radio Network released four radio scripts on urban farming for broadcast in developing countries. Major UN programmes (e.g. Healthy Cities of WHO and Sustainable Cities of UNDP/WB) now provide operational frameworks for urban agriculture research to guide better urban management. Since early 1993, International Development Research Centre (IDRC) Urban Environment Management Programme focuses on water-waste agriculture linkages in cities. In mid-1993 various agencies and Northern and Southern country specialists met at the International Development Research Centre in Ottawa, Canada to identify key information needs and collaboration mechanisms. the International Development Research Centre has about one million Canadian dollars (CA\$1 million) in active projects on urban agriculture production and urban nutrition; many past studies have tested links between waste treatment and recycling with farming, others have analyzed urban food circulation systems (International Development Research Centre, 2010).

## **2.5. Urban Agriculture in Zimbabwe**

FAO 2001 notes that fifty per cent of Harare's urban farmers initiated production activities in the early 1990s when maize became the main crop. At this time, since access to land was insufficient, these urban farmers began using public land. Thus, approximately 75% of the open spaces of public land were utilised for maize cultivation, and 25% used for sweet potato. Today, 94% of farming households in Harare grow maize and 25% grow sweet potato.

According to Environmental and Development activities- Zimbabwe (ENDA-Zimbabwe, 1984) some work carried by Mazabani (1982) has shown that Harare has a history of sustainable urban agriculture that predates independence.

As far back as 1955 some 267ha were cultivated and this rose to 4, 762 in 1980 (Mazambani, 1982). A survey by Environmental and Development Activities-Zimbabwe (ENDA-Zimbabwe) showed a dramatic increase of 92.6 percent of the open spaces area under cultivation in Harare from 1990-1994. Since 1990 land under cultivation in residential areas has more than doubled (Gumbo and Ndiripo, 1996). In 25% of poor Harare households, urban crop production contributes 60% of food consumption. However, 80% of urban agriculture occurs on public land with no official recognition. Recently, though, farmers have lobbied for community participation in local governance and urban agriculture has gained legitimacy as a significant source of food security. In 1990, gardens covered 8% of land in the city; by 1994, 16% of land, and by 2001, urban agriculture pervaded 25% of Harare's area (ZIMVAC, 2004).

According to the International Development Research Centre (IDRC) 2010, from 1990 to 1994, the amount of land under cultivation in Harare nearly doubled to about 16% of the city's area and has been rising rapidly ever since. The main reason for this phenomenal growth was the relaxation of by-laws governing urban agriculture in 1993, in a bid to alleviate poverty linked to the Economic Structural Adjustment Programme (ESAP).

## **2.6. Policy and legal framework for urban agriculture in Zimbabwe**

Agriculture is not classified as an urban activity in Zimbabwe. Hence, city planning system does not cater for urban agriculture. Urban agriculture is therefore to some extent viewed as illegal since it is not backed up by any statutory instrument (Marongwe, 2003). There is no clearly laid down policy on urban agriculture. However, since 2002, local authorities support urban agriculture if it is organised in a systematic manner. The Nyanga Declaration on Urban Agriculture in Zimbabwe and the Harare Declaration by Ministers of Local Government in Eastern and Southern Africa acknowledged that urban agriculture contributes to urban food security, poverty reduction, local economic development and sustainable urban development (Hungwe, 2006). The declaration also urged local authorities to develop appropriate incentives necessary for the growth of urban agriculture.

Non-Governmental Organisations (NGOs) were also encouraged to support sustainable urban agriculture projects for the benefit of the poor. This declaration paved the way for the formulation of policy and legal frameworks for urban agriculture. For example, pertinent policies such as the National Environmental Draft Policy that provides strategic directions include developing and publishing guidelines on urban agriculture, assisting local authorities to plan ways to integrate and co-ordinate support for urban agriculture, and establishing extension programmes to promote sustainable urban agriculture (Mushayavanhu, 2003).

Kutiwa et al (2010) states that currently, local municipalities in collaboration with the Department of Housing and Community Services, issue permits for cultivation but the majority of the public is not aware of this facility. Although city municipalities have acknowledged the importance of urban agriculture, the recognition of its current or potential importance has not yet been integrated in the legal and statutory provisions of Zimbabwe. Policies and laws specifically dedicated to enhancing and monitoring urban agricultural activities are glaringly absent (Kutiwa et al, 2010).

### **2.7. Some benefits of urban crop production**

Ngozi (2010) says that in recent times, urban agriculture seems to have gained importance especially in developing economies basically because it has been discovered to be a viable intervention strategy for the urban poor to earn extra income and therefore reduces their reliance on cash income for food by growing their own food. It is a major component of the urban foods system by providing the diversity needed to ensure dietary quality, which is an important aspect of food security.

Millions of people in the growing cities of the developing countries have become urban farmers in recent decades. They grow vegetables, raise livestock, poultry and fish, and practice many other types of agriculture. Researchers are paying increasing attention to a sector often neglected by governments, one which can contribute greatly to the sustainability of cities. The practitioners of urban agriculture need no convincing about its merits. They enjoy better diets, higher income, employment or combinations of all these benefits (International Research Development Centre, 2010, Phiri, 2000, Hungwe, 1994).

According to the International Research Development Centre 2010, apart from nutrition and health, farming in cities contributes to producers' well-being in a number of ways, including cash-saving and income generation. Among the lower-income groups, self-produced food can cover a considerable share of a household's total food intake and can save cash income that otherwise would be spent on food. Depending on the income group, self-produced food is found to account for between 18 and 60% of household food consumption in East Jakarta, Dar es Salaam, Tanzania, and Kampala, Uganda. Home-produced food enables families in Addis Ababa, Ethiopia cooperatives and Dar es Salaam, Tanzania's poor families to save 10-20% and 37% of their income, respectively. In Bolivia, urban food projects supply women producers with a quarter of their total income. The impact of this activity on households' nutritional status is under-researched but the data available is encouraging. According to a 1981 UNICEF survey of households with children in 13 low-income districts of Kampala, Uganda, partial reliance on intra-urban food production largely explained why supplementary feeding aid could be discontinued, despite dramatic economic decline.

Thus conventional urban food security strategies need to be reassessed in view of the potential of city farming to augment the real income of low-income households at levels equivalent to food subsidy programmes, doing so at much lower cost and with many other benefits (International Research Development Centre, 2010). Mwangi (1995) compares farming and non-farming households in low-income neighborhoods in Nairobi, Kenya. He notes that, by growing their own food, people produce food for personal consumption or for sale. Consequently, "real" and "tangible" income is generated. Fungible income is defined as the substitution of goods or labour for money that would have had to be earned to acquire these or equivalent goods. In any case, they save money they would otherwise have spent to buy food.

According to official data, urban agriculture does not make a substantial contribution towards urban employment or to the gross domestic product (Nugent, 2000). Urban agricultural activities generally form part of the informal economy and are usually not included in official statistics. Furthermore, it is very difficult to determine the urban agricultural contribution towards a city's overall economy as it is determined by the quantity and market value or price of the goods created by this subsector.

However, prices cannot be easily determined, because much of the output from urban farming is not sold on markets. According to Armar-Klemesu (2000), women in Kampala, Uganda may not even let their husbands know the extent to which their crop production is relied upon in the household budget (Armar-Klemesu, 2000). While mean consumption is well below estimated requirements in all cases, farming households are better off in terms of both energy and protein consumption. Furthermore, farmers participating in an organised urban crop production support programme are significantly better off in both categories.

## **2.8. Summary**

The chapter looked at a global overview of urban crop production, how urban agriculture stands on a global scale and also gives a view of it in Zimbabwe. The chapter also reflects the benefits of urban agriculture. A theoretical perspective of urban agriculture has also been provided. The insight gained through literature review forms the basis of this study.



## **CHAPTER 3: METHODOLOGY**

### **3.0. Introduction**

This chapter explores the way the study was conducted. It focuses on research design, the sampling techniques, data collection and subsequent analysis. The chapter provides the procedures which were followed in the collection, analysis, and presentation of data.

### **3.1. The Study Area**

The research was carried out in Mt Darwin urban. The residential areas are inclusive of the high density suburbs called New Pfura location and low density suburbs called Mupfure Heights.

This is a town which lies in Mount Darwin District which is in Mashonaland Central Province in north-eastern Zimbabwe. It is located approximately 160 kilometres (99 miles), by road, northeast of Harare, the capital and largest city in the country. The high density suburb has a concentration of urban poor due to the fact that the area has a small industry with only a few companies including Cottco and Grafax operating in the area, and its population is relatively young with a huge number of the population unemployed (Parliament Research Department, 2011).

Mount Darwin is the probable site of some of the earliest European missionary work in southern Africa, by the Portuguese Jesuit Goncalo da Silveria, who arrived in 1561 near Mt Darwin following a souring relationship with a local chief. The population of Mt Darwin as last recorded from the 2012 census stands at 6349. The town is an agricultural and mining centre with minerals like gold and asbestos found in the area. The area rises 4 951 feet (1 509 metres) above sea level. The soil in the area is conducive to mining and agriculture and the area also has farms which produce a great deal of crops. The area is also known for minerals as most people attain a living from illegal mining of gold which is mostly done in the Mukaradzi area (Parliament Research Department, 2011).

The area is also known for the mountains which can be seen from some very far areas. The vegetation in most of the area is that of the savannah area with trees which are not dense. Trees of the savannah areas like the baobab tree can be found in the area. The weather of the area is hot mostly during the summer time.

Mt Darwin urban was selected for this study due to two main reasons. The place has a few researches that have been done, and due to the fact that the researcher noticed a rise in urban agriculture, the researcher felt that there was need to carry out the study. The people in Mt Darwin urban have other income generating activities they can do including gold panning. Mt Darwin urban served as a place of easy access as the researcher.

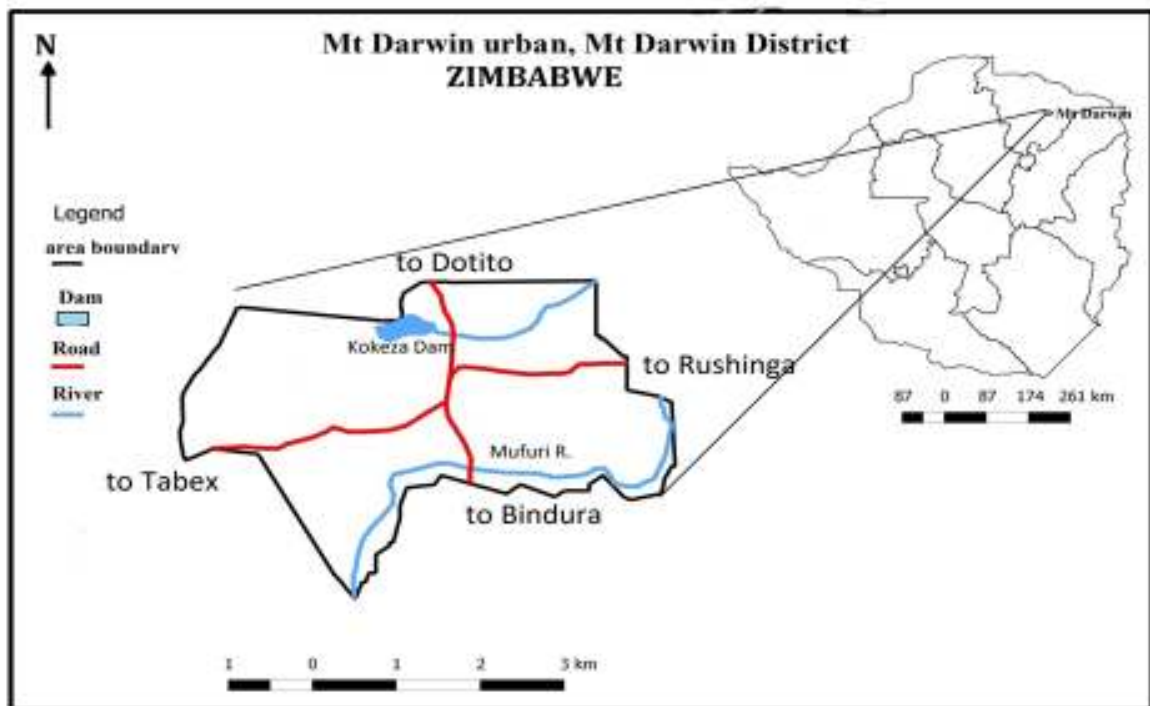


Fig 1: Map of Mt Darwin urban.

Source: Geography Department, GIS Lab

### 3.2. Research Design

The research took a triangular approach and utilized both qualitative and quantitative techniques so as to capture as much as possible views of the research participants. In the research study, the methods used comprised the questionnaire and interview surveys supplemented by field observations.

The study used questionnaire to collect quantitative data and interview guides for qualitative data collection. The design is an in-depth assessment of the contributions of urban agriculture to food security among the households of those involved in urban agriculture in Mt Darwin.

A descriptive survey was used to collect quantitative and qualitative data using face to face interviews, questionnaires and direct observation schedules as research instruments. The use of both quantitative and qualitative paradigms was aimed at obtaining reliable, valid and logical conclusions to the research findings. Questionnaire schedules were administered to 25 urban farmers who were selected on the basis of their socio-economic attributes, ranging from low income residential area (high density) to high income residential area (low density). There were other circumstances whereby data was collected through interviews due as some of the responders were illiterate. A questionnaire would be filled for them whiles they were being interviewed.

Data was collected from households carrying out urban agriculture in Mt Darwin urban. Data was also collected from other secondary stakeholders including the CEO for Pfura Rural District Council, a member from Zimbabwe National Statistics Agency (ZIMSTAT) for Mt Darwin District and the District Administrator (DA) for Mt Darwin District.

There was need for the use of different approaches mainly because the respondents had different backgrounds. Some respondents could easily understand and fill out the questionnaire while others required the interview guide to enable them talk, share, and be probed for the responses to the questions. These two approaches also complement each other in that many words can also use the numbers to support specific conclusions

### **3.3. Target population**

The target population included 185 urban farming households who engaged in urban crop production in Mt Darwin urban. The District Department of Agriculture Technical and Extension Services (AGRITEX) officer for Mt Darwin District confirmed that there were 185 households engaged in urban crop production in Mt Darwin urban. The ZIMSTAT office for Mt Darwin also confirmed that there are approximately 180 households in Mt Darwin urban carrying out urban

agriculture. A total of 25 households were interviewed and these constitute 14 % of the study population.

### **3.4. Sampling Methods**

The researcher used non probability methods to select respondents from Mt Darwin urban. With probability sampling, the probability of each element being selected from the population is equal. A simple random sampling technique of the households carrying out urban agriculture was done to come up with households that provided information on the results of the research.

A total of 4 interviews were done with key informants from Pfura Rural District Council, ZIMSTAT for Mt Darwin District, AGRITEX and the DA. The researcher only interviewed respondents who were readily available and were willing to participate in the study. The researcher managed to interview 25 urban farming households.

#### **3.4.1. Household sampling**

To identify the urban farming households in Mt Darwin, the researcher could not indulge in a door to door operation asking whether a household was carrying out urban agriculture or not. Rather, the researcher identified the households that are doing urban agriculture by approaching farmers in their pieces of land and did the simple random sampling method on them. From that process a simple random sampling procedure was then carried out to come up with the 25 urban farming households in Mt Darwin urban.

#### **3.5.1. The Questionnaire**

The researcher employed the questionnaire method of collecting data, which is a set of written questions that were simply handed out to the respondents and this was aligned to systematic sampling that has been carried out. It consisted of closed questionnaires only. They were distributed to the households that came from the sampling technique. The questionnaire was given 25 household heads both males and females as long as it was the head of the urban farming household. The researcher chose 25 urban farming households because it is a manageable number. The questionnaire was divided into 8 sub headings. All the sub headings had issues related to urban farming in Mt Darwin urban. Sub heading 1, solicited for information on demographic data for the respondents, as it is always important to know such information as age and gender of the respondents. Sub heading 2 was on the household food requirements, what the

family requires in form of food for their health living. Sub heading 3 sought to find out the kind of the crops that the urban farmers in Mt Darwin were cultivating and it also sought to find out the amounts of the crops they are producing. Sub heading 4 sought to find out how the urban farmers in Mt Darwin obtained their pieces of land on which they are doing their cultivation. Sub heading 5 dealt on what motivates the urban famers in Mt Darwin urban to continue engaging into urban agriculture. Sub heading 6 sort to deal on how the urban farmers makes use of the crops they produce, it sought to find out whether the urban farmers use the crops they produce for only their consumption or other purposes for example selling the crops for income etc. Sub heading 7 sought to find out other means from which the urban farmers from Mt Darwin resort to if the outcomes from urban farming fail to fully sustain them on food security. Sub heading 8, sought to obtain the food requirements that the urban farmers think they should be having for them to consider themselves food secure.

There are also questions 9, 10, 11 and 12 which deal on the challenges that the urban farmers in Mt Darwin are facing in implementing urban agriculture. The researcher used a questionnaire as a data collection instrument because it was cheaper to use. The researcher distributed and collected questionnaires by hand so no loss through post, cost of postage and poor returns were avoided. All the questionnaires distributed to the respondents were collected and ensures that all clusters were represented. The approach allows time and space for respondents to think and assimilate questions and questionnaire allows for the use of closed-ended questions, which are easy to administer and help keep the minds of the respondents focused on the subject. The closed-ended items allowed for collection of data that was easy to code and quantify.

The questionnaire was prepared well ahead of time and in some cases options of answers were provided. The questionnaire design was such that it was long enough to collect all the required information and also short enough not to bore the respondent. However questionnaire instrument was unable to probe a topic in depth without becoming lengthy. The questionnaire was time consuming as much of the time was spent on interpreting the questions for the respondents who did not understand English.

### **3.5.2. Face to Face Interview**

Interview questions were asked to the key informants who included the CEO of the Pfura Rural District Council, a member from ZIMSTAT for Mt Darwin District, the DA and a member from AGRITEX. In cases of semantic problems and vague responses, the researcher had a chance of rephrasing the question, glossing the statements or probing further. To prepare the respondents for the interview, an interview schedule was prepared by the researcher and dispatched to the respondents in advance.

The unstructured interviews were an effective strategy for catering memory failure or respondents' resistance and it gave the respondents more control over the pace and direction of the interview and allowed them to the topics on their own terms, pace and comfort level. The researcher conducted 4 face to face interviews to the D.A for Mt Darwin district, a member from ZIMSTAT, the CEO for Pfura Rural District Council and the district head of AGRITEX Mt Darwin District. The researcher interviewed these people as they are the people with the knowledge on the history and all the activities in Mt Darwin. The researcher interviewed them on their knowledge on urban farming and asked them on what they perceive as ways to improve urban agriculture in Mt Darwin urban.

The interviews assisted the researcher in getting the general information about urban agriculture in Mt Darwin and the emerging constraints. The researcher, however, used observation to see urban plots. This involved physical visitation of some plots, which were seen to have some crops.

### **3.6. Data Analysis**

Raw data was validated, edited and cleaned, soon after the questionnaires were administered. This was done early so that any clarifications were sought while the researcher's mind was still fresh.

The researcher constructed diagrams after analysis and coming up with the comparisons for the statistics from the research outcomes. Individual households that responded to the questionnaire constituted a unit of analysis. Some initial checks were done for obvious errors. Every effort was

made to ensure that non-available data were not treated as zeros but they were given an arbitrary value.

Frequency distribution, graphs, charts and case summaries were used for data presentation and analysis. A simple regression analysis was also used to see the relationship between various variables and urban agriculture. Qualitative data that were collected through observation and key informant interviews were analyzed manually.

### **3.7. Ethical Considerations**

The researcher considered the research values of voluntary participation, anonymity and protection of respondents from any possible harm that could arise from participating in the study. Thus, the researcher introduced the purpose of the study as a fulfillment of a Bachelor of Science degree in Development Studies. The research was not for any other hidden agenda and the respondents were requested to participate in the study on a voluntary basis and refusal or abstaining from participating was permitted. The researcher also assured the respondents of confidentiality of the information given and protection from any possible harm that could arise from the study since the findings would be used for the intended purposes only. The respondents were to be provided with feedback about the findings of the study.

#### **3.7.1. Confidentiality:**

The respondent's identity was kept confidential. Data collection and storage was done in strict confidentiality and was used for the purpose of the study alone.

Informed consent: Respondents were informed of the purpose of the study and were free to tell the researcher if they were not interested to take part in the study.

### **3.8. Summary of chapter**

This chapter explained how the research was done. It began by explaining the target population, data collection tools and the sampling techniques that were applied. It ended by explaining the data collection and analysis done as well as the limitation of the study.

## CHAPTER 4 - DATA PRESENTATION AND ANALYSIS

### 4.0. Introduction

This chapter focuses on the presentation of results of the study. The objectives of the study were answered basing on results obtained. To allow easy and clear interpretation of the results, various techniques were used for presentation of results and these include tables, bar graphs and pie charts. The chapter also looks at how the research objectives mentioned in chapter 1 were addressed.

### 4.1. Demographic information of Respondents

#### 4.1.1. Distribution of respondents by gender of Household Head

Table 2: Percentage distribution of respondents by gender of Household Head

| Gender of household head | Frequency | %age involved in urban agriculture | %age of total involved in urban agriculture |
|--------------------------|-----------|------------------------------------|---------------------------------------------|
| Male                     | 16        | 64                                 | 100                                         |
| Female                   | 9         | 36                                 | 100                                         |
| Total                    | 25        | 100%                               | 100%                                        |

Source: Primary data

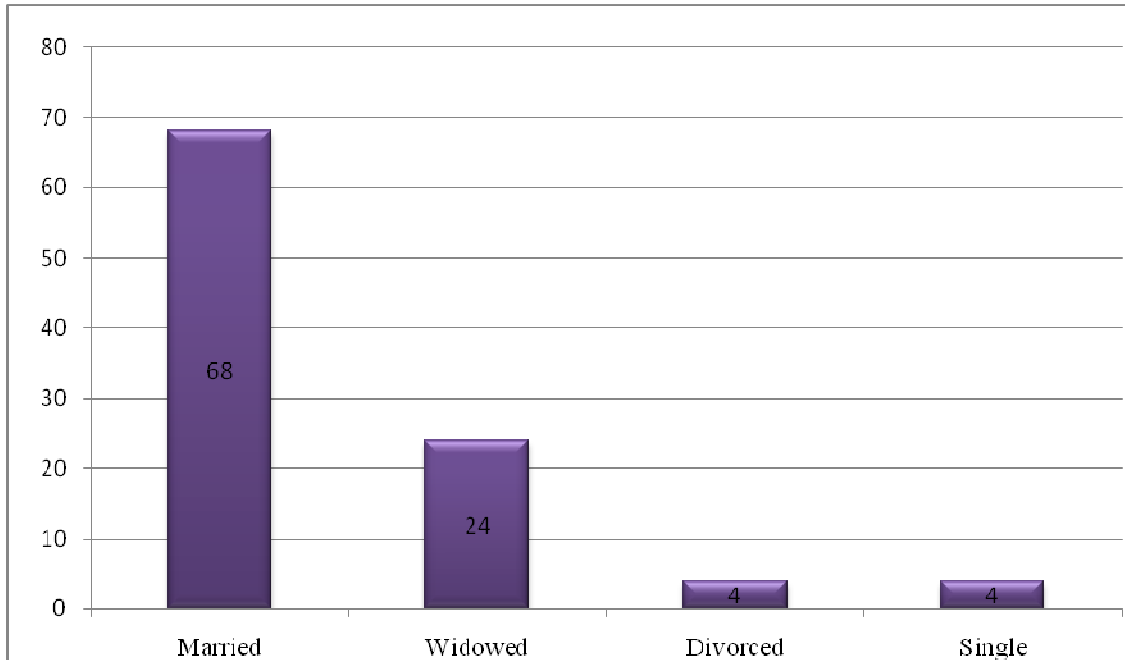
The table shows that female headed households practicing urban agriculture are a few constituting of 36% compared to male headed urban agriculture practicing households taking the remaining 64%.

#### 4.1.2. Marital status of household head

Most of the sampled households were headed by married people (68%) while 28% of household heads were widowed with the remaining 8% equally shared between divorced and single household heads. Most of the married household heads were males whilst the majority of widowed and divorced household heads were females.



Fig 2: Marital Status of Household Head

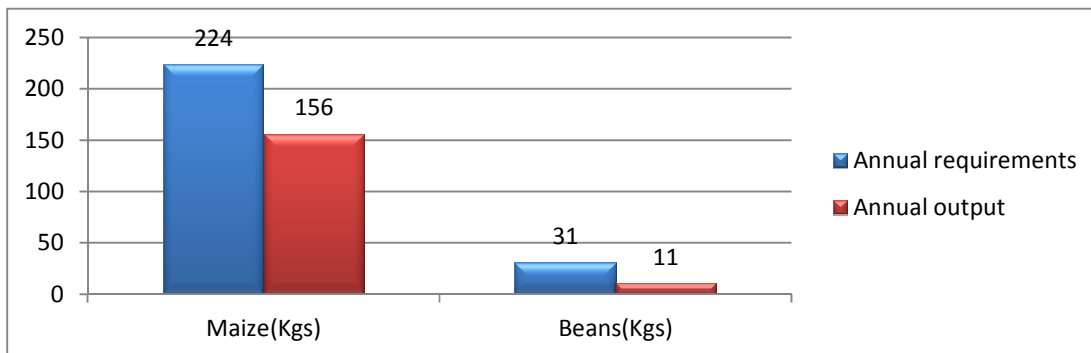


Source: Primary data

**4.2. Research objective 1: To identify the contributions being made by urban agriculture in improving the food security of Mt Darwin urban farmers.**

**4.2.1. Annual household food requirement vs. annual production in urban agriculture**

Fig 3: Annual household food requirement vs. annual production in urban agriculture



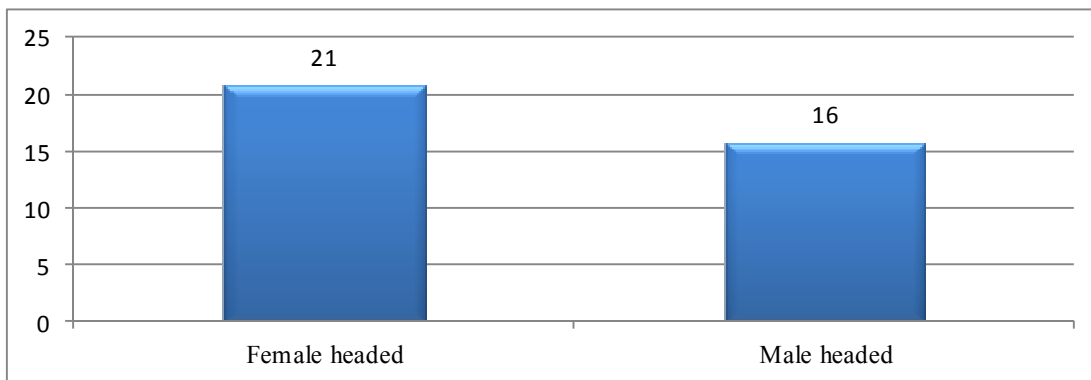
Source: Primary data

Households practicing urban agriculture actually produce amounts less than their annual requirement. For example an average household practicing urban agriculture produce 156Kgs of maize per year yet their average annual requirement is 210Kgs (Fig 2).

#### 4.2.2. Household's experience with urban agriculture.

The results on this topic show that female headed households had more years practicing urban agriculture compared to male headed households. The reason for this could be the fact that men in the society are the ones who are usually employed whilst women stay home most of the time to take care of the family and do domestic work. The results also show that urban agriculture has been practiced in Mt Darwin urban for the past 15 years or more.

Fig 4: Number of years urban agriculture has been practiced by male headed and female headed households



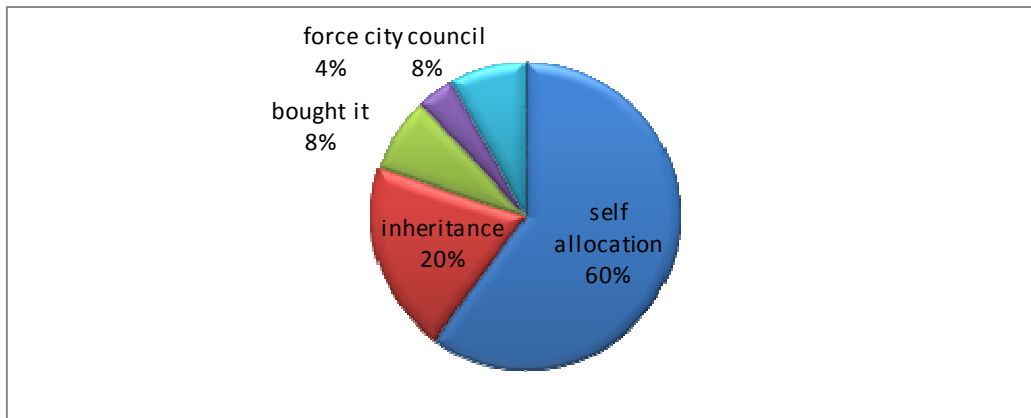
Source: Primary data

#### 4.2.3. Acquisition of land for urban agriculture

Most of the urban farmers in Mt Darwin constituting of 60% acquired their farming land through self-allocation, whilst 20% said that they inherited their land from friends and relatives who either relocated to other areas or passed on. A total of 8% reported that they bought their farming land from others who possessed the land but could not utilize it for any purpose whilst 4% used force to acquire the land and a total of 8% said that they had acquired the land from the Pfura Rural District Council (Fig 4). The majority of the urban farmers said that they had fixed plots while a total of about 10% said they were migratory.

A total of 56% said that they cultivated on a piece of land different from their current one. From that total 64.2% said that the reason for that was because their piece of land had been allocated to someone else, whilst the remaining 35.8% said that council had barred them to use those pieces of land for council uses of the land

Fig 5: Acquisition of land for urban agriculture



Source: Primary data

#### 4.2.4. Types of crops grown

The findings show that 92 % of the sampled households cultivate maize while only 4 % cultivate small grains like sorghum, pearl millet and finger millet (rapoko). On average most households have cultivated in Mt Darwin urban for more than fifteen years. Chances are very high that all households started to practice urban agriculture after independence in 1980. On average households practicing urban agriculture produce close to half a ton of maize per year which is the Zimbabwean main staple saving a considerable amount of money per household.

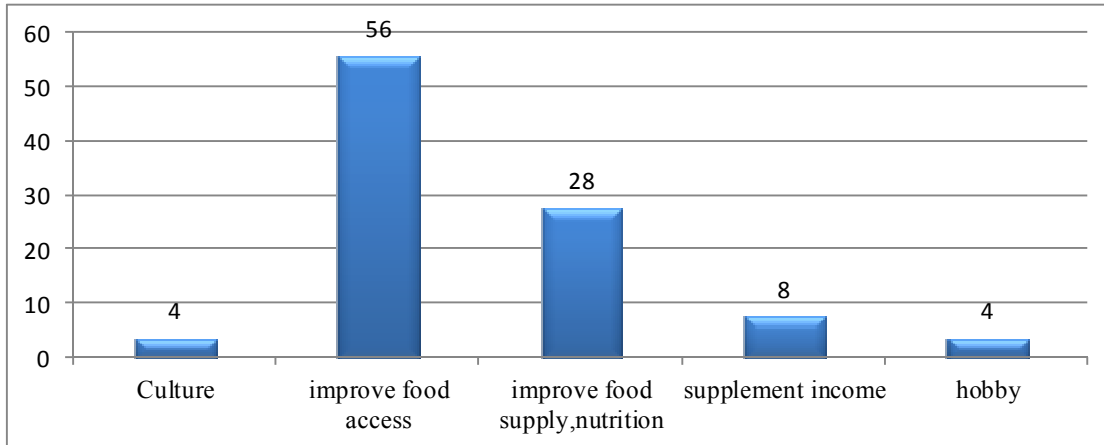
Table 3: Crops grown and average quantities produced per year

| Crop          | Average no of years the crop has been produced | % of household producing | Amount of crop produced per year(kgs) |
|---------------|------------------------------------------------|--------------------------|---------------------------------------|
| Maize         | 18                                             | 92                       | 156                                   |
| Beans         | 16                                             | 12                       | 11                                    |
| Ground nuts   | 11                                             | 8                        | 7                                     |
| Rapoko/millet | 6                                              | 4                        | 4                                     |

Source: Primary data

#### 4.2.5. Reasons for engaging in urban agriculture

Fig 6: Reasons why people engage into urban agriculture



Source: Primary data

Most of the urban farmers constituting 56% reported that they were into urban agriculture because of the willingness to improve food access for their households; 28% reported that they were into urban agriculture because of the reason of improving food supply and nutrition. A total of 8% reported that they are engaging into urban agriculture because of the need to supplement income for other purposes like buying other food stuffs, paying school fees and paying medical bills. Other farmers mentioned that they were doing urban farming as it is a clean source of food for their households.

### ***4.3. Research objective 2: To identify the extent of urban agriculture and its level of contribution to household food security in Mt Darwin.***

#### **4.3.1. Sufficiency from urban agriculture**

Most households are sustained for up to three months by what they produce from urban agriculture. As months pass by, the big families with a household size of 9 and above suddenly run out of the produce they get from urban agriculture. From the 4<sup>th</sup> month to the 6<sup>th</sup> month, only 18 households out of the 25 are still consuming produces from urban agriculture. The number of households further decreases as from the 7<sup>th</sup> month to the 9<sup>th</sup> month to 5 households still being

sustained from urban agriculture produce which is a 52% drop. Only 1 household is still sustained from urban agriculture from the 10<sup>th</sup> to the 12<sup>th</sup> month.

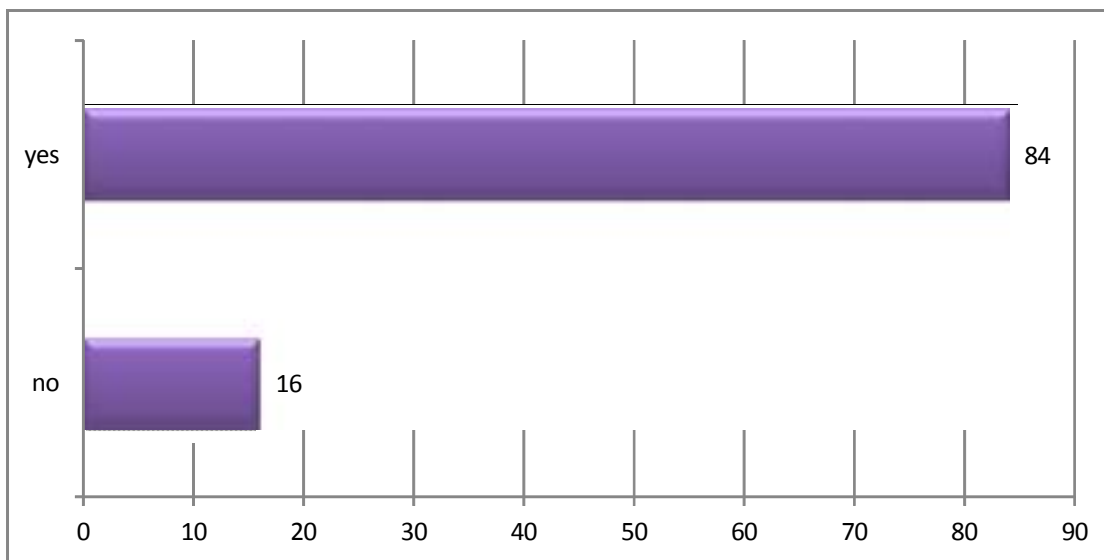
Table 4: Sufficiency from urban agriculture produce

| Household size | 1 – 3 months | 4 – 6 months | 7 – 9 months | 10 – 12 months |
|----------------|--------------|--------------|--------------|----------------|
| 5 and below    | 18           | 13           | 4            | 1              |
| 6 – 8          | 5            | 4            | 1            | 0              |
| 9 – 12         | 2            | 0            | 0            | 0              |
| 12+            | 0            | 0            | 0            | 0              |
| Total          | 25           | 18           | 5            | 1              |

Source: Primary data

#### 4.3.2. Overall importance of urban agriculture

Fig 7: Percentage of household perceptions on the importance of urban agriculture



Source: Primary data

Most of the urban farmers constituting 88% said that their goals for implementing urban agriculture have not been met. The justifications they gave included the challenges they are facing which include shortage of farming inputs like fertilizers and seeds, challenges of attaining

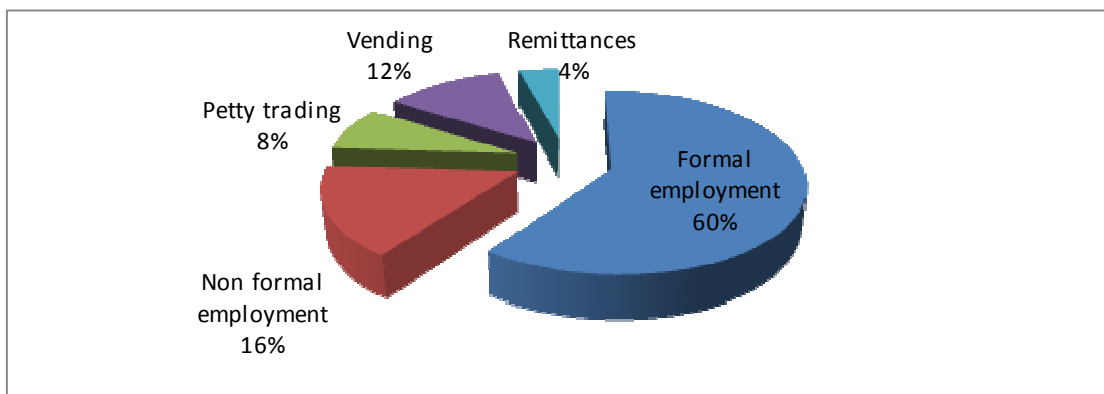
the farming land as they are always having disagreements amongst themselves concerning ownership of land for cultivation of crops, lack of security for their crops in their small fields and shortage of rainfall due to climate change. Due to climate change, output from urban agriculture has been reduced.

The majority of the farmers constituting of 88% felt that urban agriculture is a helpful activity, giving justifications that it was contributing beyond providing food for their families but also acting as a source of income. However, 16% of the farmers felt that urban agriculture was not useful to them as the output is not to their expectations. This, they said, was due to the poor rainfall that the area has been receiving and lack of farming inputs for good yields. Those who said it was not a helpful activity, but continued to engage in it indicated that they only participated in the activity because they just wanted something to occupy them.

Another reason for engaging into urban agriculture is that it is expensive to bring food from rural areas and therefore it was better for them to practice urban agriculture and enjoy the little benefits. Other urban farmers also felt that they needed to benefit from the urban open lands.

#### 4.3.3. Alternative income sources

Fig 8: Percentage distribution of alternative income sources to supplement Income from Urban Farming



Source: Primary data

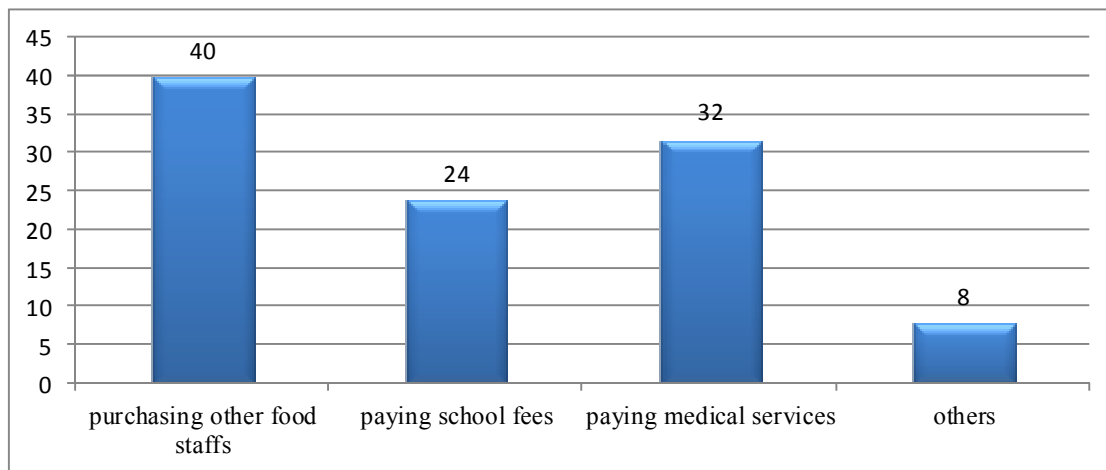
The results show that many farmers engaged in urban agriculture (60 %) still consider formal employment as their major alternative source of income (Fig 5). Other sources of income such as non-formal employment, petty trading, remittances and vending were not as significant contributing a total of 40 % of all respondents. This may also suggest that one of the reasons why

people participating in urban agriculture are not willing to relocate to communal areas where they can access larger land sizes is because they still believe in formal employment although they are not earning much. FEWS NET (2009) also supported this by saying a significant proportion of the low income urban households in Zimbabwe face serious difficulties in accessing adequate basic food stuffs, which are sold at prices beyond what consumers can afford.

#### 4.3.4. Use of cash from urban agriculture

Some of the farmers in Mt Darwin urban sell their urban agriculture produce for cash and none of the farmers reported to be engaging into trade for other goods or products. About 16% of the sample population reported to be getting an income from urban agriculture produce.

Fig 9: Use of cash from urban agriculture



Source: Primary data

Since the farmers can only get crops from urban agriculture, they reported that they use some of the money from urban agriculture, which is 39% for buying other food stuffs like cooking oil, salt, sugar, bread, meat etc. Some of the money constituting 21% was reported to be used for paying of school fees while 31% of the money is used for payment of medical bills. The other uses of the money which constitute 9% included leisure, little investment etc. Binns et al (1998), Nugent, (1999b) and Mkwambisi (2010) also agree to this by noting that savings from home

consumption and income from sales are spent on other basic needs or invested in other businesses.

#### 4.3.5. Use of produce from urban agriculture

The majority of the respondents constituting of 80% reported that they use all the food they obtain from urban agriculture for consumption while 5 of the household heads, 4 of them males reported that they either give the produce to family and friends or sell the crops.

Kutiwa et al, (2010) also agree to this by stating that urban farming households are able to produce their own food for household consumption and for sale. With income earned from the sale of urban agricultural produce; these households are able to mobilize resources to access appropriate foods for a nutritious diet. As regards food utilization, urban agriculture has the potential to ensure nutritional security through dietary diversity and intake of quality food.

#### 4.3.6. Household food requirements.

This section summarizes the average quantities of other food stuffs consumed by urban farmers in Mt Darwin which are not obtained from urban agriculture. Information collected shows that male headed households spend more than female headed households due to the fact that most male household heads are formally employed and therefore earn better than female household heads (Table 4). Mitlin (2005) also notes that women headed households face challenges of taking care of their households due to challenges of unemployment whilst at the same time they are forced to prioritize their basic needs.

Table 5: Monthly consumption of households by gender

| Average monthly consumption rates |                  |            |                      |               |                      |                          |             |
|-----------------------------------|------------------|------------|----------------------|---------------|----------------------|--------------------------|-------------|
| Gender of head                    | Vegetables (Kgs) | Meat (Kgs) | Cooking oil (liters) | Milk (liters) | Sweet potatoes (Kgs) | Bread (number of loaves) | Beans (Kgs) |
| Male                              | 5                | 3          | 5                    | 4             | 11                   | 20                       | 1           |
| Female                            | 5                | 2          | 4                    | 3             | 13                   | 16                       | 1.5         |
| total                             | 10               | 5          | 9                    | 7             | 24                   | 36                       | 2.5         |

Source: Primary data



**4.4. Research objective 3: To identify common challenges inhibiting urban agriculture as a viable supplemental source of food for Mt Darwin urban dwellers.**

**4.4.1. Challenges/constraints being faced by urban farmers**

Table 6: Percentage of challenges faced by households in urban agriculture

| <b>Challenge/constraint</b> | <b>Percentage of total</b> |
|-----------------------------|----------------------------|
| Lack of Inputs              | 20                         |
| Shortage of land            | 60                         |
| Poor security for produce   | 8                          |
| Lack of agricultural tools  | 12                         |
| Total                       | 100                        |

Source: Primary data

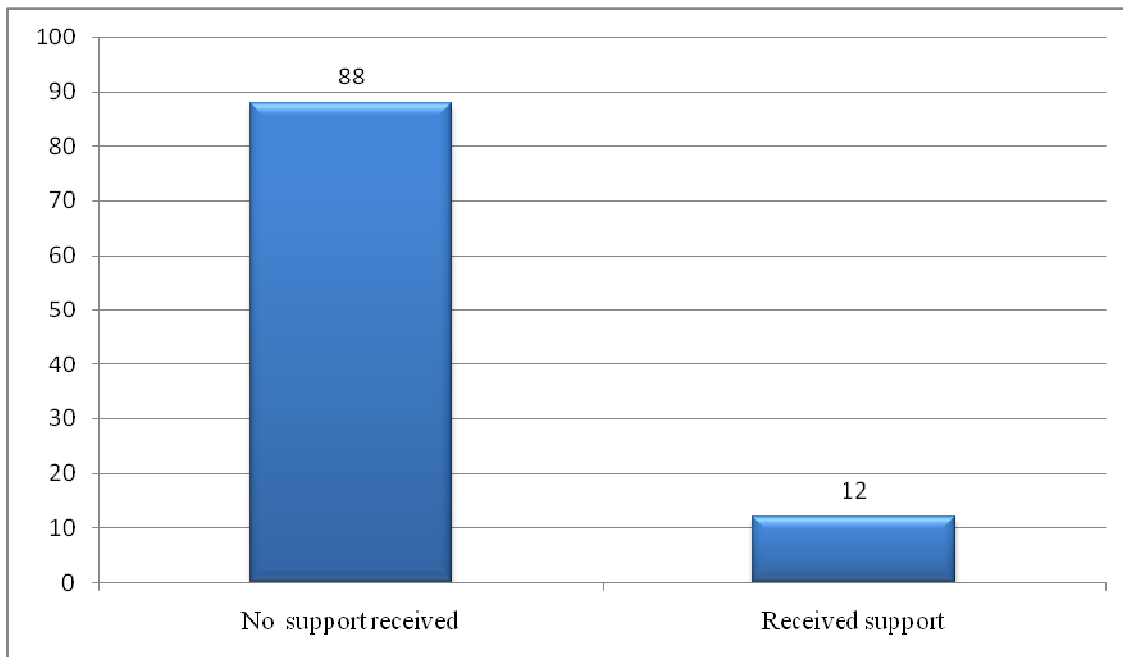
A percentage of 60% of the urban agriculture practicing households reported that they are facing challenges of shortage of land, whilst 20% reported that they facing challenges of lack of farming inputs like seeds and fertilizers as they were not receiving any form of assistance from neither the government nor NGOs.

A total of 8% reported that they are facing challenges of poor security for their produce since some people could use their small fields as roads. The crops are also vulnerable to animals which come from the nearby rural areas. The remaining 12% reported that they are facing challenges of lack of agricultural tools and this is affecting their produce negatively.

**4.4.2. Support to urban agriculture**

The research results show that 88 % of all respondents did not receive any support in urban agriculture and only 12 % of the total recipients claim to have received some form of support. Support was received from the government department of Social Welfare and the support was very viable; support was offered in form of seeds (Fig 10).

Fig 10: Proportion of households receiving support from Government / NGOs



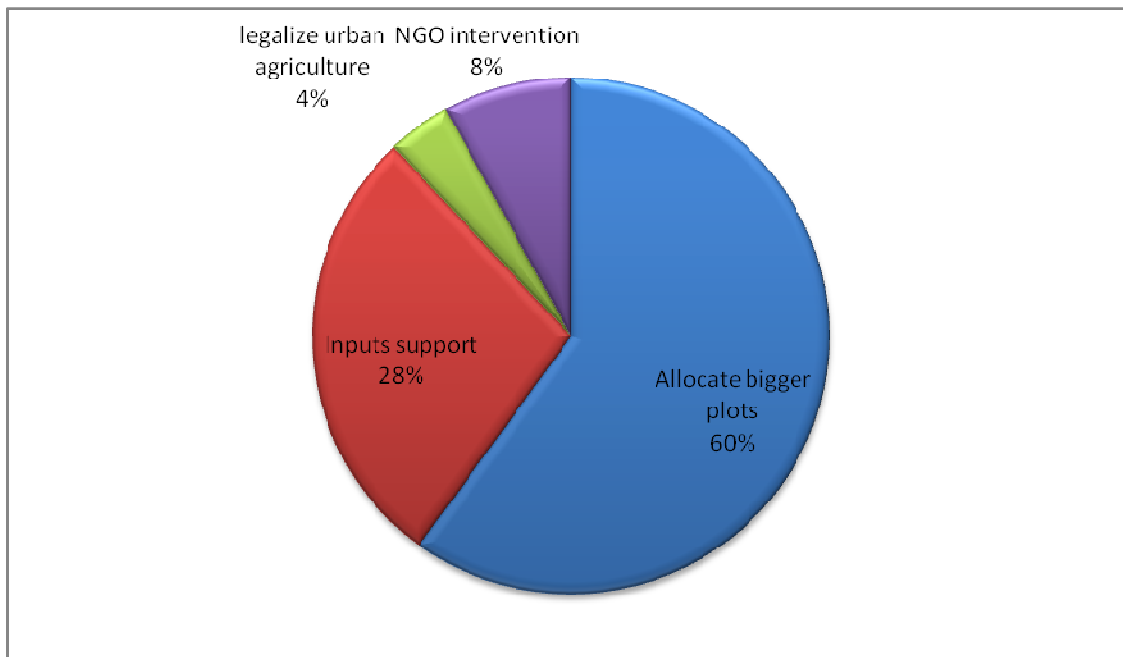
Source: Primary data

***4.5. Research objective 4: To suggest possible ways of making urban agriculture more helpful and sustainable to the urban farmers in Mt Darwin urban.***

**4.5.1. Possible ways of making urban agriculture more viable**

The majority of the sampled population constituting of 60% felt that urban agriculture can be made more viable through allocation of bigger plots since they had mentioned that shortage of land was one of the major challenge in urban agriculture. A total of 28% reported that they felt that they needed input support inform of seeds and fertilizers to make urban agriculture more viable. A total of 8% reported that they think NGO support in form of knowledge skills and inputs could make urban agriculture more viable. The remaining 4% reported that legalization of urban agriculture could result in it being more helpful (Fig 9). The intervention of NGOs in other countries were noted as way of the ways to support urban agriculture, (International Development Research Centre, 2010).

Fig 11: Possible ways of making urban agriculture more viable



Source: Primary data

#### 4.6. Information from key informants

Key informants were interviewed on whether they perceive urban agriculture as a helpful livelihood activity to attain with food security. They all agreed that urban agriculture can bring positive results in improving food security. Koc et al., (1999) also noted the same by reporting that urban agriculture advocates often praise urban agriculture for its positive effect on food security. They emphasize its role in ensuring food availability at all times; that all people have means of access to food that it is nutritionally adequate in terms of quantity, quality and variety; and that it is acceptable within a given culture.

The key informants' responses reported that they are positive about the contributions of urban agriculture in attaining food security. However, the key informants cited that farmers in urban areas had very limited coping strategies unlike rural farmers as noted by the International Development Research Centre (2010) and Kutiwa et al (2010). They all agreed that urban agriculture is a simple method of ensuring food security in Mt Darwin urban.

The key informants also agreed that urban agriculture could be made more effective and helpful through proper allocation of land for cultivating crops. The key informants said that they felt that

the Pfura Rural District Council had done nothing in support of urban agriculture since they recognize it as illegal. The key informants reported that Pfura Rural District Council had no policies concerning urban agriculture. They all suggested the setting aside of land which could be used for urban agriculture.

The key informants also expressed that the government of Zimbabwe was supposed to assist all councils around the country to develop policies to support cultivation of open land, come up with legislation which promoted urban farming and further monitor the usage of land in order to address issues associated with environmental problems.

#### **4.7. Summary**

The chapter looked at the data presentation and analysis. Results from this chapter show that urban agriculture has become a vital livelihood which is not only improving food security but also acting as a supplemental source of income for households in Mt Darwin urban. A total of 88% reported that urban agriculture is an important livelihood activity although the farmers are facing major challenges of shortages of land and lack of farming inputs like seeds and fertilizers to make urban agriculture more effective. The chapter also helped the researcher to come up with conclusions and recommendations which is what the 5th and final chapter looks at.

## **CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS**

### **5.1. Introduction**

This chapter points out the major findings linked to the objectives that were spelt out. It proposes recommendations to central government, local authorities and potential stakeholders like NGOs and the private sector.

### **5.2. Conclusions**

The aim of the research was to identify the contributions of urban agriculture as a livelihood activity in improving food security amongst urban farming households in Mt Darwin urban. The objectives of the research included to identify the contributions being made by urban agriculture in improving the food security of Mt Darwin urban farmers, to identify the extent of urban agriculture and its level of contribution to household food security in Mt Darwin, to identify common challenges inhibiting urban agriculture as a viable supplemental source of food for Mt Darwin urban farmers and to suggest possible ways of making urban agriculture more helpful and sustainable to the urban farmers in Mt Darwin urban.

The livelihood framework as mentioned by Adato and Dick (2002) assist in the realization of organizations which are influential to urban agriculture. These organizations include the Government and NGOs who can offer support to urban agriculture through agricultural inputs. The government can intervene through formulation of clear policies which are in favour of urban agriculture. The framework also assists in the policy and legislation formulations revealing that for urban agriculture to be successful, there is need for good policies and legislations in support of urban agriculture.

The research established that most people in Mt Darwin urban are engaging into urban agriculture because of the need to improve food access for their families and improve the nutritional levels for their households. The research also noted that some Mt Darwin urban farmers are benefiting from urban agriculture through selling their produce to get cash for buying other food stuffs, paying school fees and paying medical bills.

However, there are still a number of challenges associated with urban agriculture in Mt Darwin which threatens its viability and effectiveness as a livelihood strategy. For instance respondents

listed shortage of land, lack of inputs as some of the key challenges being experienced by households engaged in urban farming.

As an informal sector activity, urban agriculture can be hailed for improving the well-being of the poor households since produce from the farm plots and fowl runs can essentially cover a considerable share of the total household consumption.

### **5.3. Recommendations**

- ✓ The key informants in the research indicated that there is currently no clear legislation to support urban agriculture at both central and local government. In fact, The Zimbabwe Urban Councils Act does not provide clear legislations on urban farming. The government should therefore come up with a clear policy on urban farming considering the activity is continually expanding.
- ✓ The majority of the households studied indicated that they have been engaged in urban agriculture for a long time (more than 10 years) and yet did not have official ownership to the pieces of land on which they grew crops. They just made a first claim on a piece of land by tilling it first. Only 8% of the respondents confirmed that they were allocated their pieces of land by the City council.
- ✓ The Zimbabwean population is becoming more and more urban and food insecurity has become a major challenge to which an immediate solution must be found. The government and the councils around Zimbabwe should thus support urban agriculture through an orderly land allocation.
- ✓ The other challenge as highlighted by both respondents and key informants was shortage of input for urban agriculture. For instance 88% of the respondents indicated that they did not get any support in the form of input from government or any other organization. In view of that, NGOs and organization like UN Food and Agricultural Organisation should support urban farmers with the provision of agricultural inputs like seeds, fertilizer etc.
- ✓ It is recommended that the City of Harare and the government should come up with a policy framework which will articulate issues of land use plan for open space cultivation since there are no clearly defined regulatory mechanisms to fully support urban farming. The policy framework should also fully support urban cultivation by allocating land to people in order for them to embark on urban farming.

**APPENDICES**

**QUESTIONNAIRE**

**BINDURA UNIVERSITY OF SCIENCE EDUCATION**

Questionnaire on the study of the assessment of the effectiveness of urban agriculture as a strategy for improving food security in Mt Darwin Urban

**Instructions**

Information collected through this questionnaire is strictly for academic purposes and therefore the responses to be obtained shall be treated as confidential material.

- a) Please respond to all questions as objectively as possible. Questions require you to place a tick against what you consider to be the correct answer.
- b) Do not write your name or append your signature anywhere on this questionnaire.

**Questionnaire**

Date of interview:

**Interview Questions**

**1. Demographic information**

- (a) Gender of respondent: M [ ] F [ ]
- (b) Age of respondent:
- (c) Gender of household head: M [ ] F [ ]
- (d) Marital status: married [ ] divorced [ ] separated [ ] widowed [ ] single [ ]
- (e) What is your current occupation? .....
- (f) What is the size of your household?
- (g) For how long have you been involved in urban agriculture? [ ] years

**2. Household food requirements**

- (a) What is your household's monthly total cereals (maize/sorghum/rapoko) requirements (in kgs)?

.....  
.....

(b) What other types of food would your household require for a balanced diet and how much do you spend on each of them per month?

|                       | Monthly Quantity | Amount spent/month |
|-----------------------|------------------|--------------------|
| (i) Vegetables        |                  |                    |
| (ii) Meat             |                  |                    |
| (iii) Cooking oil     |                  |                    |
| (iv) Milk             |                  |                    |
| (vi) Sweet potatoes   |                  |                    |
| (vii) Bread           |                  |                    |
| (viii) Beans          |                  |                    |
| (ix) Others (specify) |                  |                    |

C. For how long does the food produced from urban agriculture serve the family? [     ] months

D. What is the main reason for your involvement in urban agriculture?: [     ] Culture [     ] Improve food access [     ] improve food supply nutrition [     ] supplement income [     ] hobby [     ]

Other (specify)

.....

### 3. Cultivation of crops

(a) What type of food crops does your household produce? Use table below.

| <b>CROP</b>            | <b>YES</b> | <b>NO</b> | <b>No of years the household has been producing the crop</b> | <b>Amount of crop produced per year(kgs)</b> |
|------------------------|------------|-----------|--------------------------------------------------------------|----------------------------------------------|
| <b>Maize</b>           |            |           |                                                              |                                              |
| <b>Beans</b>           |            |           |                                                              |                                              |
| <b>Groundnuts</b>      |            |           |                                                              |                                              |
| <b>Rapoko/millet</b>   |            |           |                                                              |                                              |
| <b>Others(specify)</b> |            |           |                                                              |                                              |

### 4. Cultivated land

(a) How did you acquire the piece of land on which you carry out crop production?



- (i) I was the first one to till it [  ]
- (ii) I inherited it from a relative/friend [  ]
- (iii) I bought it [  ]
- (iv) Force [  ]
- (v) Others (specify) .....

(b) How long have you been practicing crop production on your piece of land?  
 .....

(c). (i) Have you ever cultivated a piece of land different from your current one elsewhere?  
 Yes [  ] No [  ].

**5. Motivation to engage in or practice crop production**

(a).What influences or motivates you to engage in or practice urban crop cultivation?  
 .....  
 .....  
 .....  
 .....

(b) Has your goal to engage in crop production been met so far as per your expectations?  
 Yes [  ] No [  ]

(c) If yes, can you elaborate on the benefit?  
 .....  
 .....

**6. Use of produced food**

a) Has your involvement in urban agriculture contributed to poverty alleviation in your household? Yes [  ] No [  ]

(a) (i) From the food you produce, do you use all of it for household consumption? Yes [  ]  
 No [  ]

(ii) If no, what do you use the rest of the food you produce for? Choose from the list below.

- Give it to relatives and friends [  ]
- I sell it [  ]
- Others (Specify) .....

(b) If you sell some of the food produced how do you spend the money?

- Purchasing other food stuffs [ ]
- Pay school fees for the children [ ]
- Pay for medical services [ ]
- Others (specify) .....

(c) If the money gained is not used for the above purposes, what is it used for?

---

---

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**7. Contribution to household food security**

(a). By what percentage do you think urban crop production contributes to your household's food security?

(b). If less than 100%, how do you supplement?

- (i). Remittances [ ]
- (ii). Gifts [ ]
- (iii). Causal labour [ ]
- (iv). Petty trade [ ]
- (v). Formal employment [ ]
- (vi). others (specify) .....

**9. When would you consider that your household is food secure?**

- (a) When it has 3 meals a day [ ]
- (b) When it has 2 meals a day [ ]
- (c) When it has 1 meal a day [ ]

*(Tick the appropriate)*

10. Have you received any form of assistance from the government or non-governmental organizations or private sector to enhance crop production? Yes [ ] No [ ]

(a) If yes what kind of support was it and from which NGO/government ministry or department/ company? And in your opinion how viable was it?

.....

.....

11. What are the challenges/main constraints that your household is facing in carrying out urban crop production?

(a) Lack of Inputs [ ]

(b) Shortage of land [ ]

(c) Poor security for produce [ ]

(d) Lack of agricultural tools [ ]

(e) Others specify .....

10. Do you consider urban agriculture a worthwhile activity in addressing household food security? Yes [ ] No [ ]

(a) If yes, in what way? .....

(b) If not why does your household continue to engage in the activity? .....

12. Suppose the Zimbabwean economy was stable, would you still consider urban agriculture a helpful activity in addressing household food security? Yes [ ] No [ ]

13. What do you think needs to be done to make urban agriculture more helpful?

Allocate bigger plots [ ] Inputs support [ ] Legalise urban agriculture [ ]

NGO intervention [ ]

**KEY INFORMANTS INTERVIEW GUIDE**

Position of key informant .....

Department of key informant .....

1. Do you think urban agriculture is a viable informal strategy for poverty alleviation for those who practice it? Yes [ ] No [ ]

b) If yes, in what way

.....

c) If no, why do you think people engage in it?

.....

d) If urban agriculture is a viable option of poverty alleviation at household level, in what way should it be promoted?

i) Through a proper allocation of land. [ ]

ii) Through farmer support schemes like provision of inputs [ ]

i) By introducing credit schemes for farmers [ ]

ii) Others (specify) .....

2a) In your perspective do you think Pfura Rural District Council has done enough to promote the urban agriculture sector in the Mt Darwin urban? Yes [ ] No [ ]

b) If yes, in what way

.....

c) If not, what need to be done

.....

3a) To the best of your knowledge does Pfura Rural District Council have a policy on urban agriculture. Yes [ ] No [ ] not sure [ ]

b) If yes what are the main provisions of the policy.

.....

4) What are the major challenges being faced by those who engage in urban agriculture.

- i) Lack of land [ ]
- ii) Lack of inputs [ ]
- iii) Lack of legislation to support urban agriculture [ ]
- iv) Others (specify) .....

b) How can these challenges be resolved?

.....  
.....

6) What advice would you provide to the Pfura Rural District Council and the government to make urban agriculture more viable?.....

.....  
.....

## REFERENCES

[africanarguments.org/2012/07/10/conflicts-over-urban-agriculture-in-harare-zimbabwe/](http://africanarguments.org/2012/07/10/conflicts-over-urban-agriculture-in-harare-zimbabwe/)

Retrieved 5 April 2014.

Adato, M. and Dick, R. M. (2002) Assessing the impact of agricultural research on poverty using the sustainable livelihoods framework. Washington. International Food Policy Research Institute.

Armar-Kleemesu, M. (2000) Urban agriculture and food security, nutrition and health. Association of Rhodesia.

Bailkey, M and Nasr, J (2000) From Brownfields to Greenfields: Producing Food in North American cities. Community food security news. Fall 1999/winter.

Brazier, A (2010) Conflicts over urban agriculture in Harare, Bulawayo and Gweru Farmers (Zimbabwe)”, City Farmer, Canada.

Bulawayo and Gweru Farmers (Zimbabwe)”, City Farmer, Canada.

Buttler, L and Moronek D.M (2002) Urban and Agriculture Communities: Opportunities for Common Ground: Council for Agricultural Science and Technology. Retrieved 20 May 2013.

Cities Feeding People (CFP) [http://reseau.crdi.ca/fr/ev-8300-201-1-DO\\_TOPIC.html](http://reseau.crdi.ca/fr/ev-8300-201-1-DO_TOPIC.html); Accessed on 20 October 2014.

Crush J, Frayne B, Grant M (2006) Linking Migration, HIV/AIDS and Urban Food Security in Southern and Eastern Africa. From <<http://www.ifpri.org/renewal/pdf/UrbanRural.pdf>> (Retrieved 25 September, 2013).

Davies, D. H (1979) An urbanization strategy for Zimbabwe Rhodesia. Proceedings

ENDA-Zimbabwe, 1984. Urban Agriculture in Harare. Enda Zimbabwe, Harare.

Famine Early Warning Systems Network (FEWS NET) 2009 Zimbabwe Food Security Outlook: October 2007-March 2008. Harare: FEWS NET Zimbabwe, P. 2.

FAO (1999) “Issues in urban agriculture” FAO Spotlight Magazine, January.

FAO (2002) Food security and trade: An overview, in Trade and Food security: [http://www.idrc.ca/en/ev-135131-201-1-DO\\_TOPIC.html](http://www.idrc.ca/en/ev-135131-201-1-DO_TOPIC.html).

FAO (2003) The state of food insecurity in the world. Monitoring progress towards the World February 28, 2014 from the World Wide Web: <http://www.ruaf.org/node/54> February 2015.

Food and Agricultural Organisation of the United Nations (FAO) (2008) FAO's Initiative on Soaring Food Prices Guide for Immediate Country Level Action. Rome: FAO, P.5 Food Summit and Millennium Development Goals, FAO, Rome, Italy from <http://www.idrc.ca/uploads/user-S/10530054240E1.pdf> 2010 Greater Harare, Zimbabwe. African Urban Quarterly 11 (2 & 3): 210-216.

Gumbo, J. D and Ndiripo T.W. (1996) Open space cultivation in Zimbabwe: A case study of Greater Harare, Zimbabwe. African Urban Quarterly 11 (2 & 3): 210-216.  
<http://www2.gtz.de/Dokumente/oe44/ecosan/nl/en-allotment-gardens-cagayan-de-oro-2005.pdf>. Retrieved 28 February 2015

Hungwe, C. (1994) “Urban Agriculture as a survival strategy: an analysis of the activities of International Research Development Centre (2010) Urban Agriculture. Accessed 15 May 2014

Kutiwa S, Boon E and Devuyt D (2010) Urban Agriculture in Low Income Households of Harare: An Adaptive Response to Economic Crisis, Harare, Zimbabwe.

Marongwe N (2003) The Fast Track Resettlement and Urban Development Nexus: A case of Harare. Paper presented at the symposium on Delivery Land and Securing Rural Livelihoods: Post Independence Land Reform and Resettlement in Zimbabwe. Harare, 26-28 March, 2003.

Mazambani, D. (1982) Aspects of Peri-Urban Cultivation and Deforestation. Unpublished M Phil.

Mitlin D. (2005) Chronic poverty in urban areas. Environment and urbanization, 17: 3-10.

Mkwambisi, D. D. (2010) Urban Agriculture and Food Security in Lilongwe, Accessed from on 16 July 2014.

Mougeot L.J. (1998) Urban Agriculture: Definition, Presence, Potential and Risks. In :Bakker et al.

Mushayavanhu D. andMushamba S. (2003) Policy Brief on Legislative and Policy Issues on Urban Agriculture in Zimbabwe.Harare: Municipal DevelopmentPartnership Eastern and Southern Africa (MDP)and the Resource Centre on Urban Agriculture andForestry (RUAF), P. 2.

Nugent, R. (1999b) “Is urban agriculture sustainable in hartford, connecticut?” In:Furuseh O & Lapping M. (eds), Contested countryside: the rural urban fringe in North America (London: Ashgate).

Nugent, R. (2000) ‘The impact of urban agriculture on the household and local economies’, Paper University of Witwatersrand, Johannesburg.

Parliament Research Department, (2011)Mt. Darwin South Constituency Profile: Harare, Zimbabwe.

Phiri, C. (2008) “Urban Agriculture as a strategy for poverty alleviation: the case of Buffalo City,” pp. 10-25. Conceptualizing the Linkages Expert Consultation, Rome, 11–12 July 2002, FAO, Rome, Italy.

Rogerson C. M, (2001) Urban Agriculture: defining the southern African policy debate. Research Settlements, Nairobi, Kenya.

Smith DW (1998) Urban food systems and the poor in developing countries.The Institute of British Geographers. *Trans Inst British Geographers*, 23: 207-219 Harare Thesis submitted to the Geography Department, University of Zimbabwe.

Tshuma D.T. and Mashoko D. (2010) Urban farming, its relevance, sustainability and policy implications: A case study of Gweru and Masvingo urban areas:*Journal of Sustainable Development in Africa* (Volume 12, No.3, 2010).



UNDP. (1974) Urban agriculture and peri-urban agriculture: A briefing guide for successful implementation of Urban agriculture in countries of transition. New York. UNDP.

UN-HABITAT (2006) The State of the World's Cities: Urbanization: A Turning Point in History. Nairobi: United Nations Centre for Human Settlements, P. 1.

United Nations (1996) Urban Agriculture: Food, Jobs and sustainable Cities. UNDP, London.

Viljoen A, Bokn K and Howe J (2005) Continuous productive urban landscapes: Designing urban agriculture for sustainable cities, Oxford: Architectural Press.

[www.fao.org/DOCREP/005/Y4671E/y4671e05.htm](http://www.fao.org/DOCREP/005/Y4671E/y4671e05.htm). (accessed 24 January 2010).

[www.foodfirst.org/en/node/137.117](http://www.foodfirst.org/en/node/137.117). Retrieved 6 May 2014.

Yoshikuni, L (2007) “Air pollution in cities” Atmospheric Environment 33: 4029-4037.

Zimbabwe National Vulnerability Assessment Committee (ZIMVAC) (2004) Zimbabwe Urban Areas: Food Security and Vulnerability Assessment-September 2003. Urban Report 1. Harare: SADC FANR, ZIMVAC.