URBAN AND PERI-URBAN AGRICULTURE AS A POVERTY ALLEVIATION STRATEGY AMONG LOW INCOME HOUSEHOLDS: THE CASE OF ORANGE FARM, SOUTH JOHANNESBURG

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DECLARATION

Student Number 3581-662-7

I declare that URBAN AND PERI-URBAN AGRICULTURE AS A POVERTY ALLEVIATION STRATEGY AMONG LOW INCOME HOUSEHOLDS: THE CASE OF ORANGE FARM, SOUTH JOHANNESBURG is my own work and that all the sources that have been used or quoted from have been acknowledged by means of complete references.

Signature …….
(Mr. C.L. Onyango)

Date ……..

DEDICATION

This dissertation is dedicated to my son

Michael Cyril Wandanje Onyango,

and my late father

Michael Obinya Wandanje Onyango

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Larr Onyango

Ennerdale, January 2010.

ABSTRACT

Urban and peri-urban agriculture is a strategy that can be adapted by low income households in Orange Farm to meet their food and nutritional requirements. The practice is a basis upon which poor families can enhance their incomes by producing part of their food needs, hence saving money for use on other livelihood obligations. This dissertation discusses the importance of urban and peri-urban agriculture as a method easily available to low income families residing in informal settlements to access food and incomes. Urban agriculture is examined in the context of poverty alleviation. A descriptive and quantitative assessment of the salient variables of the practice in the area is attempted in order to give an insight of the potential role the sector can play in eliminating poverty, enhancing incomes and creating employment. The study shows that participation in urban farming can impact significantly on poverty conditions and improve livelihoods.

KEY TERMS

Urban agriculture, urban farming, urban food systems, Food security, food coping strategies, poverty, poverty alleviation, sustainable livelihoods, informal sector, income generation, empowerment, employment, employment creation, unemployment, South Africa, Orange Farm

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ACRONYMS

ANC: African National Congress

CFP: Cities Feeding People

FCS: Food Coping Strategies

GADS: Gauteng Agricultural Development Strategy

GJMC: Greater Johannesburg Metropolitan Council

GPG: Gauteng Provincial Government

HIV/AIDS: Human Immuno-Deficiency Virus/Acquired Immune Deficiency Syndrome

HSRC: Human Sciences Research Council

IDP: Integrated Development Plan

IFPRI: International Food Policy Research Institute

RDP: Reconstruction and Development Program

StatsSA: Statistics South Africa

TPA: Trans Vaal Provincial Administration

UNDP: United Nations Development Program

UPA: Urban and Peri-Urban Agriculture

WCED: World Commission on Environment and Development

WSSD: World Summit on Sustainable Development

GHG: Green House Gases

CHAPTER I

PROBLEM, AIMS AND DESIGN OF THE RESEARCH

1.1. POVERTY AND FOOD – A BROAD OVERVIEW

Poverty and food are two issues that are intrinsically related. Poor households will invariably be food insecure. Access to proper and decent food resources, both in sufficient quantities and of good dietary quality is imperative if a household is to enjoy a good quality of life.

For world leaders, development scientists, policy makers and others involved in improving human lives, few problems have proved to be as intractable and elusive as that of poverty. Poverty alleviation (or at least reduction) is currently at the center stage of most government plans, international development agencies' programs and policy pronouncements. Fox and Liebenthal (2006:1) observe that reducing poverty in Africa appears to be an elusive, even quixotic goal. They add that the rhetoric of improving the lives of the people has been on the lips of all African leaders since independence. It has become a 'mantra' for development practitioners and all involved in economic and social welfare development planning, more so in the developing countries. The problem has been further exacerbated by the global financial crisis of 2008, and resultant recession, leading to widespread levels of unemployment all over the world. According to Grain (2009:2), this financial crisis will rumble on for a long time, taking people's jobs, homes and savings with it.

Mukandala, Fox and Liebenthal (2006) have posed the question why, after four decades and billions of dollars in foreign aid, has Africa failed to develop? They also question why Africa has failed to effectively tackle the problem of poverty despite the immense natural resources and agricultural potential. Maxwell and Zziwa (1992:1) also ask: in the wake of repeated failures with development projects, what can be learned from people's own initiatives over the last few decades?

Even after all this attention, the share of developing countries populations living below the international poverty line, colloquially known as $1 per day still remains unacceptably high (Mbuli, 2008:93). Millennium development goal 1 calls for a 50 per cent reduction between 1990 and 2015 in the proportion of people who suffer from hunger and whose income is less than US $ 1 a day (Foeken, 2008:224). This goal is proving to be increasingly elusive to achieve. Most poverty alleviation strategies as currently being pursued seem to be failing to meet their intended goals. Barret, Carter and Little (2008:8) observe that the challenge of poverty reduction is both most vexing and most urgent with respect to those who appear trapped indefinitely in a deplorable standard of living.

According to Mougeot (2005:1) governments across the world have entered the 21st century with a realization that cities should be given much more attention in development strategies than had been the case previously. In 2000, 2001 and 2002 respectively, the United Nations Millennium Declaration, the Declaration on Cities and other Human Settlements in the New Millennium, and Outcomes of the World Summit on Sustainable

Development reinforced the international communities' commitment to sustainable urban development and poverty reduction (Lindahl, 2005:16).

In South Africa, poverty reduction (and alleviation) seems to be the prominent goal in almost every social expenditure program (ANC, 1994; White paper on Agriculture, 1995; White paper on Environmental Management, 1997; Discussion paper on Urban Greening, 1997; White paper on social development, 1998). The various studies that have attempted to give a crude estimate of the extent of poverty in the country have yielded results that greatly differ from each other (Kruger, Schonfeldt and Owen, 2008). Estimates have ranged from 45 to 57 per cent, depending on the poverty line that has been used.

Studies by Statistics South Africa (2000), May (1998), Woolard (2002), UNDP (2003) have given different ranges of the extent of poverty in the country. A clear consensus however arises from all these studies. This is in relation to 'who' is poor, and 'where' are they located. It emerges that poverty in South Africa has strong regional, race, age, gender, literacy, employment and locational dimensions. These studies have observed that the poor tend to live in large households (with many dependents), and in most cases have poor access to basic services.

Most studies have emphasized the point that poverty is largely a rural phenomenon (Mazur and Titilola, 1992; Killick, 1995; Serumaga-Zake and Naude, 2002; Ferranti, 2005). While this is true for most developing countries, recent population movements and socio-economic conditions in South Africa have resulted in a pro-urban shift, leading to

the mushrooming of informal settlements in urban areas and their fringes. This has led to the densification of pockets of poverty in most cities in Africa. Mougeot (2005:1) noted that 61 per cent of the population in Africa was living in slums in 2001. Tomlinson (1995) estimated that 7 million of the urban population in South Africa lived in informal settlements during 1995. The figure is expected to increase to over 12 million by 2010[1]. This has resulted in dense concentrations of poverty pockets in most urban areas of South Africa today.

May (1998) argues that poverty in South Africa has strong racial dimensions. While poverty cannot be confined to one racial group, it is evident that it is concentrated mostly among black people.

Another outstanding feature of poverty in the country is its strong gender dimensions. According to Mbuli (2008:5), in 2002 about 50.9 per cent of the poor in South Africa were females, compared to 45.9 per cent who were males. Woolard (2002) argues that a household headed by a resident male has a 28 per cent probability of being poor, whereas a household with a *dejure* female head has a 48 per cent chance of being poor. Similarly, a household with a *defacto* female head (because the nominal male head is absent) has a 53 per cent chance of being poor. The situation is worse for child headed households and those where the main bread winner is afflicted by HIV/AIDS.

Ensuring that the rapidly growing urban population has access to sufficient food, especially the poor in informal settlements, is a major challenge for the South African

[1] Quoted in Kekana, 2006

economy. Urban areas are more likely to experience persistent hunger than the intermittent hunger that can be found in rural areas. This is because urban populations depend largely on income to access food, yet prevailing employment and income conditions seem to be stagnating. Foeken (2008:226) points out that life in urban areas has become more expensive, while employment in the formal sector has dropped and real wages have not kept up with price increases or have even declined in real terms.

Viljoen (2005:xx) defines food security as giving populations both economic and physical access to a supply of food, sufficient in both quality and quantity at all times, regardless of climate and harvest, social level and income. Food security is an objective of every family and household whether in urban or rural areas. A household is food secure if it can reliably gain access to food of a sufficient quality and in quantities that allow all its members to enjoy a healthy and active life. It has been observed that even in food-secure households, individuals may still have deficient or unbalanced diets (IFPRI, 2004)

In the last two years there has been an upward spiral in food prices both globally and locally. This has been due to many factors, including global economic and financial dynamics, drought, government policies and change of cereal use like maize and sunflower to produce biofuels. The situation here in South Africa has been extremely acute, affecting the poor in terms of food availability and accessibility. The situation has been worsened by job losses and retrenchments resulting from the recession that has followed the financial crisis of 2008.

The poor in South Africa, especially those households living in informal settlements, experience differing levels of dietary variety, food intake and household hunger. Low incomes, poor food production techniques and availability, together with low spending power characterize most of these households. For them food acquisition has become an arduous and challenging task.

In 1994, the Project for Statistics on Living Standards and Development[2] estimated that 39 per cent of the South African population was vulnerable to food insecurity. Ten years later, the National Food Consumption Survey[3] found that only 25 per cent of the households in South Africa appeared to be food secure at the national level.

Households become food insecure when their livelihood systems (i.e. their capabilities, assets and activities required for a decent means of living) change or fail to adapt to the challenges and shocks of their external environment. These shocks encompass sudden price increases and unavailability of food, emanating from environmental, socio-economic and political reasons.

It is a common feature all over the world that households facing a dilemma of food do not sit back and despair. To combat shortages, most households will engage in food acquiring activities or change their eating behavior.

[2] Quoted in Kruger R. et al (2008)
[3] *ibid*

Most households in South Africa have been forced to resort to and adopt different food coping strategies (FCS). Food coping strategies can be described as the mechanisms employed by households when the means of meeting their needs are disrupted by one or a combination of factors including drought, low income and unemployment, loss of livelihood or high food prices.

Kruger, Schőnfeldt and Owen (2008:4) have identified two common FCS. These are reliance on cheaper or less preferred food (chicken feet –'*maotwana*', pork and beef bones-'*matambo*', cow, pig and goat heads –'*skop*' or '*smileys*' and their internal edible organs – '*mala-mogudu'*, diluted Soya mince soup, etc), and employment of food seeking strategies. This takes the form of relying on food aid including government food vouchers, help from friends, family and charitable institutions, reduced food portions, and urban farming for those families staying in urban areas.

Household food security encompasses three dimensions: availability, accessibility and utilization. Food availability can be described as having enough food available for consumption. This relies on food production and supply (urban agriculture falls under this ambit). It also relies on food stability (in price terms) and food access.

The perception that poverty is largely a rural phenomenon as observed in most development literature has harmed the urban poor. This has resulted in most policies aimed at poverty reduction focusing on rural areas, to the detriment of the urban poor. But increasing urbanization, migration and changing ways of living has meant that rural

poverty has shifted to urban areas and their fringes. Strategies addressing poverty thus need to focus and cope with this subtle shift of the phenomenon.

A new development paradigm of sustainable use of resources and self reliance has emerged over the past two decades. This has mainly been due to a realization that government institutions together with their programs and policies have failed to alleviate poverty in its most extreme form. Most have failed to effectively combat poverty, especially urban poverty. This new paradigm, with its emphasis on individual empowerment, self sufficiency, sound environmental management and self determination, is an example of how individuals and households can adapt to survive during times of economic hardship, and can act as a step to move away from extreme poverty and dependence. Inoguchi, Newman and Paletto (1999:2) observe that there has been a changing pattern of urban environmental management, resulting in a shift of emphasis in economic and development policies attitudes. There has been a growing movement in favour of human-centered development as a counterbalance to purely free market principles. Economic growth and development is increasingly being seen in the context of human welfare rather than abstract economic indicators.

One activity that households in urban areas have resorted to is Urban and Peri-urban Agriculture (UA). Fernandes (1998) observes that the appeal of urban agriculture lies in its simplicity and universal application. He adds that many of the urban poor in cities throughout the developing world are generally equipped with agricultural skills that can be utilized to develop unused land in their cities. Maswikaneng, Van Arbecke and

Bőhringer (2002:265) succinctly state that farming by urban dwellers has been related to declining purchasing power and urban poverty.

1.2. ANALYSIS AND STATEMENT OF THE PROBLEM

Food is a basic human need. It is important for our survival as well as growth and good health. It enables us to be able to lead decent and fulfilling lives. Kruger et al (2008:3) emphasizes that freedom from hunger is the most fundamental human right that can be attained. This right can only be enjoyed if an individual is food secured.

Although there is a broad consensus that poverty stricken South African families living in informal settlements experience difficulty in accessing food to meet their daily nutritional requirements, the food coping strategies that they employ have not been fully understood, analyzed and appreciated.

Orange Farm is an informal settlement where levels of poverty are extremely high (Beall Crankshaw and Parnell 1999, GJMC Report 2000, IDP Plan 2005/6). Most families depend on cash incomes to access food. It has been estimated that poor families in Johannesburg spend over 80 per cent of their incomes on food purchases, which may not be adequate and of full nutritional value (ETV News, 12 April 2008).

The chronic poverty, high unemployment levels and low standards of living that characterize the area results in many families being unable to meet their food

requirements. Alternative means of accessing food then become necessary. Urban agriculture as a food coping strategy is a cheap and effective means of accessing food, yet most residents in the study area are not practicing it. This study investigates why this is the case, given the fact that most residents in the area have cultural roots in rural areas where farming is the primary activity.

On a comparative basis, residents in urban areas of most African cities outside South Africa practice urban agriculture as a primary or secondary activity, a means of acquiring income, and a sure way of accessing food cheaply (Maxwell and Zziwa 1992, Waddington 2006, Anderson 2004, Kekana 2006, Mbiba 1996). For most families, money that is saved from food production by urban agriculture, and the income that is obtained from the practice, is normally used to meet other household needs and expenditure, hence easing the burden of poverty.

This study investigates the level and extent of urban and peri-urban agriculture in Orange Farm. Most families in the study area reside on their own stands to which they have legal ownership. The area is also surrounded by a lot of vacant land, most of which is owned by the Johannesburg Metropolitan Council, public utility companies and absentee landlords. There is also a lot of public space that is unutilized. Area residents hence have ample space and opportunity to grow and meet some of their food requirements.

Most households have family members who are migrants from farming communities and who have been exposed to the culture of agriculture. These members are capable of

practicing urban farming. The assumption here is that having initially originated from a rural area or having links to rural areas and farming communities where agriculture is the predominant activity, the practice of farming should be an internalized aspect in the lifestyles of such individuals. It would be expected that they would openly opt for urban agriculture as a food coping strategy and income generation. Cousins (1998:58) says that internalization (in our case internalizing the concept of farming) is a highly personal process, which is shaped by the different identities and diverse experiences that people go through. The question that arises then is why is the practice of urban agriculture not widespread in Orange Farm?

The basis of this study is that participation in urban agriculture should impact on poverty by providing employment and incomes to those who do not have formal employment. It should also release money that would have been used to purchase food for other household uses and investment. It can also be a secondary source of income for households whose members are employed or are dependent on various grants and food aid packages. This should be able to ease the poverty burden experienced by these households.

The study has a dual approach to the problem of extent and participation in urban agriculture by households in the study area. It examines:

1. The current level of participation, and the potential for improving and encouraging the practice of urban agriculture, with a focus on a more effective

form of ‘endogenous development’ of the urban agriculture sector in the area i.e. development and encouragement of participation in the sector that is based on the perceptions and expectations of the area residents, which should be self-initiated and self-driven as much as possible.

2. Development of an urban agriculture system in the area with the intention of easing poverty and improving living conditions without radical demands for financing, training and expensive farming inputs.

1.3. AIMS OF THE RESEARCH

The overall aim of the research is to examine the practice of urban agriculture in Orange Farm as a case study focusing on its impact on poverty alleviation. This is to enable us to have a greater understanding of how a local community can endogenously address the problem of poverty and inadequate food availability, and how this process can be structurally supported by external institutions so as to achieve a better standard of living for all residents of the area. Specifically, the study examines:

- Extent of participation of households in UPA, highlighting reasons for/for not participating
- The contribution of urban and peri-urban agriculture to household food demand and food security
- The impact of UPA on household poverty

- The salient features that encourage and hinder UPA in the study area
- Gender leanings in the practice of UPA
- The innovative processes and potential for improvement in the sector
- Weaknesses of urban farming systems and ways in which the sector can be improved so as to be a means of income generation, employment and upliftment of living standards for those involved in the activity.

To achieve the stated aims, the following research questions are addressed:

1. What are the factors affecting food availability and food security for poor residents of Orange Farm?
2. Is urban agriculture a purely survival and life enhancing strategy for those operating on the poverty margin?
3. What are the elements that explain the present level and extent of UPA given the prevailing socio-economic conditions of the people involved?
4. Is there a significant difference in the standard of living between those practicing UPA and those who are not?
5. How are the local residents adapting to the practice of UPA and what can be done to improve the level of participation?
6. What institutional, environmental and social bottlenecks hinder the full exploitation of UPA in the study area?

7. Which institutional and government arrangements can be made to invigorate and revitalize the practice so that a majority of poverty stricken residents can participate in it?

Based on the stated aims, the primary objective of this dissertation is to contribute towards a better understanding of the process of urban agriculture, and in the process, highlight the emergence of this sector as a new source of providing food, employment and incomes to the urban poor.

1.4. THE METHODOLOGY AND RESEARCH PROCESS FOLLOWED

1.4.1. FIELD WORK AND DATA COLLECTION

This study uses the survey technique to collect data for analysis. The choice of survey technique is based on the fact that it is a popular and ideal mode of observation in the social sciences. Babbie (2001:237) is of the opinion that surveys are suitable for descriptive, explanatory or exploratory studies. They are especially ideal for studies that have individual people as units for analysis. In the present study, both the individual and household were our units of investigation and analysis. The head of the household served as the chief respondent to whom the study questionnaire was administered to.

In recognition of the fact that the study had to collect data from a sample of the population that described the social and economic attributes of the target population, the

survey method was considered to be the ideal vehicle to use to carry out the research. The survey method has always been considered to be ideal for measuring attitudes and orientations as observed in the study.

The survey method employed in this study involved administering questionnaires to sampled respondents. Direct observation by the primary researcher in the field was also employed to collect information on innovative processes households are using as food coping mechanisms. The study also involved collecting secondary data from different sources.

Use of the survey technique appreciates the fact that surveys are useful in describing the characteristics of large populations. The survey enables a representative sample of the population to be taken. The survey is also a flexible technique. It allows many questions to be asked, enabling considerable flexibility in our analysis. The technique enabled us to develop operational definitions from our actual observations.

A questionnaire was developed and used as an instrument of data collection. Babbie (2001:237) says that questionnaires enable us to define concepts in a manner relevant to our goals, and enables us to apply the same definitions uniformly to all subjects. In our study, the questionnaire employed enabled the same questions to be applied to all respondents.

Babbie (2001), Babbie and Mouton (2006) and Baker (1994) warn that the requirements for standardization (as represented by a questionnaire) may result in a lack of adequate explanation for diverging views and attitudes that do not fit into the set context of the problem being investigated. This specifically refers to attitudes, orientations, circumstances and experience. The questionnaire used in this study had open-ended questions to take care of this problem.

Surveys have been criticized that they seldom deal with the context of social life (Babbie, 2001:240). Sometimes the researcher may fail to develop the feel of the total life situation in which the respondents are thinking the way a participant observer can. This problem was solved by the researcher residing in Orange Farm for over four months to get the feel or context of the social and physical environment of the study area.

Surveys are also deemed in many ways to be inflexible. Babbie (2001:268) says that studies involving direct observation can be modified as field conditions warrant. Surveys on the other hand typically require that an initial study design remain unchanged throughout. In the present study, this inflexibility was avoided by carrying out a pilot survey during which divergent conditions were noted and included for the final research.

It has been noted that surveys can be subject to artificiality, in that the respondent might give the interviewer the answer they want to hear. It is has also been noted that survey research is generally weak on validity but strong on reliability. In this study, the data collection process involved recruiting assistant researchers who are residents of the study

area and who are conversant with the norms, mores and values of the area community. This resulted in the respondents being comfortable and confident with the questionnaire administrators, enabling the respondents to give valid answers to the questions posed. By using a standardized questionnaire, it is hoped that this eliminated the unreliability in the observations and data collected.

In conjunction with the field survey, data was also collected from available government databases. Also utilized were the data bases of Statistics South Africa, The National Research Foundation, Gauteng Provincial Government and the Johannesburg Metropolitan council. The internet was used to gain a comparative insight between urban agriculture in South Africa and other countries in Africa and the rest of the world.

This study involved five major steps:

1. Formulation of the proposal
2. Questionnaire construction
3. Pilot survey
4. Data collection
5. Data analysis and report write up.

The questionnaire was pre-tested in a pilot survey over a two week period in January 2009. Relevant changes were then incorporated into the questionnaire. Actual field work took place from February to mid April 2009. This period was chosen because it is

midway during the growing season when summer crops have been planted. It is during this period that the practice can be best observed.

The practical research involved three people. The author of this dissertation as the primary researcher was in charge of coordination, arranging meetings and interviewing officials. One of the officials interviewed early in the study was the head of social development of region 11 of the Johannesburg metropolitan council. His insights on poverty and the role food coping strategies, like urban agriculture, can play in easing poverty were recorded.

The primary researcher met other stakeholders involved in poverty alleviation, food aid and food production in the area, interviewing them and asking critical questions while making the necessary observations. The primary researcher was also the main observer of the practice of urban agriculture as carried out in the study area. Information from these strategic interviews was recorded and later on incorporated in the final report. The respondents interviewed in this manner are acknowledged accordingly in the relevant chapters.

Participative observation enabled the researcher to gain an in-depth appreciation and understanding of the detailed process of urban agriculture in the study area. Participative observation was able to affirm and corroborate some of the information that was collected using the questionnaires.

The role of the two research assistants was to help the researcher administer the questionnaires to respondents in the field. Choice of research assistants was made on ability to effectively communicate in both English and the main languages spoken in the area, i.e. South Sotho, Xhosa, Zulu and Afrikaans. The research assistants also played an important role in translating data that was collected and recorded in the vernacular when a respondent could not communicate well in English.

1.4.2 ETHICAL ISSUES

The concept of voluntary participation and informed consent is an integral part of social science research. It is imperative that everyone participating in a research is provided with sufficient information about the research and its role so that they can make an informed decision on whether to participate or not. Participants in this study were informed prior to interviewing that the purpose of the research was purely for academic purposes and that findings from the research would be disseminated in the development field. Consent to participate was then obtained orally. Participants were also informed on use of questionnaires with no names to protect their identity. The exception was Mr. Jacob ‘Conti’ Mavimbela who wanted to tell his life story to illustrate the hardships people undergo in the study area. When asked if his details could be used he willingly accepted stating that this would sensitize people about poverty conditions in the township. Respondents whose photographs are used in the study also gave permission for use and dissemination of their images. Permission was also sought from officials interviewed on use of their details in the final report which was granted.

The researcher has lived in Orange Farm for a considerable period of time and is familiar with attitudes and nuances in the area. He was thus able to approach respondents and officials to explain the reasons and purpose of the study in a contextual manner. This enabled trust and free provision of the needed information without bias. This is an important aspect of the case study approach.

The researcher was accompanied by a female research assistant when interviewing female urban farmers. This was to enable respondents to be free and at ease for those who would not be comfortable answering questions from a male interviewer.

In two cases, children whose age was ascertained to be 17 years were interviewed. This was done only after consulting their parents by phone. The researcher later on returned to the two households to explain in detail the purpose and role of the research to the parents. Consent was then obtained on use and dissemination of the collected information. The same method was applied to the three households in which grandparents were interviewed. In all phases of the study the rights, values and needs of participants and relevant stakeholders were respected.

1.4.3. IDENTIFICATION AND CHOICE OF THE STUDY AREA

The choice of the study area and its boundaries was determined by the following criteria:

- There is on-going urban agriculture in the area. This is practiced both inside the residential stands and on public land adjacent to roads, railways and electric way leafs. It is also carried out in unutilized spaces next to schools and public amenities.
- There is a relatively high level of poverty in the area.
- The area has a diverse population of residents. They come from all over South Africa and neighboring countries.
- Logistics relating to distance and accessibility to the area were taken into account. The area can also be considered as being both urban and peri-urban and has good transport infrastructure.
- The area is similar to other low income areas in the country. Findings from this study area can be easily replicated to other areas.
- The researcher is well acquainted with the study area.

The above reasons resulted in Orange Farm being the ideal site for the study.

1.4.4. SAMPLING AND QUANTITATIVE DATA ANALYSIS

The research utilizes both quantitative and qualitative methods. Some parameters being studied could be measured quantitatively. Other parameters under study, like attitude towards the practice of urban agriculture and reasons for engaging in the practice, could not be measured in a quantitative manner. Use of qualitative methods then had to be employed. Due to the contextual, small scale emerging nature of urban agriculture in the

area, together with the social aspects involved, a mainly qualitative approach to the study was considered to be the most appropriate.

This study is guided by the precept that urban and peri-urban agriculture significantly impacts on poverty conditions of the households practicing it. The population of the study comprises all households in Orange Farm, although the study limits itself to extension 1 and 2 in the area. This is due to the constraints of finances and time. The total population of Orange Farm is too large to be studied in totality. A sample of this population had to be taken in order to obtain the precise data needed. Sometimes social research (such as the present study) is conducted in situations that do not permit the kind of probability sampling that is feasible in large scale social surveys.

Sampling as defined by Babbie (2001:176) is a process of selecting representatives from a population that can portray the overall attributes of the population being studied. Due to the nature of our research topic and the constraints mentioned previously, the study opted for a non-probability sampling technique to select respondents to be interviewed.

The study required that an equal number of households, both practicing and not practicing urban agriculture, be selected for interviewing. Use of probability sampling would have resulted in a disproportionate representation of one group as compared to another. Valid comparisons of the two groups would not have been possible and might have resulted in false findings.

Purposive or judgmental sampling was considered to be the ideal method to use in this study. This is because it is suitable for selecting a sample on the basis of knowledge of the population and purpose of the study. Based on the main researchers' knowledge of the area and objectives of the study, the aim then was to select the widest variety of respondents from the study population in order to test the broad applicability of our study questions.

Purposive sampling used in the study enabled easy identification of households involved in urban agriculture by carrying out transect walks in the extensions. Transect walks were taken in each extension. Five households practicing urban agriculture were selected on each transect, and five households not engaged in the practice were selected on the next transect. This alternating method was used until all the required households had been interviewed. A total of 200 households were interviewed. This purposive sampling enabled us to examine the deviant cases of our study e.g. cases where the head of the household had never considered practicing urban agriculture, or lack of knowledge of available vacant spaces in the study area, or lack of interest in the practice.

The main quantitative variables examined in the study are income and expenditure. Social and economic indicators of the population are also examined. Uni-variate statistical techniques are used to analyze the collected data. Uni-variate analysis involves examination of a single variable in a study in relation to other variables. This study carries out an analysis of the association among age, gender, education level, income, attitude and place of origin among others, in relation to urban and peri-urban agriculture.

Single variable analysis (uni-variate analysis) examining percentages, averages, modes and medians are used in the study. Uni-variate analysis involves the description of a case in terms of single variables – specifically the distribution of attributes that comprise it. Graphs illustrating the diverse factors impacting on urban agriculture and poverty are also used. Frequency distributions are also applied to the data and presented in table forms in order to illustrate clearly the variables being studied. This is presented in detail in chapter IV of this dissertation

1.4.5. QUALITATIVE DATA ANALYSIS

Qualitative data analysis is usually done and presented in the form of words rather than numbers, and has always been the staple method of some fields in the social sciences. Miles and Huberman (1994:1) say that they are a source of well grounded, rich and descriptive explanations of processes in identifiable local contexts.

The use of qualitative analysis on part of the data collected resulted in the preservation of chronological flow of information on the process of urban and peri-urban agriculture among the households practicing it. It also enabled the study to precisely analyze which events led to which consequences, so that valid explanations of the process could be derived.

Baker (1994), Creswell (1994) and Babbie (2001) support the use of qualitative analysis in research because they are more likely to lead to serendipitous findings and to new

integrations. The present study is indicative of this because its findings and conclusions are likely to result in integration of urban and peri-urban agriculture into the policy framework of urban development and planning.

It has been postulated that qualitative analysis has a quality of ‘undeniability’ because it describes the actual situation as it exists on the ground. Miles et al (1994) supports the use of qualitative analysis because such analyses ‘use well organized words which have a concrete, meaningful flavor that is often more convincing to a reader, another researcher, policy maker or practitioner than a page full of calculations’.

Creswell (1994), Mouton (2006) and Baker (1994) say that the use of qualitative analysis may yield quantitative data that can be reduced to numbers. This study attempts to quantify nuances of attitude and behavior towards urban and peri-urban agriculture so as to properly understand why the practice is popular or ignored among households in the study area.

The study believes that description and analysis of the collected data using qualitative methods results in valid and best explanations of aspects of social behavior that are best understood within their natural settings, as opposed to abstract findings of a purely quantitative nature. It is for this reason that the study combines both qualitative and quantitative methods of data analysis.

1.6. JUSTIFICATION OF THE STUDY

When an individual makes a decision consciously or unconsciously based on their past norms, experience and knowledge, it will affect the concept of availability of food. This may be based on moral laws, customs and habits. This results in a concerted effort on the part of an individual on whether to utilize available resources, especially land and labour, to acquire the needed food. It also leads to some foods being accepted or rejected, even in cases where these foods are readily available.

In trying to understand the underlying reasons as to why such decisions are made, this study attempts to inform stakeholders in the development arena why such decisions are taken. This should lead to an appreciation of the salient role urban and peri-urban agriculture can play in food availability and access. The present study contributes to understanding the process of urban agriculture and poverty in a holistic manner. Physical availability of food depends on what food can be obtained for consumption, and is based on the ability to either produce the food required, or the means to purchase it if they exist. It is apparent that in the study area, the prevailing poverty conditions mitigate against the ability to purchase all the food needed by a household. Urban agriculture as a means of sustainable food acquisition should be an easy option available to all households in poverty stricken urban areas. Kruger et al (2008) notes that household access to food and its availability is always based on the context of financial, physical and social aspects, followed by the proper utilization of this food. The present study places individual household decisions to access food on these factors.

The past few years have witnessed an impoverishment of urban areas all over Africa. Poverty has become increasingly urbanized due to population growth and population movements, in addition to failed policy prescriptions. This has resulted in the spawning of an immense urban labour force which cannot be absorbed into formal employment. There has also been volatility in price and supply of urban foodstuffs. Maxwell and Zziwa (1992) observe that for the first time, salary earners in paid employment are beginning to be included in the pool of the urban poor. The combination of these factors should be a concern to researchers, policy makers and development agencies.

Little effort has been made by development agencies, either government or private, at understanding or assisting urban farmers and urban livestock keepers in Africa. There is a glaring lack of an accumulated body of knowledge about the practice of urban agriculture on the continent. It is also apparent that urban agriculture, like many other informal sector initiatives, is almost entirely a local/indigenous response to a set of conditions which has failed to be entrenched in policy pronouncements and official development rhetoric.

The scarcity of accumulated knowledge in both research and the development practice community underlies the need for studies on urban and peri-urban agriculture. Even the most exhaustive and recent studies on urban agriculture in African cities (Mbiba, 1996; Kekana, 2006; Nugent, 2001; Rogerson, 1993 and 2003; Thornton and Nel, 2007; Wilcox, 1992) make a strong plea for further research on the topic.

The author's knowledge of the physical and social conditions of the study area also contributed to choice of the study topic. This was rooted in a realization that the prevailing physical and social environment of Orange Farm makes it an ideal area for households to grow their own food, greatly enhancing their ability to meet part of their food requirements.

The practice of urban and peri-urban agriculture is common in most cities of Africa. South Africa seems to be an exception. Mbiba (1992:20) argues that while the practice is common in most urban areas of the continent, the difference seems to be in magnitude, typologies and institutional responses. While most governments in Africa, South Africa included, have tended to trivialize the practice by arguing that it makes a minute contribution to the national food stock, it should be noted that it impacts significantly on the economy of low income households involved in the practice.

1.7. SCOPE AND LIMITATIONS OF THE STUDY

This research uses a case study approach. A case study can be defined as an empirical inquiry that investigates a contemporary phenomenon within its real life context. Case studies enable a researcher to gather very close first hand knowledge of the field situation. Gulati (1998:99) has observed that there are questions which can be quite sensitive, particularly on matters of poverty. Use of the case study approach enabled informants to be free with the researcher, and were thus able to give the information needed.

Eisenhardt (1989:354) states that case study research excels at bringing us an understanding of a complex issue and can extend experience or add strength to what is already known. Stake (1995:32) adds that case studies emphasize detailed contextual analysis of a limited number of events or conditions and their relationship.

The case study approach as used in this study resulted in the researcher gaining a good understanding of the respondents' situation in its totality. Gulati (1998:101) says that case studies enable a researcher to understand the reasons behind a particular decision because one learns to put themselves in the shoes of the respondent.

A major criticism of the case study approach is that it concentrates on a particular locale. Findings from case studies may sometimes not be applicable to other areas due to differing social and economic environments. Stake (1995:57) criticizes case studies stating '… the study of a small number of cases can offer no grounds for establishing reliability or generality of findings'. Although case studies have been dismissed by some scholars as being only useful in exploratory studies, they continue to be used in many disciplines exploring real life issues, situations and problems (Gulati, 1998:102). The case study approach as used in this study resulted in awareness and understanding of the different social processes that result in families resorting to urban agriculture.

There is a need to establish the extent to which UPA can be a potential, albeit partial solution to the problem of food insecurity at the household level. This cannot be comprehensively done without taking into account other socio-economic and cultural

aspects of the society being studied so as to achieve a holistic understanding of the whole problem. A study at this level would require immense resources of time and finances which are beyond the capability of this research.

Poverty is a phenomenon that covers a wide scope and is not easy to define or quantify. This is because it manifests itself in various forms and perceptions. The study has to assume that most respondents who are interviewed are poverty stricken simply because they are residing in this informal settlement.

The study has to also limit itself to the problem of food insecurity; yet urban agriculture only provides some of the needed food and not all the food requirements. Some plots are small thus residents cannot meet all their food requirements from their stands.

The study limits itself to two extensions in Orange Farm, where only a small sample is surveyed. Even though attempts were made to make the sample as representative as possible, errors may still have occurred. This may make it difficult to extrapolate findings from the study to other areas in the country with similar socio-economic conditions.

The researcher was originally born in Kenya and has average communication abilities in Sesotho, Zulu and Xhosa, which are the languages spoken by the majority of the residents in the study area. This may be a limitation in the study in that some information may be lost in the translation process as the interviews were conducted mainly in English.

1.8 LAYOUT OF THE DISSERTATION

This dissertation comprises six chapters. The first chapter gives a general overview of poverty and food so as to set a basis for the need of urban farming by poor communities. It introduces the study problem, outlining its aims and objectives. It also highlights the sampling framework, giving a brief outline of the qualitative and quantitative methods employed by the study. The justification, scope and limitations of the study are also discussed. Chapter two outlines the theoretical perspective of the study, focusing on the context in which urban and peri-urban agriculture operates. Literature review is carried out in this chapter. The interlinkages between poverty and food are discussed in detail, and ends with a discussion on participation and extent of the practice. This is to be able to set a framework for urban agriculture as a basis of poverty alleviation. Chapter three discusses the research context of Orange Farm, examining the physical, social and environmental conditions as they appertain to the practice of urban agriculture. Chapter four is a detailed analysis of the data collected on urban and peri-urban agriculture in relation to poverty in the study area. Chapter five is a continuation of data analysis but examines and discusses the factors encouraging and discouraging the practice of urban farming in the area. The final chapter is a summary of findings and conclusions and also offers recommendations arrived at during the study.

CHAPTER II

THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

2.1 INTRODUCTION

This chapter starts with a definition of urban agriculture. It forms the literature review of the study by giving a perspective of the sector in modern urban systems from a Modernist and New Marxist approach. In doing so it contextualizes the practice in Sub-Saharan Africa. The theoretical framework of the study is discussed, focusing on an ecosystem approach. It also examines the linkages between poverty and food. It finally examines reasons for and extent of participation.

2.2 NEED FOR AND DEFINITION OF URBAN AGRICULTURE

The rapid increase in populations in many regions of the world has led to increase in poverty levels and insecure food supplies. Landon-Lane (2004:8) predicts that by 2010 the world population will have reached 7.3 billion people, 90 % of whom will be living in developing countries. Maintaining viable employment and food supplies becomes imperative if the war against poverty is to be won. According to Grain (2009:2), there are currently more than one billion people permanently hungry worldwide.

Many countries, especially those of Sub-Saharan Africa, have formulated poverty reduction policies with increased emphasis on agricultural development. Most of these

strategies have invariably focused on rural areas, totally ignoring urban food production systems. Devereux and Maxwell (2001:75) observe that one side effect of the 1980's concern with urban bias was an assumption that towns were usually better off in terms of food security than their rural hinterlands. As a result, urban food security was widely ignored until the 1990's (Djurfeldt, Holmen, Jirstrom and Larson, 2005).

Kekana (2006:25) has pointed out that literature on urban agriculture has often been based on country or site specific accounts. It is apparent that a generalized theory of urban agriculture has not yet emerged. Such a theory could go a long way in entrenching the appreciation of urban agriculture as a relevant poverty alleviation strategy in urban areas.

The International Food Policy Research Institute conference of 2004 held in Kampala, Uganda came up with wide ranging recommendations about achieving sustainable food production systems by 2020 (IFPRI, 2004). One noteworthy outcome of the conference was that nowhere was urban agriculture mentioned as a means of obtaining food and nutrition security on the African continent. This was despite the theme of the conference being prioritizing actions, strengthening actors and facilitating partnerships in food systems. The lack of acknowledgement of the sector in such an international setting points to its trivialization by even international stakeholders in the global food system. As Mbiba (1995:15) hypothesizes, this could possibly be a result of the minute contribution urban agriculture makes to national food stocks vis-à-vis the traditional and accepted zones of agricultural production i.e. the rural areas (including commercial farms).

Reuther and Dewar (2005:99) identify a large number of benefits of urban agriculture that do not relate to poverty. These include the recreational potential and aesthetics of food gardens, ecological service to cities, environmental education, social empowerment such as the increased self-esteem a thriving and productive garden gives, social interaction and the strengthening of community ties. Reuther and Dewar (2005) draws attention to the way a food garden can benefit women: as a symbol of stability and an emotional refuge from fear and violence, and by giving them a stronger role in the household through having more control over household food consumption.

There are many definitions of urban agriculture. Diversity in form, function and size of urban agriculture contributes to difficulty in precisely defining it. However its place in the farming systems of urban landscapes is readily recognized. Mbiba (1995) sees urban agriculture as the production of crops and livestock on land which is administratively and legally zoned for urban uses. Farming and livestock rearing is conducted within these zones or at the periphery of urban areas i.e. land likely to be rezoned from agricultural to urban land in the peri-urban areas. Kekana (2006) maintains that urban agriculture is an informal set of activities focusing on farm production in an urban setting. The South African Council for Scientific and Industrial Research defines urban agriculture as any form and scale of agricultural activity that happens within boundaries of the urban environment. It can include horticulture, floriculture, forestry, aquaculture and livestock production (Reuther and Dewar, 2005:98). Rees (1997:1) views urban agriculture as any activity associated with growing of crops and some form of livestock rearing in or very near cities for local consumption, either by producers themselves or by others where the

food is marketed. Mougeot (2005:2) defines urban agriculture as an 'industry located within (intra-urban) or on the fringe (peri-urban) of a town, city or a metropolis, which grows and raises, processes and distributes a diversity of food and non-food products, (re-)using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area'.

Perhaps the most apt and comprehensive definition of urban agriculture is that given by Premat (2005:157), which expands on Mougeot's (2005) definition. Premat defines urban agriculture to include 'all activities located within (intra-urban) or on the periphery (peri-urban) of a settlement, city or metropolis, independently or collectively developed by people for self consumption or commercialization purposes; involving the cultivation or raising, processing and distribution of a diversity of products – be these edible or not – largely via the (re)utilization of human and material resources, products and services located in and around the urban area in question, in turn contributing considerable material and human resources to that area'.

This study defines urban agriculture as a farming system that combines physical, social and economic functions in the area of land around homes and settlements. Included in this definition is the concept of home gardens, though these will also be found in rural areas. It differs from high technological applications and sophisticated farming ventures in urban environments (e.g. chicken factory farms and large scale horticultural commercial ventures). Reuther and Dewar (2005:98) distinguish between home food

gardens and community gardens. Home gardens are dynamic, smaller in scale and more periodic or transitory compared to community gardens. They point out that community gardens usually cover a larger planting area, are run by more than one member of a household, are more established or permanent, and aim to produce profit. This study views both home food gardens and community gardens to be an integral part of the urban agriculture system. An urban agriculture practitioner in this study consists of any person cultivating crops on a plot of at least one square meter and/or keeping one or more types of livestock. One square meter as a bottom line may seem small but studies have shown that there are examples of surprising production levels from such a small plot (see for example Smit, Rattan and Bernstein, 1996; Viljoen, 2005). Peri-urban agriculture, which is part of the urban agriculture system, is defined as farming of crops or livestock in the zone between the built-up areas and municipal boundaries.

In the present study, a distinction should be made between production of edible products (such as food animals, fruit trees, vegetables, cereals, medicinal and culinary herbs) and non-edible products (such as ornamental plants, tree seedlings, pets).This disaggregation of the broad definition is particularly important because of our research theme which concentrates more on food, the traditional ambit of low income urban farming. Urban agriculture should be considered as more of a socio-economic and livelihood enhancing strategy mainly for those operating at the margin of the formal economy in urban areas.

In the urban agriculture system we observe on-plot and off plot farming. On-plot urban agriculture is practiced on the residential stand on which a family resides, while off-plot

urban agriculture is practiced on what is perceived to be 'public' land. It can be adjacent to the household or at some walking distance from the home.

Mbiba (1995:5) questions why the practice is not given prominence in urban food systems yet its contribution to household food security, nutrition and household economy is evident. The neglect of the practice in development discourse poses challenges to:

- The poverty alleviation theme in that it should be of paramount importance to urban poverty alleviation strategies
- The institutional apathy theme in that some stakeholders in the development field only consider it in a form of knee jerk reaction because it does not fit in mainstream development discourse
- The purity of agriculture theme, considering the field of agriculture to be rural or commercial and geared towards income and profit generation
- The essentialist theme which has been the rallying point of international agencies and proponents of the activity. The call by food agencies has been that all options for feeding the world's hungry have to be considered.

Mbiba (1996), Maxwell and Devereux (2001), Maxwell and Zziwa (1992), Djurfeldt (2005) all recognize the importance of the practice and its significance in urban economies. They have attempted to inform policy makers of the positive features of urban agriculture. They give accurate regional figures on the sector's productivity and role in improved food self-sufficiency. They also highlight the importance of urban

agriculture as a survival strategy of the poor. But as Mbiba (1996) cautions, no serious attempt has been made to inform policy through participation of urban farming communities in the policy making process.

Statistics on the extent the activity contributes to household and national food stocks are lacking. This is because official policy of most countries has been to trivialize the activity, resulting in its neglect (Mbiba, 1996). There is need to establish a working relationship between researchers, planners and policy makers. This can enable holistic approaches to be adapted to the issue of urban agriculture. As Tacoli (2006:262) maintains, it is imperative that there is acknowledgement and emergence of the need to modify urban environments to the practice of urban agriculture. This can result in the formulation of a new generation of urban farming systems. Recognition of these new systems of production would enable the implementation of relevant research focusing on the integration of these systems with the urban environment, improving their management and overcoming structural barriers.

Urban agriculture then arises from a multiplicity of factors. Maxwell (2005:15) observes that a plethora of reasons help spur urban agriculture: rapid urbanization, ineffective agricultural policies, crippled domestic food systems, constrained public spending and subsidies, wage cuts, soaring inflation, rising unemployment, plummeting purchasing power, and lax land use regulation or enforcement all help encourage growth of urban agriculture.

2.3 URBAN AGRICULTURE AS A LIVELIHOOD STRATEGY

Foeken (2008:225) has noted that even though the rural poor today still outnumber the urban poor in absolute terms, the latter have been increasing in number at an alarming rate, a phenomenon commonly described as the 'urbanization of poverty'. The increasing urbanization and growing poverty trends in Sub-Saharan Africa has meant that families have to consider alternative means of supplementing their diets and incomes. Landon-Lane (2004) observes that urban gardens have evolved rapidly with the increased rate of urbanization. The result is that urban agriculture as a practice is observed in almost every city of Sub-Saharan Africa. Kekana (2006:1) notes that farming in urban environments has been found to benefit poor households through direct savings on food purchases, income generation through the sale of produce, and provision of a varied range of nutritious products. Reuther and Dewar (2005:1) recognize that the greatest proportion of urban agriculture is undertaken as a survival strategy by individual households, generally in backyards to augment household real income.

Barton (2000:199) maintains that urban agriculture is not a luxury but a necessity which arises from the need for solutions to a wide range of problems. Though these problems may appear not to be linked, sustainable urban systems have need to recognize an approach that will result in nutritious food provision for its residents, while at the same time tackling them in a holistic manner.

Researchers for a long time have ignored the demeaning effects of urban poverty. This is because for a long time urban areas have been perceived as oases of employment and modernity. This has led to the potential of urban agriculture as a food source and a means of employment being overlooked. The potential of this sector has not been fully exploited. Mbuli (2008), Landon-Lane (2004), Fox and Liebenthal (2006) attributes this lack of oversight to three basic reasons:

1. Urban land-use planning strategies for the activity have not been given the due attention that they deserve
2. There has been lackluster support for the activity by planners, policy makers, politicians, researchers, and other stakeholders. But this is beginning to change due to failure of present poverty alleviation strategies
3. There has been a glaring lack of an integrated approach to solving poverty and food shortages in poverty prone regions of urban areas.

An underlying explanation as to why the sector has long been ignored has been the view that urban agriculture has no relevance to modern urban environments. Mbiba (1995:2) says that it is a misnomer to talk of urban agriculture when the definition of 'urban' is based on a non-existence of agriculture. For many countries, the official policy has deemed the activity to be illegal, on the basis that that it constitutes environmental and health risks and also violates formal town planning (Mbiba 1995:2). Foeken (2008:226) has observed that by-laws in most African cities forbid all agricultural activity within the boundaries of urban centers, as it does not fit in the western perception of what

constitutes ‘urban’ (e.g. the city-is-beautiful idea) and because it supposedly causes all kinds of environmental hazards. But the activity is seen by Reuther and Dewar (2005:1) as being one of the many diverse livelihood strategies enabling low income households to manage risk and reduce vulnerability. Grain (2009:2) notes that some governments have been open enough to invite farmers, social organizations and other stakeholders into a planning process in order to achieve some plurality of thinking. This has resulted in the appreciation of urban agriculture as a way of ensuring food security and providing employment for the urban residents.

2.3.1 MODERNIZATION THEORY, NEW MARXIST THEORY AND URBAN AGRICULTURE

The view that urban agriculture has no relevance to modern environments can be explained by the ‘Modernization’ and ‘Dependency’ theories. It can also be explained in terms of the ‘New Marxist’ theory (Sanyal, 1984, quoted in Mbiba, 2008). Modernization theory falls under the paradigm of structural-functionalism. Spybey (1992:20) posits that structural-functionalism involves a gradual process of change. This is stimulated by increasing industrialization, and accommodated by the differentiation, adaptation and integration of social institutions. Stated simply, structural functionalism involves a fundamental proposition that people in traditional societies should adopt the characteristics of western societies in order to modernize their social, political and economic institutions. Practices which appear ‘backward’ should be discarded.

Coetzee, Graaff, Hendricks and Wood (2004:27) refer to modernization as the process of transformation which takes place when a traditional or pre-modern society changes to such an extent that new forms of technological, organizational or social characteristics of 'advanced' society appear. Different sets of characteristics, especially in regard to food acquisition, can be attributed to 'traditional' rural societies on the one hand, and to 'modernized' urban societies on the other hand. Modernization becomes a society's objective, with all attempts at bringing its own level of development to be in line with the advanced and modern accomplishments of other, especially 'western' societies. The underlying belief of modernization theory is that by changing the socio-political and cultural frameworks of society, the route to economic development can be achieved (Onyemelukwe, 2005:10). Modernization can then be defined as the final state in the social, political and economic development of societies.

The modernist theory views urban agriculture as a backward, subsistence and rural habit practiced by migrants who are new to urban areas until they acclimatize to the 'urban way' of life, or become employed in the formal sector. Mbiba (2003:13) states that the modernist theory finds urban agriculture to be damaging to the environment and recommend its destruction or elimination without compromise. The activity is viewed as a temporary, unsanitary and unsightly activity which should not be practiced in urban areas at all. It is also reinforced by the idea that it creates rural landscapes within the urban environment, described by Mbiba (1995:19) as 'ruralisation' of urban areas. This view is misleading and at odds with the goals of poverty alleviation and food security. Studies by Maxwell and Zziwa (1992) in Kampala, Mbiba (1998) in Harare, and

Kekana (2006) in Soshanguve have found that the practice is not limited to poor people living in informal settlements or recent migrants to cities. All social classes, including those employed and working in the formal sector engage in the activity (Maxwell and Zziwa, 1992). What varies is the extent and purpose of participation in the activity.

Dependency theory is a counterbalance to the modernization theory and shares principles of historical materialism, which has evolved into the New Marxist theory (Spybey, 1992:24). The New Marxist theory views urban agriculture as labour adapting to its circumstances and a means to reproduce itself. This view (as argued by Mbiba, 1998) holds that urban agriculture exploits labour, therefore needing it to work twice i.e. in formal employment and at home. According to this theory, there is no need to engage in urban agriculture if the workers are adequately paid in their formal employment. The underlying notion here is that urban agriculture reduces the pressure on modern industry to pay workers what they deserve. Urban agriculture is then viewed as exploitative and backward (Kekana, 2006:14). The views by both modernists and new Marxists can be summarized in the table below.

Table 1. 1 Views on urban agriculture from a Modernist and New Marxist standpoint

ISSUE	MODERNIZATION VIEW	NEW MARXIST VIEW
The position of the city in economic and social life	City as a symbol of economic advancement to be clean, formal and organized	City as an arena of exploitative economic relations with local level playing out global capitalist forces and relations. Rather than pay labour adequately, capitalists shift the burden to labour so that they maintain themselves
Response to urban agriculture	Urban agriculture represents backwardness, a rural culture and lack of integration into systems of urban advancement	Urban agriculture is an extra means of labour to reproduce itself. It maintains the industrial capitalist status quo and increases vulnerability of labour
Verdict on urban agriculture	Reject urban agriculture and informal sector generally. Blame the poor and those participating in such activities for destroying the economy, environment and city	Reject urban agriculture and all informal sector activity that are generally exploitative of labour
Action and policy	Destroy urban agriculture. Eliminate all informal activities including squatter settlements, shebeens, pirate taxis, street hawking etc. No compromise. More recently where destruction fails, formalize them	Mobilize workers to defend their fair share of benefits from the work place. Seek greater equity in the capitalist system of economic/industrial relations. The solution for urban agriculture and other informal activities is within rather than outside formal agricultural sector

Source: Mbiba, 1998

These views rejecting urban agriculture by Modernists and New Marxists have been counter balanced by recent trends in research of the benefits of urban agriculture (Barton, 2000; Kekana, 2006; Landon-lane, 2004; Mbiba, 2003). Kekana argues that to view agriculture as a backward or exploitative activity only when it is practiced in urban settings is to limit and restrict development strategies and options, more so those targeting poor households. As demonstrated by Devereux and Maxwell (2001) and Kekana (2006), in times of economic hardship, recession or negative economic crises, many urban household in Africa have survived through engagement in informal sector activities. Urban agriculture has provided food and income to households thus improving livelihoods to many families in both informal and formal settlements.

An overlooked aspect of urban agriculture is that it empowers the urban poor by improving their livelihoods. Mbiba (1998) observes that the activity boosts the asset base of the urban poor and reduces vulnerability of women and children to urban economic collapse. As Mbuli (2008:45) notes, it is the returns to individuals and households that are generated using these assets that are the ultimate determinants of well being. Where such assets are absent or deficient, extreme poverty is the result. Urban agriculture enables mothers who are providers of food in households to have a wide range of nutritious foods which could be otherwise beyond their means if obtained from the open market.

A criticism that has been leveled on urban agriculture, especially where space is at a premium, is that on plot cultivation leaves no space for other needs such as children's

playing area, washing lines etc. The benefits that accrue from urban agriculture for poor families far outweigh the benefits of reserving space for other uses.

2.4 THEORETICAL FRAMEWORK

2.4.1 SUSTAINABLE DEVELOPMENT, POVERTY AND URBAN AGRICULTURE

This dissertation views urban agriculture as part of the sustainable development initiative and an attempt to make a positive footprint to the sustainability debate. For a long time, the term sustainable development has been used with casual abandon by all spheres of academia, policy makers, politicians and even researchers (Barton, 2000). For developing countries, this is particularly true especially in relation to plans and policies which lay claim to sustainability while promoting a continuation of established development agendas, plans and policies that belie it. Rees (1992) cautions that as sustainable development is gradually embraced by the political and development mainstream, its meaning drifts even further from the ideal of ensuring a sustainable environment toward the temptation of ensuring sustainable material growth.

The concept of sustainable development emerged from the United Nations Conference on the Human Environment, held in Stockholm in 1972. This conference focused the international community's attention on environmental concerns and provided the impetus for the ascent of these concerns to the top of the international agenda. Hens and Nath

(2005: XXV) reckon that before this, environmental concerns had almost been the exclusive reserve of environmentalists, ecologists and conservationists who were idealistic in their view of nature conservation and environmental protection.

The next milestone in the sustainability agenda was the publication of the Brundtland Commission Report, entitled *Our Common Future*, under the auspices of the World Commission on Environment and Development. Hens and Nath (2005: XXV) feel that this report was a key document in establishing the paradigm of sustainable development at the top of the international agenda. The United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992 (and aptly referred to as '*The earth Summit'*) was the next key milestone in the sustainable development agenda. It resulted in the adoption of *Agenda 21*, focusing on the environment and human welfare with a specific concentration on worldwide poverty. Inoguchi (1999:2) describes Agenda 21 as a program of action for sustainable development worldwide. It stands as a blue print for action taken globally by all stakeholders in every area of economic, social development and environmental protection. Improvement of human welfare, especially poverty alleviation, is one of the main focuses of the agenda. Agenda 21 recognizes that sustainable development means meeting human needs, recognizing each person's right to a minimum standard of living, health and well-being, including adequate access to food, clothing, shelter, medical care and necessary social services.

Most environmental problems had been exacerbating since the Rio conference (Hens and Nath, 2005). This resulted in the World Summit on Sustainable development in

Johannesburg in 2002. The purpose of this summit was to seek means and ways of invigorating Agenda 21. The concept of poverty alleviation was then firmly entrenched in Agenda 21.

The Brundtland report (WCED, 1987) came up with perhaps the most apt definition of sustainable development. It viewed sustainable development as a people centered development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Basiago (1995:118) says that sustainability is not a tangible goal. Rather it is an organizing principle governing activity at all levels of a system, a quality that characterizes social alternatives that yield vitality. To Basiago, sustainability is more of a research methodology which sets up a schema for asking important questions, but does not provide, *a priori*, an answer.

To some scholars, the term sustainable development appears to be a paradox. Barton (2006:6) observes that this definition appears to put together two irreconcilable principles – that of environmental sustainability and that of economic development. This is because most development activities are based on exploitation of natural resources, some of which are unsustainable. To Lele (1991:609) most proponents of sustainability take it to mean 'the existence of the ecological conditions necessary to support human life at a specified level of well-being through future generations' or 'ecological sustainability'. This has led to two interpretations of sustainable development: ecocentric and anthropocentric.

The ecocentric approach places global ecology first – saving the planet at all costs. Capra (1983) and Norgaad (1995) note that some of its staunchest advocates include extreme conservationists like the deep ecologists. The anthropocentric approach puts human welfare first, with consideration to their needs, aspirations and well-being. As Barton (2000:6) explains, the anthropocentric approach implies that we value the natural world not for any abstract innate virtue that it might have, but because it is critical to our life support and we can gain pleasure from it.

Poverty, both urban and rural, hence becomes an important component of the sustainable development debate. It fits into the anthropocentric fold because it is a fundamental aspect of human welfare. Poverty can only be tackled efficiently if natural resources are used judiciously and in an equitable manner to address human needs. Lele (1991:614) says that removal of poverty (which is the traditional development objective), sustainability and participation are the three fundamental goals of the sustainable development paradigm.

The Brundtland report (WCED, 1987) and Barton (2000) propose six principles of sustainable development in addressing resource use and utilization in development. These are:

1. The public trust doctrine, which places a duty on the state to hold environmental resources in trust for the benefit of the public.

2. The precautionary principle – which holds that where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
3. The principal of intergenerational equity, which requires that the needs of the present are met without compromising the ability of future generations to meet their own needs.
4. The principal of intra-generational equity, stating that all people currently alive have an equal right to benefit from the use of resources, both within and between countries.
5. The subsidiarity principle, which deems that decisions should be taken at the lowest appropriate level, either by those directly affected by it, or on their behalf, by authorities closest to them.
6. The polluter pays principle, which requires that the costs of environmental damage should be borne by those who cause them.

Several of these principles can be applied to current attempts of poverty alleviation and urban agriculture. The public trust doctrine particularly applies because many governments and local authorities have vacant land in urban areas which is currently unutilized or underutilized. This land can be rezoned for use by the urban poor to practice agriculture.

The principle of intergenerational equity equally applies to poverty and urban agriculture. Poor urban households have a right to use available idle land in close proximity to where they are staying for food production. What is essential should be steps in place to minimize negative impacts to the environment when they carry out urban agriculture.

The subsidiarity principle also applies to poverty and urban agriculture. Poor people themselves should make decisions as to which programs of action best suit them, utilizing available resources to help in solving their problems. Fox and Liebenthal (2006) emphasize that empowering the poor through community involvement is key to reducing poverty. It is now widely recognized that development needs to be based on broadly owned strategies that empower the poor. The program of action towards sustainable development, under the auspices of Local Agenda 21 gives considerable importance to the role of participation by citizens in decision making. Barton (2000:7) points out that Agenda 21 emphasizes the importance of drawing all sectors of society in engagement with the goal of sustainability. Local Agenda 21 specifically calls for participation by all citizens in the process of development. WCED (1987) argues that sustainable development can only be achieved using partnerships, with effective collaboration between public, private, voluntary and community sectors. A poverty alleviation strategy incorporating urban agriculture perfectly fits into this model.

Use of the sustainable development model as a basis of urban agriculture has several implications. Firstly, sustainable development demands that we re-think the link between localities and their context, seeing the design and management of urban areas as

reflecting its locale in terms of economic potential, ecology, landscape and natural resources. This involves adapting an ecosystem approach to locality. Barton (2000:10) says that a locality has a role in maintaining the 'social capital' of community networks based on local activity and propinquity. Urban agriculture as a poverty alleviation strategy fits perfectly into this. Secondly, citizens and community groups can be invited to be partners in the process of devising plans and programs for their locale. This is an aspect of genuine participatory development into which poverty alleviation strategies, like urban agriculture, fit perfectly. In locations like Orange Farm which have high unemployment rates, urban agriculture is likely to be proposed as an income and employment strategy.

2.4.2 THE ECOSYSTEM APPROACH TO URBAN AGRICULTURE

Hyden (1983), Okole (1980), Mukandala (1992) and Fernandes (1998) claim that urban development for most cities in Africa have been carried out in a haphazard manner, resulting in the mushrooming of pockets of poverty in the form of slum and squatter settlements. Barton (2000), Kevin (1993) and May (1998) all agree that urban development in the late 20th century has happened in a piecemeal, disaggregated process. This is despite the existence of planning systems which are designed to provide coordination.

The haphazard approach to policy making and planning has been due to varied public and private agencies being driven by their own motives to make disparate decisions. The

public sector has been concerned with planning for clean, well organized formal cities with little regard to rapidly expanding populations. Private agencies have always had the motive for profit as their driving force. As Barton (2000:87) observes, for most urban areas, housing, commerce, transport, recreation, energy and water have not only been 'planned' without adequate cross-reference, but within each of these spheres there have been divided approaches. The result has been a progressive urban disconnection, fragmentation and fission with growing social, economic, physical, ecological and health impacts. This has manifested itself in acute urban poverty whose face is lack of adequate food and shelter (Barton, 2000:87).

Lynch (1987, quoted in Barton 2000) proposes a solution to this dilemma of carefully integrated planning to be an ecosystem approach. This theory, when applied to human settlements, recognizes that urban centers are a complex system with living and non-living organizations, cyclic processes, and a complicated network of relationships. To paraphrase Rees (1992:19), the urban economy is an integral component of the biosphere. Alone, an estate, informal settlement, town or region is an ecosystem in the sense that it provides the essential local habitat for humans, creating its own micro-conditions. The problem of poverty and hunger are an integral part of this system. Part of the solution to solving this problem in the system is to include urban agriculture. The ecological approach then becomes an adequate method of describing the functioning of urban areas. This approach has both explanatory and normative powers.

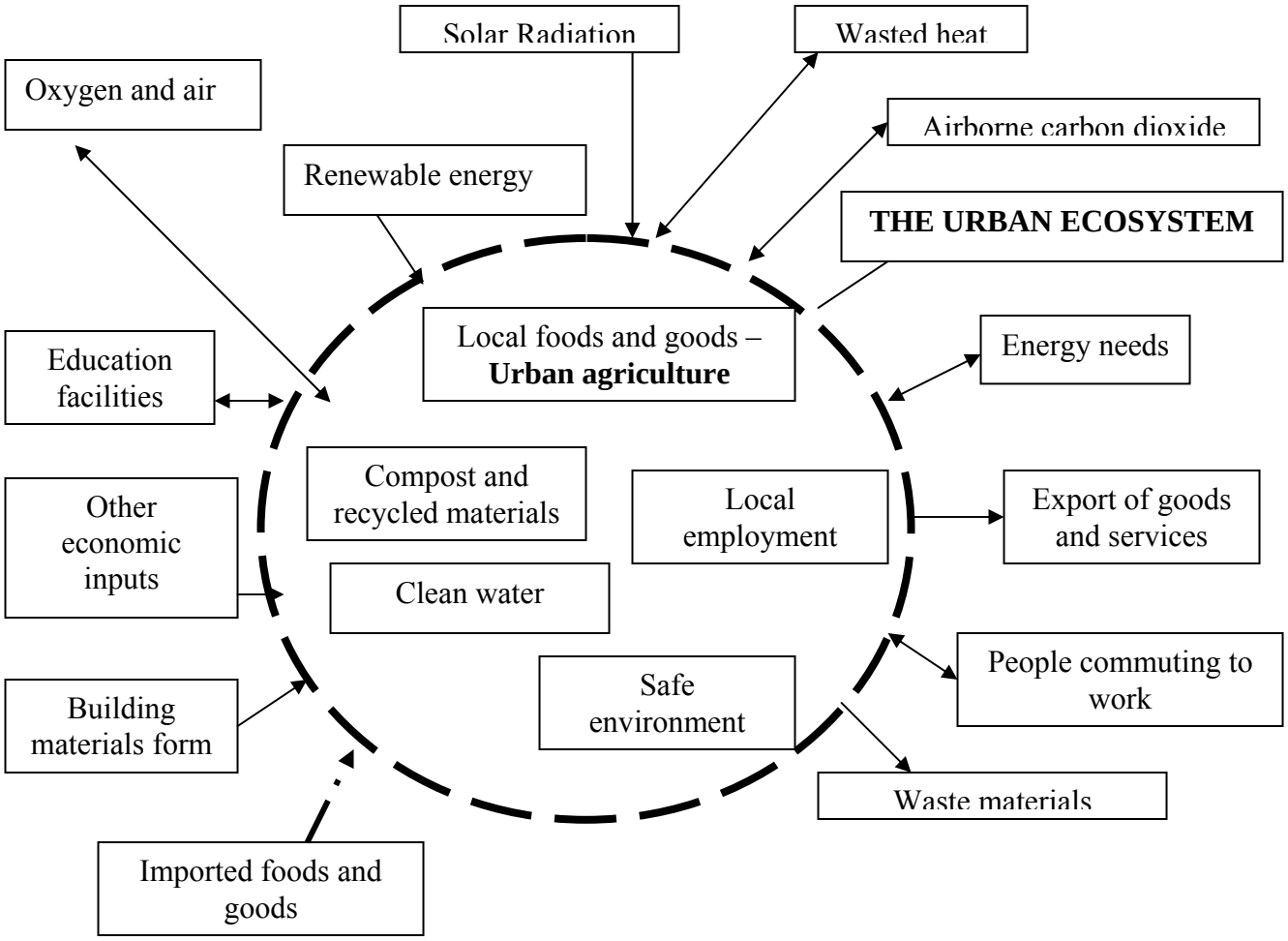
According to Inoguchi et al (1999), an ‘eco-city’ in the ecosystem approach is a city that cares for its environment and endeavors to use resources effectively so as to minimize its burden to the environment. The ecosystem approach recognizes cities as being a focus of poverty, social dislocation, homelessness, social inequality and crime.

Barton (2000) argues that the principles flowing from the ecosystem approach to urban centers have an inherent value-structure. The principles start on the premise that it is ideal to increase local self-sufficiency in order to make the system more dynamic. The system should provide as far as possible sustenance and comfort to the inhabitants. Attempts should be made to enhance the level of autonomy of the ecosystem while enhancing its life-giving qualities (Barton, 2000:88).

Mougeot (2005:3) points out that cities obtain their food from a variety of sources, domestic and foreign, rural and urban. The urban poor experience difficulties in tapping into the formal food supply system of the city, regardless of how efficient such systems may be. Instead, the urban poor resort to various informal food procurement strategies, the mix of which will vary according to context.

We should then view urban areas as systems on their own, functioning as part of a greater system, and which should strive to be as autonomous as possible from rural area systems in terms of food supply. The link between urban and rural areas mainly in the form of food supply should be minimized for the urban area to achieve some degree of autonomy.

Fig 1. Some components of an urban area as an ecosystem



Source: adapted and modified by the author from Barton, 2000

Discussions of urban areas as autonomous ecosystems tend to imply that interest of researchers is mainly on physical systems (Walter, Arkin and Crenshaw, 1992; Blower, 1993; Constanza, Norton and Benjamin 1992; Athanasiou, 1996; Rees, 1990). There is need to focus more on urban ecosystems as human habitats, and concentration on human beings as the main component of the ecosystem. See figure 2 above. Manipulation of the ecosystem through urban agriculture to meet part of the food needs of the system is a cost effective way of solving the problem of poverty and hunger.

The ecosystem approach is compatible with the anthropocentric Brundtland definition of sustainable development. Since the definition of sustainable development revolves around maintaining and enhancing the quality of human life – social, economic and environmental, while living within the carrying capacity of the base ecosystem, urban agriculture clearly fits into the urban system. If properly planned and managed, urban agriculture as a component of the ecosystem can result in the improvement of the ecosystem as well as the quality of the whole system.

An important aspect of urban agriculture that has often been overlooked is its minimal impact on the ecological footprint. According to Grain (2009b: 2), current agricultural systems involve turning food into global industrial commodities hence resulting in a tremendous waste of fossil fuel energy. This is in the form of transporting it around the world, processing it, storing, freezing it and getting it to the consumer. This contributes to the climate bill by releasing huge amounts of green house gases into the atmosphere.

Urban agriculture can play a fundamental role in the current climate crisis of rising carbon levels in the atmosphere that lead to global warming. According to Professor Rees (personal communication), the eco-footprint of any form of agriculture depends on the growing area and on the intensity of inputs. The less diesel-powered cultivation and irrigation, the less pesticide, the less manufactured fertilizer, the less processing and manufacturing of the food, the smaller will be the aggregate eco-footprint. Transportation from farm to household is another factor but not as large as the others. Low-input urban agriculture with minimal processing and travel requirements would have the smallest eco-footprint per unit food produced. This makes urban agriculture a viable form of ecologically less damaging food production.

For urban agriculture to function effectively as part of the ecosystem, some key principles, as outlined by Barton (2000) need to be observed. These include:

1. There should be an effort to increase local autonomy. Although all the needs, especially food requirements, cannot be met from the urban ecosystem, where it is technically/socially or environmentally feasible, most needs of the area residents should be met locally, reducing inputs necessary for the wider environment. Urban agriculture then becomes a cost effective way of meeting the area residents' nutritional regime. Autonomy should be for social and economic needs.
2. There should be increased choice and diversity. Households in an urban setting have differing requirements. The urban system that incorporates urban agriculture

should allow for households to devise their own food coping strategies so that different preferences can be locally satisfied.

3. Urban land, especially vacant lots that can be converted to agricultural use, should be managed in a responsible and pro-poor manner. Policies should not be prohibitive and should favour inventiveness in food production, so that a wider variety can be obtained i.e. horticulture, silviculture, aquaculture and permaculture should be encouraged. This will increase the level of autonomy and robustness of the ecosystem
4. There should be connectivity and integration of all systems in the urban ecosystem with surrounding area and national systems. In this way, inputs for urban agriculture can be obtained and surplus output from the process can be sold to surrounding areas so as to increase income for the system.
5. The precautionary principle should apply so that land use planning allows for future extension of different land uses. Options for future land use should be open. In this way, future, potentially desirable options cannot be prejudiced. This should include provision for multi-land use patterns.
6. The principle of subsidiarity should always apply, so that local residents are able to take decisions at the lowest appropriate level. This principle should apply to individuals, households and all stakeholders involved in the practice of urban agriculture

The ecosystem approach is able to integrate all facets of urban life, and can enable urban food acquisition through urban farming to become an integral part of all urban

development planning and urban way of life. This ecosystem approach can result in the achievement of a rich, complex and robust system that is partly self sufficient, linked to wider systems. Barton (2000:92) says that it will reduce the adverse features of ecological decay while providing more choice and opportunity for local people. It looks to local resources where possible, but recognizes the reality of interdependence with wider areas and communities. Rees (1992:22) succinctly summarizes that sustainable development represents an opportunity to shift the emphasis in development from qualitative to quantitative considerations. He maintains that in adopting a sound ecosystem approach to socio-economic problems, we might rediscover that development has more to do with community relationship, self-reliance and personal growth than with increased economic capacity. Urban agriculture as an alternative option available to the urban poor represents a new thinking in the development agenda.

2.4.3 CONDITIONS FOR A SUCCESSFUL URBAN AGRICULTURE STRATEGY

The prevailing paradigm in most fields of study is the concept of sustainability and preservation of natural resources, while leaving an ecological footprint that safeguards the earth. Development practitioners have to formulate strategies and policies that are in line with this paradigm. Viljoen (2005:39) maintains that good urban design in the 21st century should start by mimicking natural ecosystems. Designers should learn from the metabolism of natural, closed loop systems in which all wastes are recycled into resources for future growth.

Poverty, manifesting itself in the form of hunger and malnutrition, is an intractable problem that requires novel ways to tackle it. Urban agriculture appears to be a relevant tool of fighting this problem. If sensibly managed, it can have minimal impact on the environment; help solve hunger problems among low income families, and help in the greening of cities.

For the practice of urban agriculture to be widely accepted, it should not be viewed only as an activity for impoverished areas. Rather it should be considered as a necessity which arises from a wide range of problems, though sometimes these problems may not be viewed as being linked by policy makers and development planners. An urban development strategy that proclaims to be sustainable should recognize the need for an appropriate approach to providing food for residents in a holistic manner, encompassing all available options from both urban and rural sources. Landon-Lane (2004) believes that growing food in cities is an appropriate response to the wide challenges provided by fast urbanization. Tacoli (2006:262) asserts that formulated strategies should not endanger the environment, but should incorporate traditional urban systems of agriculture characterized by 'self-conserving' technologies which avoid pollution and ecosystem degradation.

In Hopkins' (2000) opinion, several conditions are necessary if the practice of urban agriculture in a holistic manner is to be successful. These include:

- The activity should as far as possible promote local wealth. Benefits from the activity should accrue to the local community in terms of cheaper food, paid jobs or the utilization of local skills. Food growing should be seen as being of benefit not only aesthetically or in terms of wildlife value, but should also be of financial benefit to all practicing it.
- The activity must be environmentally sustainable. The gardens should avoid use of harmful pesticides and herbicides. The practice should examine its inputs and outputs in terms of their environmental impact and sustainability.
- The practice should use or build upon existing community networks. Urban areas will normally have existing community groups and forums that can be incorporated into the system.
- It should conserve and promote diversity. It must enhance and protect biodiversity, using 'heirloom' seed and avoiding hybrids. It is easy for urban agriculture practitioners to save their own seed. It should also compost organic materials to use as fertilizer. This lessens the cost of inputs.
- The products grown should be affordable to all. If the products grown are expensive it becomes 'elitist' and fails the principal aim of urban agriculture, that of providing the community with fresh, affordable, locally grown produce.
- It should integrate waste water management, employment creation etc. into the whole system so that it functions efficiently with gains to all involved.
- It should nurture ethnic and cultural diversity. This is because urban areas generally include a wide mixture of ethnic groups. By growing food from their

own cultures, many people of ethnic origin can begin to reclaim and revalue their cultural identity.

- The system should contribute to a move to overall sustainable development within the community. It should be part of a wider program of measures dealing with social and economic issues that affect the community.

A novel way to make urban agriculture acceptable to all stakeholders involved in planning for the development of urban areas is to tackle it in the form of permaculture. Smit (1996) and Hopkins (2000) propose that if urban agriculture is undertaken in the form of permaculture, it will offer an excellent approach to the design of sustainable urban systems which will actualize the principles needed for the success of urban agriculture.

According to Flores (2006:18), Bill Mollison coined the term permaculture to describe the methodology for the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability and resilience of natural ecosystems. Permaculture (from *perma*nent agri*culture* or *perma*nent *culture*) takes nature as its model. Sheriff (2005:224) stresses that permaculture, in definition, seeks where possible to utilize resources frugally. This is important when applied to urban agriculture because it will enhance the sustainability of the practice, while at the same time making it inexpensive to practice. This is particularly important where urban agriculture is practiced by low income households. Hopkins (2000) recommends the practice as being the ideal form of urban agriculture because it observes natural systems, requiring no

inputs except rain and sun. It also creates no pollution and relies on a huge natural biodiversity. Barton (2000) supports the method because it is productive on an array of 'niches' hence allowing different activities to be carried out utilizing seasonal variations. Urban agriculture can adapt permaculture practices because the system uses a set of succinct principles and techniques to establish homesteads and communities that provide for their own needs, requiring minimal care to produce and redistribute surplus food and goods (Flores, 2006:18). The practice of permaculture emphasizes relaxation, sharing and working with nature rather than fighting against it. Self sufficiency without exploiting others is the primary goal of permaculture. All these attributes of permaculture fittingly describe urban agriculture.

How can permaculture inform urban agriculture? Sheriff (2005:224) states that it is able to do this because it is essentially an approach to designing whole systems. This can be done through the maximization of the interconnectedness of elements. It should have an ethical foundation in sustainability and a scientific basis in ecology.

Recent years have witnessed a slow but steadily growing demand for fresh organic produce free from harmful chemicals (personal observation). This heightened demand, coupled to a dire need for employment opportunities and income generation in fast growing urban areas makes urban agriculture relevant. Home and market gardens can supply a significant, though not all, of the urban areas food requirements. Permaculture has track record of producing a large amount and variety of food from a small area (Viljoen, 2005:224).

2.5 INTERLINKAGES BETWEEN POVERTY AND FOOD

Barret et al (2008:8) insist that the challenge of poverty reduction is both most vexing and most urgent with respect to those who appear trapped indefinitely in a deplorable standard of living. Poverty alleviation strategies then need to have a focus on urgency of the problem by suggesting simple workable solutions. Poverty is a relative term whose definition should always be contextual. Mbuli (2008) explains that the word 'poverty' can be considered to have a cluster of different and overlapping meanings, depending on which subject area or discourse being examined i.e. the definition is a function of the area of expertise. Lindahl (2005:88) observes that poverty has been defined by the poor themselves and by most development agencies in relation to several dimensions of human life such as hunger, poor material standards, no assets, poor health, lack of education, insecurity, lack of freedom, abuse of human rights, and no voice or power in decision making. Poverty then is multi-dimensional with a material dimension (income, assets); a physical dimension (hunger, poor health, poor education); and a psychological dimension (voice, freedom, power). Generally, the condition of poverty manifests itself over a wide spectrum – malnutrition, hunger, disease and poor health, ignorance and isolation (Onyango, 2007). This study adapts Wienecke's definition of poverty as a materialistic and /or monetary deficiency including inadequate food and nutrition (Wienecke, 2007: 79).

Conditions of poverty also change. May (1998:5) points out that poverty is not a static condition among individuals, households or communities. Rather, it is recognized that

although some individuals or households are permanently poor, others move into and out of poverty. May (1998) attributes this to be a result of life cycle changes, specific events such as loss of income or illness of the main income earner, or deterioration in external conditions e.g. the present global recession.

The result is that many households become vulnerable to poverty. Vulnerability as defined by the World Bank (2000) is the present probability or risk of being in poverty or falling into deeper poverty in the future. It can be considered as a downward risk of falling into poverty.

Poverty can be transient or chronic. May (1998:6) points out that the transiently poor (short-term) and chronically poor (long-term) are overlapping, but distinct, groups. The latter is characterized by conditions of impoverishment which are a consequence of multiple deprivations over time, such as poor health, sub-standard nutrition and inadequate access to productive resources. This is often associated with persistent, inter-generational poverty. Transient poverty on the other hand results from a one-time decline in living standards, from which a household gradually emerges. May (1998:6) states that transient poverty may show itself in fluctuations in well-being that results in frequent declines in living standards e.g. seasonal variations in food security as a result of households periodically falling into and out of poverty, sometimes quite regularly over time.

Barret et al (2008:5) have cautioned that like many concepts in development studies, the term ‘persistent poverty’ – and synonymous terms such as ‘chronic poverty’ – is a convenient simplification of a very complex set of historical, social and political relations and is represented by a variety of empirical definitions in the literature. However, the fact that poverty exists and is a pressing problem that needs urgent solutions is a matter that is not disputable.

The main sources of food in towns are markets, own production and public or private transfers. Devereux and Maxwell (2001:75) point out that in Ghana, 90 per cent of the urban households depend on the purchase of food and spend 60 – 80 per cent of their income in doing so. Current urbanization trends and patterns suggest that there is lessening transfer of food between rural areas and towns (self observation). The common option available is to purchase food where incomes allow, or self-production.

Devereux and Maxwell (2000:75) are of the view that since urban people spend such a high proportion of their income on food, urban poverty automatically translates to food insecurity. Urban residents have to buy most of their food thus income becomes a key variable in determining household food security. In cases where incomes are low or non existent (among the urban poor) due to unemployment or low wages, the ability of households to be in a position to guarantee food security is constrained.

Although income cannot be the only measure of poverty, in the current moneterised economy it becomes a salient determinant of poverty status. Mbuli (2008:45) believes

that a household's ability to access most measures of well-being (Nutrition, health, education etc) is usually a function of income.

Djurfeldt (2005) reports that most Sub Saharan African countries have witnessed growth in food imports over the last few decades. Imported food translates to food purchases at higher prices. Reduction in formal job opportunities and incomes mean that poor households are struggling to access required nutritional intakes. Grossman, Van den Berg and Ajaegbu (1996) observed that in almost all aspects of life in third world cities, there has been an intensification of capitalist activities that have thickened ties between local and global economies. As far as food systems are concerned, there has been 'industrialization' of food supplies. Grossman et al (1996) maintains that this 'industrialization' of food is coincident with the 'second food regime', in which fast foods and grain fed livestock production from the developed world has come to dominate the global food market.

There has been change in food preferences, which has resulted in subtle shifts in dietary habits among urban residents. Andrae and Beckman (1985) argue that while there has been an economic imperative behind this 'industrialization' of food, it has also been underpinned by both political and cultural consideration[4]. Dependency on non-traditional food stuff has been reinforced both by aggressive marketing by food multinational companies and erosion of indigenous cultural values.

[4] Grossman (1996) gives the example of the 1960s, when the USA deliberately exported very cheap wheat to the developing world in order to bring about increased dependency

This change in lifestyle (many view it as modernization) on the African continent has resulted in the introduction of new technologies and retail organization. The outcome has been a rapid spread of supermarket style selling, especially here in South Africa. The growth of franchised food outlets has contributed to the shift in dietary habits. Grossman et al (1996) explain that this associated shift to packaged food in standard units has raised the cost of food purchases for many at the same time as real incomes have fallen. Devereux and Maxwell (2001) confirm this by observing that even when the poor find paid employment, they earn and spend daily and so have to buy small quantities of food often. This hampers their ability to benefit from low food prices or bulk purchases.

In most developing countries, and South Africa in particular, there has been a significant shift from indigenous carbohydrates such as sorghum, millet, maize, taro, yams and cassava to imported produce. The author observes this shift to be particularly noticeable in South Africa, where consumption of 'Mabele'[5] and 'Stamp' or 'umngqusho'[6] has dropped sharply. Grossman et al (1996) points out that growth in consumption of bread in Africa has been particularly noticeable, occurring in countries which do not produce wheat or are not self sufficient in wheat production. Most of this change has taken place in urban areas.

It seems that governments and state institutions have played a key role in facilitating the penetration of 'modern', often western food values. Goodman and Redcliffe (1991) point out that state involvement has either been direct (e.g. through the operation of state food

[5] Sorghum which was the staple diet for black communities before popularization of mealie meal and bread
[6] A mixture of crushed maize and beans which is affordable and easy to prepare common among Xhosas, Zulus and Sothos

stores like in Angola) or indirect (e.g. through the introduction of new hygiene or health standards). Such legislation has been extensively employed to suppress competition from the informal food production and retailing sectors.

The informal food sector, which is often the main supplier to the urban poor, has often been accused of selling food that is relatively costly per unit, unhygienic or of poor nutritional value (Grossman et al, 1996). But as Tinker (1997) and Atkinson (1991) reveal, street food is cheaper, adds variety and value to otherwise monotonous diets and is no more unhygienic than many domestic cooking arrangements in poor households. Moreover, they are usually sold in smaller quantities which lie within the spending capacity of the poor, and are often sourced from urban food producers. This ready market can be planned so as to become a viable market for urban agriculture output.

Some groups in the poverty band are particularly vulnerable to food insecurity. Kruger (2008) states that such groups include women, the elderly and physically handicapped, child headed households and children who rely on adults for provision of basic food.

Poverty alleviation and reduction measures then need to focus on overall upliftment of the poor from the poverty cycle. As donors, government policy makers and researchers struggle to understand and design strategies to reduce persistent poverty in sub Saharan Africa, it becomes even more important that efforts to combat poverty clearly distinguish true structural mobility from simple, transitory churning around the poverty line, identifying the targetable characteristics of those who are structurally persistently poor,

and to focus attention on the key productive assets and exclusionary processes that constrain the persistently poor's access to steady improvement in well being (Barret, 2008:8). As Pimbert (2009:6) points out, localized food systems provide the foundations of people's nutrition, incomes, economies and cultures throughout the world. They start at the household level and expand to neighborhood, municipality and regions. Such food systems can constitute a whole network of local organizations, each active in different sectors of the food chain. Proper policy encouragement and management can lead to embedding the sector firmly in development discourse.

2.6 PARTICIPATION IN URBAN AGRICULTURE

Many households have been faced with a severe decline in their purchasing power. Such households have responded to this in a number of ways, with diversification of income sources undoubtedly being the most notable. Foeken (2008:226) emphasizes that urban agriculture is an important aspect of this informalisation process and has expanded considerably over the past decades. Many authors have pointed out that urban agriculture as a food coping strategy among the poor is not a new phenomenon (Mbiba, 1996; Landon-Lane, 2004; Grossman et al, 1996; Kekana, 2006; Lynch, 1981). Food gardens have always existed next to homes since pre-historic times. Landon-Lane (2004) believes that these food gardens may be the precursor to modern day agriculture, as they have always had close association with family activities. The main role of food gardens has been to provide a wide range of crop and livestock species to meet family needs.

Although urban agriculture exists within homesteads in the form of home gardens, it has also been fostered by the availability of unused open spaces. Urban residents take advantage of an available resource (land) in the urban ecosystem which would otherwise be unutilized.

Land and tenure rights are an important factor in the practice of urban agriculture. Devereux and Maxwell (2001) have argued that because access to land is essential for urban farming, urban agriculture tends to be practiced by the poorest families or most recent migrants who have no access to land. The poor will only grow food on small public spaces during the rainy season. These authors assert that due to lack of secure tenure rights, practitioners of urban agriculture make little investment on the land, and the farming is therefore of low productivity and sustainability. This argument is in contrast with Maxwell and Zziwa (1992) who pointed out that due to a shift in absolute poverty in Africa over the last few decades, a high proportion of government and formal sector workers are indulging in the activity to supplement their food and incomes.

Cleaver (1993) maintains that the poor will always adopt survival strategies in times of hardship, and urban agriculture is one such activity. Landon-Lane (2004:9) points out that the urban poor will adopt food coping strategies with the objectives of:

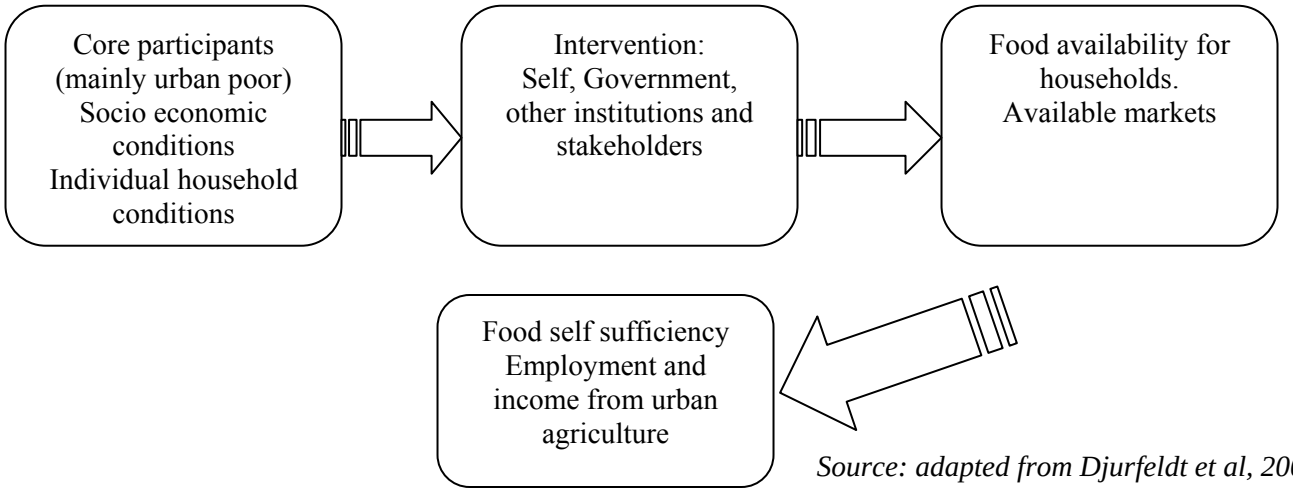
- Reducing or improving their poverty status
- Diversifying their incomes and providing self employment for members of the family who are not working

- Improving the quality of household food supply thereby improving on their nutrition
- Improving the status of women
- Reducing pressure on household income.

Urban agriculture becomes an ideal choice for the urban poor as a food coping strategy. This is because the sector is readily and easily accessible. It also requires minimal start up capital and inputs. The sector is also capable of generating small incomes rapidly (Mbiba, 1996). People participating in urban agriculture may have a background of farming from their initial area of origin (Onyango, 2007) or may gain the knowledge from organizations promoting urban agriculture as a poverty alleviation strategy. They may also gain the knowledge through diffusion or observing and learning from neighbours who are carrying out the practice.

The decision to participate in urban agriculture can be explained by a causal and explanatory model as illustrated in the following diagram.

Fig 2. A framework for participation in urban agriculture



Source: adapted from Djurfeldt et al, 2005

The decision to participate in urban agriculture and resultant benefits is a linear process. Low incomes, lack of food and unemployment results in a realization that the household can meet some of its food requirements from farming. Intervention by stakeholders can stimulate a start of the process. Resultant benefits will include availability of nutritious food, incomes and employment. This should definitely result in the easing of pressure on household incomes.

Reuther and Dewar (2005:99) caution, however, that the poorest of the poor rarely engage in urban agriculture because they often lack access to land on which to cultivate, owing to the 'gate keeping' practices of the less poor and more established people who can control existing resources and exclude poor newcomers. The poorest also have few surplus resources to invest in tools and seeds and necessary household expenditure while the crops are growing, as income from agriculture is not equally distributed throughout the year.

Most cities in Sub Saharan Africa are practicing urban agriculture. Mbiba (1995) confirms this and notes that the difference seems to be in magnitude, typologies and institutional responses. The responses are either prohibitive or accommodating and enabling. Kekana (2006:2) aptly observes that the 'battle' to meet the growing demand for food in future will mainly be situated in urban areas. Beneficiaries of the practice are mainly the urban poor, women and children. The table below illustrates the extent of urban agriculture in sub-Saharan Africa

Table 2. Extent of urban agriculture in Sub-Saharan Africa

COUNTRY	EXTENT
Burkina Faso	36% of families in Ouagadougou are engaged in horticultural cultivation and livestock breeding
Cameroon	In Yaoundé, 35% of residents are farmers
Gabon	80% of families in Libreville engage in horticulture
Kenya	67% of urban families farm on urban land and peri-urban sites. 29% of the families farm in the urban areas where they live
Mozambique	37% of household surveyed in Maputo produce food, 29% raise livestock
Tanzania	68% of families in six Tanzanian cities engage in farming, 37 % raise animals
Uganda	33% of all households within a 5 kilometer radius of the city of Kampala engage in some form of agricultural activity
Zambia	A survey of low income households in Lusaka showed that 45% grow horticultural crops or raise livestock in their backyard gardens in the periphery of the city

Source: Devereux and Maxwell (1996:76)

The table shows that urban agriculture is popular in African cities. In Kenya 29% of urban households grow food in towns, while 17% keep livestock (Mbiba, 1995). Djurfeldt (2005:141) observes that dairy production in Kenya has grown rapidly in recent decades resulting in per capita production double the levels found anywhere else on the African continent. Small holders, especially in peri urban areas have captured a steadily rising share of the market, so that today, 600 000 small farmers operating from one to three cows produce 80% of Kenya's milk. He adds that by the year 2000, nearly 70 per cent of Kenyan small holders were producing milk and it had become their fastest growing income source.

Perlman (1998:130) observed that urban agriculture in Kumasi, Ghana originated as a response to the need to make extra income. It is largely undertaken by migrants from Burkina Faso and the northern regions of the country. Through simple vegetable production on marginal strips of land, the gardens are able to provide the city with 94 per cent of its vegetables. He adds that the average daily income of urban gardeners is three times higher than the average daily wages in the formal economy.

This illustrates the economic potential of the sector. If properly planned for it can play an important role in urban food systems and income generation in South Africa.

2.7 CONCLUSION

This chapter has set the theoretical background of the study by contextualizing the study topic in ongoing development paradigms. It has examined the place of urban agriculture in the ongoing debate of environment and resource conservation, within the context of improving human welfare. The importance of urban agriculture as a livelihood strategy has been emphasized. This should result in an appreciation and embedding of the practice in current development discourse.

CHAPTER III

THE RESEARCH CONTEXT IN ORANGE FARM

3.1 INTRODUCTION

This chapter examines the background of Orange Farm in relation to urban agriculture. It looks at the social, cultural and economic conditions in which residents of Orange Farm reside so as to contextualize urban agriculture as a poverty alleviation strategy. Social and cultural conditions here refer to socially or culturally constructed and maintained axes of identity, such as those associated with gender, generation, education, occupation and family background e.g. whether one has an urban or rural background. The social, economic and cultural conditions existing in Orange Farm are examined in order to illustrate the need to enhance livelihoods. The income generating activities carried out in the area are described in order to set a basis for examining factors that can spur urban agriculture in the area. Availability of land, ownership and tenure conditions are discussed. The chapter ends by examining the knowledge and perception of residents towards farming. This is to enable us to understand if urban agriculture as a practice can be readily appreciated and accepted as a livelihood strategy by residents of Orange Farm.

3.2 BACKGROUND AND THE SOCIO-ECONOMIC ENVIRONMENT OF ORANGE FARM

Orange Farm is a sprawling informal settlement located 55 kilometers to the south of Johannesburg. The first inhabitants of Orange Farm arrived in 1988 from Wielers farm, a maize and cattle farm belonging to the Wielers brothers in the Grasmere area. They were settled in the area by the Transvaal Provincial Administration (TPA), which had expropriated the land from local farmers for township development. From then on, the relative ease with which land was available in the settlement attracted many homeless people from as far a field as Mshenguville in Soweto, Meyerton, Alexandra, Evaton and even parts of the Free State. Most of the new arrivals were farm workers who had been laid off; others had been staying in backrooms in their areas of origin and wanted a piece of land on which to settle. From an initial population of 3000 residents in 1989, the population had mushroomed to over 300,000 people in 2004 (Statssa, 2004:206). The current population is even higher due to in- migration and natural population increase.

Orange Farm is divided into 13 extensions. It also incorporates Driezek and Stretford, which are divided into 6 extensions. According to Nyanjana (2009), estimates show that the area has 11175 officially allocated stands. There are more stands which have been appropriated by recent immigrants and which are not included in the official database. Nyanjana (2009) reckons that these may be three times as many as the officially allocated ones.

The area has 4 clinics operated by the Johannesburg Metropolitan Council. There is one police office and two satellite police stations in the area. The council runs one public library which caters for all the inhabitants of the area.

A fairly modest rate of basic services like electricity, water and sanitation exists in Orange Farm. There are water taps inside most of the stands. Some of the older extensions have electricity. Paraffin and candles are the common fuels used for lighting.

Although provision of social services and construction of infrastructure to meet the basic needs of the poor is the widely accepted priority of the government, the rate of implementation appears to be too slow. This is evident in the form of frequent demonstrations for service delivery by the area residents.

According to the IDP (2005:15) Orange Farm has many distinctions- some of them dubious. It is the biggest and most populous informal settlement in the country. Most of the residents live in shacks, are unskilled and eke out a living without a visible means of subsistence except social grants. The GJMC report (2005) points out that the settlement has the highest number of gravel roads in the country. These roads are treacherous, full of potholes and are difficult to navigate even during winter. Only a few arterial roads are tarred.

Unlike other informal settlements, which consist mostly of decrepit dwellings, many of the yards in Orange Farm are properly demarcated, neat and colourful, with well

maintained front yards (personal observation). The researcher noted that although most of the inhabitants of the area stay in shacks (commonly referred to as *Mkhukhu*), they take pride in their surroundings and compete to keep their surroundings neat and tidy both inside the yards and on the streets.

Plate 1. A shack in Orange Farm Extension 2

Source: Social Development Office, Orange Farm

Even though Orange Farm is an informal settlement, it can be described as a salubrious area. It is not run down – most of the dwellings are neat and habitable. The term shack suggests a hovel. The researcher has observed that in many informal settlements of Gauteng (Tembisa, Alexandra, Ivory Park, Lehai, Swanaville, Joe Slovo) the shacks are indeed run – down ramshackle buildings. Shacks are self built by the occupants. Orange Farm shacks reflect a high level of craftsmanship. They are made of iron sheets, zinc, cardboard and other accessible forms of building materials. In most cases the roofs of the

shacks are held down by stones and other heavy objects. The floors of most shacks are plastered with sand and cement to control dust. Some have threadbare mats to help stem the cold during winter. The shacks are often partitioned by curtains, wardrobes and other household furniture for privacy. The shacks do not adequately protect the dwellers from the elements. They get extremely cold in winter and are excessively hot in summer.

The author observed that most of the shacks in Orange Farm have bare essentials such as crates which are used as chairs, a base and mattress, and few cooking and eating utensils. Two plate stoves are used for cooking by those connected to electricity (some connected illegally from street poles and distribution meters of the utility company). Those who do not have electricity in their stands use paraffin stoves. During winter braziers (known as '*imbaula*') using coal, firewood, plastic or discarded cardboard boxes are used for heating purposes both by those who have electricity and those without. It is a normal phenomenon during winter for thick smog to cover the whole of Orange Farm from the smoke of these braziers.

The Government has provided pit latrines for most stands in Orange Farm where the sewer system has not yet been laid. These are vacuumed fortnightly by municipal workers. Lack of proper houses, sewerage services, running water and electricity are some of the main issues fuelling service delivery protests in the area.

The Government has built RDP[7] houses in Extension 1. These are two roomed houses built on a four room foundation. The idea is that the owner should complete the other two rooms once they are able to afford it. Ironically, many residents have used corrugated iron sheets to extend the houses, giving them the facade of a shack. Well-off occupants have built imposing dwellings in some of the extensions.

Orange Farm, like other areas of metropolitan South Africa has been affected by the HIV/AIDS pandemic. The City Of Johannesburg Integrated Plan of 2006 notes that the pandemic of HIV/AIDS is profoundly threatening the human resource base, hence productivity and the social fabric in the south of Johannesburg, in which Orange Farm falls. The City of Johannesburg strategy, quoted in the IDP (2005) estimates the HIV prevalence in urban formal settlements to be 12.1 percent of the population, while in informal settlements it is twice as great, at 21.3 per cent. In a personal communication with Sheila Mphuting, the director of Women's Voice (a Not for Profit Organization) operating in Orange Farm, it was established that in Extension 2, over 23 percent of the population was HIV positive in 2008. The impact of the pandemic is manifold and manifests itself in terms of:

- Household income and expenditure is affected. It impacts mainly on breadwinners and adults in the household, affecting livelihoods and perpetuating poverty. According to Mbuli (2008:171) HIV/AIDS generates new poverty as people lose

[7] The term RDP comes from Reconstruction and Development Program which was launched by the ANC government in the late 1990s to provide decent houses and services to poor South Africans and as a poverty alleviation strategy.

employment and housing tenure. Households' income fall due to loss of wage earners and rising spending, particularly on medical care and funerals.

- Affects household composition and structure. There is an observable growth in child headed households in the area
- It affects the psycho-social dynamics, with a resultant growth in the number of orphans, delinquents and children dropping out of school.

The four clinics serving Orange Farm are grossly inadequate to meet the health needs of the area. Even though the whole population of Orange Farm is within 10 kilometers of a health facility, it is still expensive for residents to travel to nearby hospitals for specialist care. Sebokeng and Lenasia South Hospitals are within 20 kilometers, while Chris Hani Baragwaneth, the national referral hospital, is within 30 kilometers. Residents still struggle to access these health facilities.

Like other areas in South Africa and specifically Johannesburg, Orange Farm is greatly affected by crime. The GJMC report (2004:16) estimates that two thirds of Johannesburg residents have been victims of one form of crime or another. An informal interview, carried out by the author, with Mr. Mogae, the station commissioner of Orange Farm police station, revealed that burglary is the most common crime affecting the area. Violent crime such as robbery, muggings, and assault are also prevalent and increasing. Other serious crimes in the area include murder, attempted murder, culpable homicides, public violence, rape, assault, indecent assault, kidnappings, hijackings and drug related crimes. Drinking in public is a petty crime that is rife in the area. The GJMC report

(2004:16) noted that most crime in Johannesburg happens to men aged between 25 – 60 years. This is assumed to hold true to Orange Farm. The control and prevention of crime has become a top priority for both law enforcement agencies and residents of Orange Farm.

A number of development activities are being carried out by the Johannesburg metropolitan council in Orange Farm. These include:

- Development of essential services (roads, sewers, street lights) in extension 9 and 10. This is also being carried out in Driezek extensions 3 and 5. A total of 4537 sites have been supplied with essential services (Social Development Department, Orange Farm)
- In Orange Farm Proper, the first extension to be established, shacks have virtually been eliminated and replaced by RDP houses
- A sewer system is currently being set up by the Johannesburg Water Company that will cover the whole of Orange Farm
- City Power is rolling out street lights and installing high mast lights in most of the shack settlements. The street power poles have become sources of domestic power to some shack dwellers, though this has been done illegally and is extremely dangerous
- Some RDP houses are being constructed in extensions 4, 5, 7 and 8. The pace of rolling out these RDP houses is extremely slow.

An encouraging aspect of these developments is that they utilize local labour. This provides employment opportunities and a formal cash income to some area residents.

Due to the high unemployment rate among the youth in the area, drugs, prostitution and delinquency are prevalent. Common drugs of choice include marijuana or dagga, '*tik*' which is a form of heroine, cocaine and mandrax tablets. A result of this has been the mushrooming of gangs in most extensions. This has also led to high rates of crime, HIV/AIDS and unwanted pregnancies. Claims have been made that due to the government social welfare policy of providing child grants, a number of girls consistently fall pregnant to access bigger amounts of grants.

Recreational facilities are lacking in Orange Farm. There are only two parks, maintained by city of Johannesburg Parks, where residents can visit and relax. People have to use school playgrounds and open spaces to play football and other games in the area. The civic center building has an indoor sports arena which is useful for some sports and social functions like weddings and meetings.

3.3 EDUCATION IN ORANGE FARM

There are wide disparities in the level of education among different racial groups in Gauteng province. The GJMC report (2004: 20) reports that more whites have obtained secondary education than Africans. Among blacks more males have secondary education then females. There are also more females without formal education than males. The

report indicates further that approximately 19.2 per cent of the population have no education at all and are illiterate. These figures are indicative of the situation in Orange Farm as shown by the table below, derived from the 2001 census. The 2001 census statistics are used because up-to-date statistics on Orange Farm are not available at the metropolitan offices. They depend on the 2001 census statistics and projections for most of their planning.

Out of a total of 13496 people residing in Orange Farm then, only 3751 had matric and tertiary education, giving a figure of less than 28 per cent (Statssa census report, 2001). This low level of education contributes to the high unemployment rate in the area.

According to the regional department of Education in Orange Farm, the area has 28 primary schools, 6 secondary schools and a vocational college to serve the entire area and its surroundings. Masibambane College teaches skills such as welding, brick laying, dressmaking and computer literacy. The regional education office estimates that over 80 per cent of the children aged between 5 and 20 are attending an educational institution.

Table 3.1 Level of education in Orange Farm

Highest level of education by Age for Person weighted, Orange Farm									
	11 - 20	21 - 30	31 - 40	41 - 50	51 - 59	60 - 69	70 - 79	80 - 89	90+
No schooling	13	18	62	117	72	40	17	9	-
Grade 1/sub A (completed or in process)	19	4	-	9	10	3	-	-	-
Grade 1/sub B	36	-	10	22	13	9	-	-	-
Grade 3/standard 1	127	10	20	46	33	9	-	3	-
Grade 4/standard 2	273	12	23	80	32	14	5	-	-
Grade 5/standard 3	421	8	27	74	38	12	-	-	-
Grade 6/standard 4	460	16	64	196	90	15	5	3	-
Grade 7/standard 5	469	37	125	270	70	17	-	3	3
Grade 8/standard 6/form 1	486	62	213	583	178	48	9	-	-
Grade 9/standard 7/form 2	442	78	204	288	50	16	3	-	-
Grade 10/standard 8/form 3/NTC I	476	234	459	616	126	21	5	-	-
Grade 11/standard 9/form 4/NTC II	385	425	344	328	56	11	3	3	-
Grade 12/standard 10/form 5/matric./NTC III	391	1281	806	556	73	14	3	-	3
Certificate with less than grade 12	16	26	23	22	6	-	-	-	-
Diploma with less than grade 12	5	15	4	8	3	-	-	-	-
Certificate with grade 12	33	78	26	15	3	-	-	-	-
Diploma with grade 12	24	119	60	42	3	3	-	-	-
Bachelor's degree	10	21	13	7	-	-	3	-	-
Bachelor's degree and diploma	3	6	7	5	-	-	-	-	-
Honor's degree	-	4	-	-	-	-	-	-	-
Higher degree (master's or doctorate)	-	4	-	4	-	3	-	-	-

Not applicable	-	-	-	-	-	-	-	-	-
Total	4089	2458	2490	3288	856	235	53	21	6
Grand Total	13496								
Created on 04 August 2009 **Statistics South Africa Web page: www.statssa.gov.za**									

The department acknowledges that the number of schools in the area is insufficient to cater for all learners from the area. Some learners have to attend school in the neighboring areas of Ennerdale, Lenasia South and Sebokeng. Transport to schools is a problem, although the government provides school transport by buses. The department is also providing bicycles to high school students who live in outlying areas of Driezek and Stretford.

3.4 ACTUAL AND POTENTIAL ECONOMIC ACTIVITIES IN ORANGE FARM

Orange Farm is a growing township, but with no visible formal industrial activity in the area. Most formal employment in the area is in the services sector, local government and numerous Not-For-Profit organizations that operate in Orange Farm. The supermarket chains Shoprite, Spar and Pick ‘n’ Pay are located in the township and provide a significant portion of formal employment to the residents.

Widespread unemployment conditions have resulted in worsening poverty conditions and hardships for the residents. The poverty report of the Greater Johannesburg Metropolitan Council (2000:15) indicates that over 60 per cent of the households live below the poverty line of R840 per month. Household incomes are derived mainly from paid

employment, basic income grants from the government including old age grants, child care and foster grants. Informal employment, including 'piece jobs' in the neighbouring areas of Ennerdale and Lenasia, is another source of income. The report indicates that household incomes are extremely low, with many families subsisting on between R1 and R50 per month. The IDP plan for City of Johannesburg has put a priority on raising household incomes and enhancing economic opportunities as a means of improving service delivery in the area (IDP Plan 2005/6:17).

Most of the working population is employed in Greater Johannesburg, especially in the Pretoria – Midrand – Vereeninging conurbation. Transport to work for most people is by Metro – Rail trains, taxis and buses. It is noticeable that most formal workers from Orange Farm are employed in blue collar jobs.

Table 3.2. Employment in Gauteng

Employment status (official definition) for Person weighted, Gauteng, 15 - 64				
	Not applicable	Employed	Unemployed	Not economically active
	-	2889126	1658581	1852779
Per cent employed				
45.14				
Per cent				

unemployed			
25.9			
Per cent not economically active			
28.9			
Created on 04 August 2009 **Statistics South Africa Web page: www.statssa.gov.za**			

The table above illustrates the employment levels in Gauteng. According to the 2001 census, out of a total population of 6,400,486 aged between 15 and 64, only 2,889,126 or 45.1 per cent were employed. 1,658,581 people or 25.9 per cent of the population was unemployed. 1,852,779 or 28.9 per cent of the population was not economically active. In reality 54.8 per cent of the population was not economically active. The situation in Orange Farm was similar as illustrated in the table below. Out of a total population of 11727 enumerated in the 2001 census, only 4109 people or 35.04 per cent of the population was employed. This was far below the provincial average of 45.1 per cent. 3610 people or 30.8 per cent was unemployed. This figure is higher than the provincial average of 25.9 per cent. 4008 people or 34.2 per cent of the population was not economically active. This was higher than the provincial average of 28.9 per cent. Since employment conditions and opportunities have worsened since 2001, it can be assumed that the situation at present is the same or worse in the area. The two tables clearly show that in terms of employment, Orange Farm is far off worse than other areas of Gauteng.

Table 3.3 Employment status in Orange Farm

Census 2001				
Employment status (official definition) **for Person weighted, Orange Farm, 15 - 64**				
	Not applicable	Employed	Unemployed	Not economically active
	-	4109	3610	4008
Per cent employed				
35.04				
Per cent unemployed				
30.8				
Per cent not economically active				
34.2				

Source: Statssa 2001m census report

According to Nyanjana (2009) the Social Development Officer of Orange Farm, a significant percentage of the Orange Farm population is self employed although precise figures are not available. The informal sector absorbs most of the unemployed people in the area. Mougeot (2005:1) states that the 'so called' informal urban sector used to be dismissed as a transient, minority phenomenon. It is now becoming the norm in a growing number of cities.

Preston-Whyte and Rogerson (1991:2) view the informal economy as not merely a set of survival niches occupied by destitute people on the margins of society, but is a fall back area for even those employed in the formal economy whose income is insufficient to

make ends meet. Bozzolli (1991:15) says that the concept of 'informal' sector is at best a descriptive one, which is useful only if it is linked to other concepts possessing greater complexity and depth. Informal sector activities then have to be seen as a transient and loosely defined set of activities which pass in and out of the lives of people. Lindahl (2005:88) states that the informal sector tends to be the most important source of livelihood for people in general and the poor in particular. The informal sector as an enterprise operates largely outside the formal, or legal, frameworks for business registration, licensing, taxation and labour legislation. The informal economy can comprise of everything from self employment to micro enterprises.

Certain activities in the informal sector do derive from desperation to secure much needed means of household subsistence. While most individuals engaging in the informal economy are poor, it is noticeable that informal economic processes cross cut the entire social structure. What attracts most people to the sector is the ease of entry into the sector. Some activities in the informal sector may be deemed illegal. However, Maxwell and Zziwa (1992:8) make an important point: activities which may be technically illegal are not necessarily anti-social. They cite the example of constructing houses that do not meet minimum standards, or those operating without licenses. Hardoy and Satterthwaite (1986:62) are more succinct and say 'in reality, the laws deem illegal most aspects of the poor majority's lives'.

According to Nyanjana (2009) (personal communication), more than 4 per cent of the women living in Orange Farm are employed as domestic workers in the surrounding

areas of Ennerdale, Lenasia, Sebokeng and Vereeninging. Preston-Whyte (1991:34) argues that a closer look at the conditions under which domestics operate suggests that they can be categorized as part of the informal economy. They earn relatively low wages, lack employment contracts and such benefits as medical aid and pension and have little or no protection against exploitation. Their age group varies from as young as fourteen years to those who are over sixty years. Some are heads of their families.

The common informal sector activities in Orange Farm can be divided into home-based enterprises and those carried out in the street and next to transport nodes or malls and offices. They vary both in size, scope and character. Rogerson (1991: 536) says that home based enterprises are a hidden feature of the urban scene. In most townships and shack settlements, the home-based enterprise function in at least one in every five house holds.

Shebeens, commonly known as ‘joints’, ‘spots’ or ‘spoties’ are common in nearly every street in Orange Farm. Some operate openly, but most are discreet and only known to those living in close proximity. De Haas (1991: 101) states that shebeens have played a pivotal role in the social life of black city dwellers. They have not only provided a crucial survival strategy amidst urban poverty, but have also facilitated the development of a spirit of community and companionship in areas noticeably lacking adequate social amenities such as Orange Farm. The term shebeen refers to the unlicensed (although some are licensed), often illegal sale of liquor from the residence of an operator/shebeener. The Shebeens of Orange Farm differ widely in terms of the type and quality of liquor sold, whether sale is on ‘take away’ or on a ‘consumption on the spot’

basis. They also differ in the kind of clientele they cater for, and the nature of facilities provided to their customers. The Shebeens products range from '*Ijuba*' which is factory produced sorghum beer, '*Umqomboti*' which is popular but takes time and effort to prepare, '*Imbamba*' - a home brewed concoction made from bread, water, pineapple, yeast and battery acid (it is popular because it can be made in one day), '*gavena*' - a cane spirit imported from rural Kwazulu Natal; beer, spirits, and all kinds of whiskies. It was observed that most Shebeens are owned by women. This has resulted in the rise of 'shebeen queens' - most of whom have branched out into more profitable formal businesses like taxis and spaza shops from the profit acquired from the shebeens.

Spaza shops are a common income generating activity in Orange Farm. Spaza shops are to be found on almost every street and locale of South African townships. Rogerson (1991: 337) describes spazas as a form of retailing institution undertaken from a domestic residence in the lower income areas of South Africa. A spaza is essentially a small neighbourhood convenience shop serving the community in its immediate vicinity. The premises range from temporary constructions; may be located in a garage or out house purposely built for informal retailing; a room in the house - often the kitchen, dedicated to retail activities, or a back yard shack, usually constructed of old corrugated iron or wooden planks. Most spaza shops in Orange Farm are located in the front/living rooms of the shack due to the high crime rate in the area. The business of spaza shops in Orange Farm vary in the scope of their operations, with some selling only a small range of household groceries. Others act as general dealers, while same incorporate shebeen

activities in their operations. Sale of sandwiches popularly known as '*skamban*' is a profitable side line of most of these spazas.

A unique form of income and fundraising in Orange Farm is '*Fah-fee*' or '*mchina*'. This is a Chinese game in which players bet on numbers. The author has noted that the game is extremely popular amongst South Africa's urban poor. Fah-fee is a form of gambling that is cheap (the minimum bet is 50 cents from which one can win R50). It attracts many female players who can be observed twice a day congregating around the runner's car to establish the winning numbers of the day. Many players believe that their ancestors visit them in their dreams to tip them off about winning numbers. All that is needed is the ability to interpret dreams in the language of the game.

There are permanent informal markets around Stretford railway station, the civic centre where grants are paid out, and next to the small mall where Shoprite and Spar super markets are located. Goods sold in these informal markets range from snacks, fruits and vegetables, clothing (both new and second hand), bakery and confectionary products, boiled meat from heads and feet of cattle pigs, sheep and chicken; cell phone air time, and common household groceries. Most of these small scale traders source their merchandise from Johannesburg city centre. Conditions around these markets are extremely unhygienic with no toilets facilities and running water.

There is also a big number of seven seater taxis operating from the railway station to all locations in Orange Farm. These provide much needed employment. Most of the taxis are

old Toyota ventures and stallions which appear ramshackle and unroadworthy. They transport residents from the station and within the various extensions, and their fare is cheap and affordable.

Dress making, hair saloons, backyard workshops dealing with car repairs, welding and joinery activities are to be found in the area. Four scrap yards also operate in Orange Farm. The scrap yards are becoming popular because scrap iron, bottles, plastics, waste paper and cartons are collected by some of the poor unemployed residents and sold to them. These scrap yards are becoming an informal industry that is providing livelihoods to an increasing number of people although precise statistics on the industry are not available. The study noted that the activity contributes to the recycling industry and environmental conservation, reducing waste and degradation in the area. The result is the tidy environment in most areas of Orange Farm

Burial societies and rotating credit associations (popularly known as *stokvels* or *umgalelo*) are a permanent although largely undocumented sector of poor households in South Africa. In Orange Farm most families belong to these associations and organizations. Thomas (1991:240) says that these associations reflect both the human need to aggregate in social groups and the desire for material goods or survival. Stokvels can be described as associations formed upon a core of participants who agree to make regular contributions to a fund which is given, in whole or in part, to each contributor in rotation. Thomas (1991:241) acknowledges that although these associations are mentioned regularly in publications dealing with the informal economy of South Africa,

relatively little information can be found on them, even in international literature. Informal interviews with area residents by the author established that even the extremely poor in Orange Farm strived to belong to a burial society, citing the reason that they or their family members could be afforded a decent burial on their passing away. Other stokvels in Orange Farm function as saving societies, and are also a means of regular association among the members. Residents appreciate the importance of these stokvels in times of hardship, especially deaths, weddings and births. Some women informed the researcher that they had formed grocery buying associations to which they contributed a fixed amount of money monthly. This was then used to buy groceries in bulk which would then be divided among members, and was a survival strategy.

The overall picture that emerges is that there are very few formal job opportunities within Orange Farm. The informal sector is the major income provider for most residents due to ease of entry into the sector. Lack of formal job opportunities in the area portrays a lack of opportunity to young people in the area and reinforces poverty. The residents of Orange Farm are faced with many livelihood risks, which manifest themselves in the form of widespread unemployment and low incomes, prevalence of health problems including HIV/AIDS and inadequate access to basic services. Lack of access to good transport, recreational and public facilities compound the poverty problem in Orange Farm. The high rates of HIV/AIDS in the area exacerbate the problem of social exclusion for area residents. According to Beall et al (1999:22), the combination of crime, poor housing, high population, low education levels, low incomes, and lack of access to

adequate health and sanitation facilities is facilitating increasing poverty conditions. This has resulted in a negative draw back on life conditions in the area.

3.5 THE PHYSICAL ENVIRONMENT OF ORANGE FARM

Orange Farm is located to the south of Johannesburg, and lies within the Highveld plateau region of Southern Africa. The region lies in a fairly flat plain characterized by gentle undulating hills. Soils are well drained and there are virtually no swamps in the area. Initially occurring natural vegetation in the area consists of sub-tropical temperate grassland, with very little sign of savannah. Such a vegetation type is typically supportive of livestock rearing.

The rainfall pattern of Orange Farm is typical of Highveld areas. According to the South African Weather Service (2009) the area receives an average of 713 millimeters of rainfall per year. As indicated in table 6 below, the rainy season coincides with summer. It begins in late October and extends to early April. This period is characterized by afternoon showers and heavy thunderstorm. It is very windy from August to October in the area. Relatively little rain falls between May and September.

The rainy season coincides with the hottest months. The annual average temperature of Orange Farm is 22 degrees centigrade. This summer period is ideally the growing period and area residents take advantage of this to grow most of their crops. The area can support dry land farming quite easily. The growing period normally extends from

October to March. Even though conditions are extremely windy during this period, the situation improves towards March when the crops are high so there is little incidence of plant lodging.

Table 3.4 Rainfall, Temperature and Precipitation in Orange Farm

Temperature and Rainfall averages for Orange Farm													
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Year**
Average high °C	26	25	24	21	19	16	17	19	23	24	24	25	22
Average low °C	15	14	13	10	7	4	4	6	9	11	13	14	10
Precipitation mm (inches)	125 (4.92)	90 (3.54)	91 (3.58)	54 (2.13)	13 (0.51)	9 (0.35)	4 (0.16)	6 (0.24)	27 (1.06)	72 (2.83)	117 (4.61)	105 (4.13)	713 (28.07)

Source: www.South African Weather Service.gov.za accessed 14th August 2009

Winter conditions in the area generally begin from late April and extend to late August. Winter temperatures sometimes fall to an average minimum of 4 degrees centigrade. Only winter crops like cabbage, potatoes and peas can be grown in the area during this period. Due to the dry winter conditions, irrigation can widen the range of crops grown in the area. The DACE Report (2006) indicates that the area has limited irrigation potential due to absence of riverine sources. Original dwellers in the area were dependent on underground water sources for their farming operations.

The area is dominated by very shallow soils. According to Laker (1993:2) this is because of a combination of parent rock material and low insufficient rainfall which seriously limits soil formation. Shallow soils like those found in Orange Farm are extremely vulnerable to degradation and have low resilience (Laker, 1993). Mistakes in land use planning and management can be devastating and recovery can take a long time.

3.6 LAND-USE AND LAND TENURE IN ORANGE FARM

Four major land uses were observed by the author in Orange Farm. Residential stands take up the biggest percentage of land use in the area. This is followed by recreational use, mainly parks and stadiums. Public amenities like educational institutions are another major land use. Included here are the local government offices. Commercial facilities also take up a significant portion of the land use. Civil works like roads, electricity and phone way leafs are another major land use. In this category taxi ranks and the railway station are included. There is a lot of land lying idle both inside the extensions, between the extensions and on the periphery of Orange Farm. See Annexure 2

Most people residing in Orange Farm live on officially allocated stands, and those we can refer to as semi-officially occupied. In this group, the local ruling party apportions some vacant land to needy individuals to construct shacks (personal observation). Official allocation is done by the Metropolitan Council local region G housing unit in collaboration with the office of the area councilor. The 2001 national census (Statssa, 2001) reported that Orange Farm had 4433 officially allocated stands. The 2001 census

(Statssa, 2001) showed that 965 stands were then fully owned and fully paid off. This translated to only 21.8 per cent of the total. 3159 stands were being occupied but not fully paid off, representing 70.8 per cent. 1.8 per cent was being occupied rent free. This is illustrated by the table below.

Table 3.5 Tenure conditions in Orange Farm

	No. of Stands	**% of Total**
Owned and fully paid off	965	21.76855
Owned but not yet paid off	3159	71.261
Rented	223	5.030453
Occupied rent-free	79	1.782089
Not applicable	7	
Grand Total	**4433**	

Statssa Census survey 2001

According to the regional social development office, the stands have increased to 11175, an increase of over 250 per cent. This represented the officially allocated stands. There are more informal settlements in Extensions 7 and 8 which are not yet officially allocated but which are occupied. These are not included in the official figures. The Statssa community survey of 2007 (Statssa, 2007) did not have specific figures for Orange Farm tenure conditions, but had Gauteng and Johannesburg figures which compare favourably with the 2001 figures. See table 3.6. For the whole of Johannesburg, 25.2 of the stands in

the city were owned and fully paid off by the city's residents. 70.8 per cent were either partly paid off or occupied rent free. It can then be assumed that present percentage figures of tenure for Orange Farm have not changed much.

Table 3.6 Tenure status in Gauteng 2007 in per cent

	Owned and fully paid off	Not yet fully paid off, rented or occupied rent free	other	Total
Johannesburg	32.9	65.9	0.8	100
Gauteng	33.9	63.1	0.8	100

Source: Statssa Community Survey 2007

3.7 KNOWLEDGE AND PERCEPTION OF FARMING AMONGST ORANGE FARM DWELLERS

Being a new settlement, most residents living in Orange Farm at present are migrants from rural areas, surrounding farms or urban settlements in both South Africa and surrounding countries. It would be easy to assume that all of the residents of Orange Farm have intimate knowledge of farming practices due to their areas of origin. Table 3.7 below illustrates the extent of knowledge about urban agriculture among the area residents. 176 respondents reported having knowledge about crop farming. Only 32 reported having knowledge on raising livestock.

Table 3.7 Respondents' Knowledge about farming

	Frequency (n=200)	Per cent
No knowledge of crop/livestock farming	34	17
Knowledge of both crop/livestock farming	166	83
Total	200	100

Source: Field data

17 per cent reported having absolutely no knowledge of crop farming or livestock raising. Among those reporting having no knowledge of farming, an interesting observation was that most admitted having knowledge about growing flowers and tending of front lawns. The study observed that elderly residents originally from rural areas were growing a wider variety of both winter and summer crops. This demonstrated that they had excellent knowledge of farming practices, and considered urban agriculture as a viable food coping strategy.

The study noted that most residents who reported having no knowledge of farming had a negative attitude towards the practice of urban agriculture. Of the 32 reporting having no knowledge of farming, 20 stated that the practice was arduous and only suitable for those who were unemployed or not receiving basic income grants. The median age of this group with no knowledge of farming was 25 years. This concurs with Djurfeldt's (2005: 51) opinion that the more vigorous youth who are expected to replace elderly farm

operators (in our case urban farmers) are often unwilling to take to farming because of the drudgery and poor returns.

All the residents who reported practicing urban agriculture had a positive perception of urban agriculture. They explained that the practice augmented their food regime and provided food that would otherwise be unaffordable and unavailable to them on a regular basis due to their low and insufficient income.

Observations made by the author in the food section of the supermarkets in Orange Farm and the open air trading stalls revealed a fairly limited range of diet options available to Orange Farm residents. For most, the staple diet is ‘pap’ – a form of soft porridge made from maize flour; rice, ‘umnqusho’ and bread accompanied by a relish made from meat, chicken, spinach or cabbage. Variety is introduced by mixing in beans and making salads from beetroot, carrots, green pepper, onions and potatoes. Sweet potatoes are not consumed as a main meal by many people. Cheap alternative staples consumed in other parts of Africa, and which are easy to grow in urban gardens like plantains, cassava, yams, coco yams and taro, are consumed on a very minimal scale, mostly by foreigners living in the area. The table below indicates the extent of consumption of different indigenous foods by the area residents

Table 3.8. Consumption of indigenous foods

Food type	Frequency n=200	Per cent
umngqusho	188	94
morogo	76	38
Mopami worms	22	11
Cassava	4	2
Sweet potatoes	160	80
Plantains	8	4
Yams	0	0
Kales	4	2

Source: Field data

Due to cultural factors some foods which are easy to grow are not consumed on a regular basis by area residents. Morogo (a leafy vegetable growing wild in yards and open fields during the rainy season) is one example of an easily available vegetable that could form a prominent feature in the people's diet. Only 38 per cent of the respondents reported eating it as a vegetable. Only people originating from Limpopo province and outside South Africa reported consuming it. Since it grows in abundance it can be harvested during the rainy season and dried for use during times of food shortages. Plantains and sweet potatoes could also be used as a staple food. 8 people reported consuming plantains on a regular basis, although they sourced it from Limpopo province from where they originally come from. Plantains or cooking bananas are popular in the two provinces and

the rest of Africa because they have low labour requirements, high calorie yield per hectare and are very effective in controlling soil erosion. Ellis (2003: 14) points out that bananas are an important security crop that currently accounts for over one quarter of the calorific consumption in the great lakes region.

Mopami worms (known as *masonja*) are an edible caterpillar and a rich source of protein popular in Limpopo and Mpumalanga provinces. They store for a long time and can be used as a substitute for meat and chicken. The number of people consuming them in our sample was 22 out of the 200, representing 11 per cent of the sampled population. This is a significant number and shows that with awareness they can become an important food source for area residents if cultural barriers can be overcome.

Four people out of the sample reported to be consuming cassava. These four people originate from outside South Africa. They source their products from informal vegetable vendors in the streets of Johannesburg CBD. Majority of the respondents did not know what the crop looked like although some had read about it in books. They had never considered it as a food source. Cassava has been hailed as Africa's best kept secret in times of food scarcity (Nweke, Lyna and Spencer, 2002). It is a hardy root crop that grows well in all climatic and soil types, needing very little care.

What emerges is that there is a general lack of awareness among the Orange Farm residents about available food options that are cheap and easy to acquire. Indigenous

foods are normally easy to grow, require few inputs and can withstand varying weather and soil conditions.

3.8 CONCLUSION

This chapter has attempted to give a background of physical and economic conditions in Orange Farm in order to illustrate why there is a need for improvement in life conditions. There is lack of viable income generating activities in the area. Low incomes and few employment opportunities suppress livelihoods. As Mougeot (2005:1) notes, urban populations are setting new standards and cities must re-invent themselves with new references if the needs of urban residents are to be met. There is a need to broaden our view of ensuring food security and income generation for urban residents, an aim that can be easily achieved using an urban agriculture approach. Urban agriculture as a practice is able to provide food, employment and incomes. The activity can also replace informal sector activities that are transient, low paying or illegal, as will be shown in the next chapter by those households who are currently involved in it.

CHAPTER IV

ANALYSIS OF FINDINGS: THE PRACTICE OF URBAN AND PERI-URBAN AGRICULTURE IN ORANGE FARM

4.1 INTRODUCTION

In the previous chapter, the emphasis was on providing a background on the physical and social conditions in which residents of Orange Farm are living in, so as to provide a basis of the need for urban agriculture in the area. This chapter carries out a description and analysis of the variables affecting the practice of urban and peri-urban agriculture in Orange Farm. A typology of the characteristics of urban farmers in the area is attempted in order to understand who is involved in the practice. This is done to try and understand why the practice is not as widespread as would be expected in such a poor urban setting. Frequency tables are used to describe the major characteristics of the practice. A description of the practice and its impact on poverty is attempted. The two extensions have a total population of 23 459 people (StatsSA, 2007:338). The sample population of 200 households represents approximately 0.1 per cent of the total population. This should ideally represent the total population being studied. The size of the sample was limited by time and financial constraints.

4.2 QUANTITATIVE ANALYSIS OF URBAN AGRICULTURE IN ORANGE FARM

Purposive sampling (see Chapter 1, section 1.4.3) was carried out to determine the respondents who would be included in the study. A sample of 100 households engaging in urban agriculture was randomly selected. This selection involved selecting five households on each transect walk that were practicing urban agriculture. The next transect would involve selecting five households that were not engaging in urban agriculture. The result was selection of 100 households carrying out urban agriculture, and a further 100 households not engaged in urban agriculture also being selected so as to make up a total sample population of 200. This method was considered to be ideal in order to ensure that each household in the study area had an equal chance of being included in the sample population. This sample size was arrived at after careful consideration of the whole population of the two extensions in which the survey was carried out.

The eldest person found to be present in the household at that particular time was interviewed. In most cases it turned out that the respondent was either the head of the household or a spouse. In a few cases the respondent was a grown up child whose parents were at work, or a grandparent living in the household. This process of selecting the respondents was considered to be the ideal method that would yield two sets of data which would facilitate easy analysis and comparison. Analysis and presentation of the data obtained from the sample population is divided into:

- Both sets of samples i.e. n=200
- Families engaging in urban agriculture i.e. n=100
- Families not engaging in urban agriculture i.e. n=100.

In all figures and tables presented this is indicated accordingly.

4.2.1 PRACTITIONERS OF URBAN AGRICULTURE IN ORANGE FARM

Mougeot (2005:4) says that the number of households involved in growing food varies from area to area and region to region, but their share tends to represent something between an important minority and a large majority of all households. The number of households involved in urban agriculture cannot be approximated with accuracy. The study noted that there are seasons when some households do not carry out farming. These may be due to the principal farmer obtaining paid employment in other sectors.

A typology of persons involved in urban agriculture is important if we are to gain an understanding of the holistic picture of urban farming in the study area. This should enable us to make a connection between poverty and urban agriculture. This relationship is relevant because it fosters an understanding of how urban agriculture impacts on poverty.

4.2.1.1. ORIGIN AND LENGTH OF STAY OF RESPONDENTS

Urban agriculture has been practiced in Orange Farm since the inception of the settlement in 1989. An attempt was made to find out the original area where the respondents came from before settling in Orange Farm (see Annexure 1, Question 3). This was to enable us to know if they had prior knowledge of farming before settling in Orange Farm. Prior knowledge of farming can be a strong motivation for households facing food insecurity to start urban farming. Table 4.1 shows the place of origin of respondents. What emerges is that Orange Farm has a diverse mix of people originating from all over South Africa and neighboring countries.

Table 4.1. Origin of Respondents

Place of origin	**Frequency (n=200)**	**Per cent**
Gauteng	73	36.5
Free state	43	21.5
Kwazulu Natal	17	8.5
Eastern Cape	32	16
Western Cape	3	1.5
Northern Cape	6	3
North West	5	2.5
Limpopo	9	4.5
Mpumalanga	4	2
Swaziland	2	1
Lesotho	3	1.5
Other African Country	3	1.5
Total	**200**	**100**

Source: field data

The collected data indicates that 36.5 per cent of the respondents came from other parts of Gauteng to settle in Orange Farm. Since Gauteng is mainly an urban province, this may have a bearing on the respondents' knowledge and perception towards farming. This group has a definite effect on knowledge and willingness to farm as was illustrated in table 3.7, where 17 per cent of the respondents admitted having no knowledge of crop farming and livestock rearing. Most of the respondents reporting as having no knowledge about farming are from this group. 21.5 per cent of respondents came from Free State, 8.5 per cent from Kwazulu Natal and 16 per cent from the Eastern Cape. These areas of origin are predominantly agricultural provinces; hence respondents originating there are expected to be familiar with crop farming and livestock raising practices.

The Western Cape was the origin of 1.5 per cent of the respondents, 4.5 per cent come from Limpopo, and 2 per cent from Mpumalanga. These provinces have a different climatic and soil regime from Gauteng, and thus practice more diverse forms of tropical and Mediterranean type of crop farming. In these provinces, especially Limpopo and Mpumalanga, small scale farming is prevalent and well developed. The implication is that respondents from the two provinces would be well versed in agriculture and thus able to easily adapt to and practice urban farming.

Approximately 3 per cent of respondents originate from the Northern Cape Province, while 2.5 per cent originate from North West Province. Although these two provinces are known for mining, dryland farming and livestock production are common in the area.

Respondents from the two provinces are also expected to have knowledge about farming practices, and thus have the potential to carry out urban agriculture.

Approximately 4 per cent of respondents originally come from Lesotho, Swaziland and other African countries. The study noted that all respondents from these countries are practicing urban agriculture, both crop farming and livestock rearing.

Maswikaneng, Van Averbeke and Bőhringer (2002:268) observed that the origin of non-farming households was more likely to be urban than among urban farming households. This is because most are not first generation immigrants into urban areas and hence may not possess the necessary farming techniques. It can be deduced from this study that the area of origin is a factor contributing to involvement in urban agriculture.

Kekana (2006:21) observed that people who have stayed in an area for longer periods are more likely to be involved in urban farming because they are most likely to access land. This is because they know the procedures (formal and informal) and have networks enabling them to know where they can farm or how they can gain permission to farm even in restricted places.

The length of time respondents have stayed in Orange Farm (see Annexure 1, question 4) enable us to know whether urban agriculture is a food coping strategy practiced by recent migrants to the city or an ideal strategy adapted by all residents of the area irrespective of

their length of stay in Orange Farm. Table 4.2 indicates the longevity of respondents in Orange Farm.

Table 4.2. Length of stay in Orange Farm

Years lived in Orange Farm (Years)	Frequency (n=200)	Per cent
Less than 5	8	4
6 – 10	23	11.5
11 – 15	59	29.5
16 – 20	107	53.5
More than 20	3	1.5
Total	**200**	**100**

Source: field data

The reported range of stay varies from less than 5 years to those who have been in the area for over 20 years. It should be noted that since the township is at present 20 years old, those who have been in the area for more than twenty years are former farm workers, labourers, and their relatives who were staying on the farms around the area before it was annexed by the government for township development.

From the table above, over 84 per cent of the respondents have been residing in the area for more than 10 years. It should however be noted that extensions one and two in Orange Farm were the first to be established in 1989, and as a result have more of the first migrants into the area when compared to newer extensions. Only 4 per cent of the respondents reported residing in the area for less than 5 years.

The high proportion of residents who have been living in the area for more than 10 years and are carrying out urban agriculture contradicts the commonly held view that the practice of urban agriculture is practiced by people who have recently migrated to urban areas. This observation is consistent with studies by Maxwell and Zziwa (2002), Mbiba (2005), Mougeot (2005) and Grossman et al (1996) which have shown that most urban farmers are well established migrants who have been residing in their areas of operation for long. Urban agriculture then cannot be considered to be a temporary business of recent migrants, but a livelihood strategy people opt for to help meet their food requirements.

4.2.1.2 SIZE OF HOUSEHOLD

Respondents were asked how many people were residing in their households (see Annexure 1, question 7). This was to distinguish between the household members and those residing in the compound, because in some cases more than one family was residing on a stand. The intention was to determine the composition of the household in terms of total members, number of children and grownups living in the house. This has a

bearing on food requirements because a family with growing children will require a different and more rigorous food regime than one which is composed mainly of grownups.

The number of people living in a household influences the amount of food needed by a family. It will also have a bearing on the type and amount of labour available for income generating activities, including urban agriculture. More grown ups in the household will mean that more labour is available for carrying out urban farming, especially if they are unemployed and economically inactive. In the case of grandparents taking care of children or child headed households who have been affected by the HIV/AIDS pandemic, it may require that such families have to hire labour to help them carry out agriculture.

Table 4.3 below shows the size of household of the study sample. Over 71 per cent of the households have between two and five people. 1.5 per cent of the sample was composed of households with a single individual. 27 per cent reported having more than 6 people residing in the household. The mean size of both households carrying out agriculture and those not carrying out agriculture was 4 people per household.

Table 4.3 Size of household

No of people living in household	Frequency (n=200)	Per cent
Less than 2	3	1.5
2 – 5	143	71.5
More than 5	54	27
Total	**200**	**100**

Source: field data

Large households require substantially more food and have to resort to a wider range of food coping strategies as compared to a single person or smaller households. The study noted that most households had at least two children present. More children in a household also increase the income of a household through more child welfare grants. But since these grants are inadequate, it leads to a higher demand for nutritious food that will help the children grow. Feeding the children was found to be a strong motive to start urban farming. For households not currently engaging in urban agriculture, more grown up people in the household can be a potential tool and an asset to engage in urban farming.

On average most members of the households studied were children. Table 4.4 illustrates the average number of children who are living in the households studied.

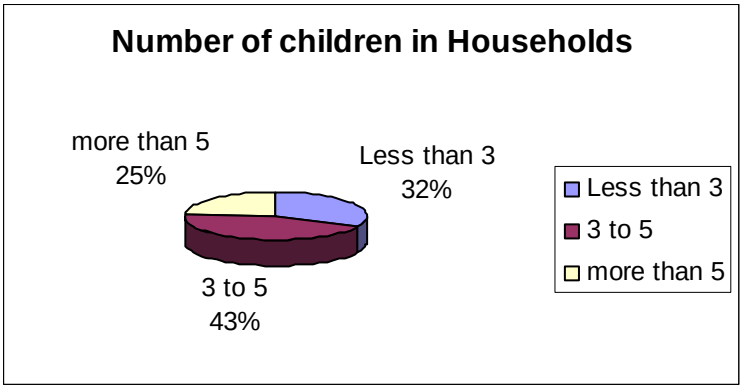
Table 4.4. Average number of children in household

Number of children in household	Frequency (n=200)	Per cent of total
Less than 3	64	32
3 - 5	87	43.5
More than 5	49	24.5
Total	**200**	**100**

Source: field data

Most households studied were found to have between 3 and 5 children, representing over 43 per cent of the sample population. 24.5 per cent of the households had more than 5 children, while 32 per cent of the households had less than 3 children in residence. This is further illustrated in the pie chart below.

Figure 4.1 Average number of children living in households sampled



Source: field data

Most respondents reported that having children in the house required a wider variety of food, and in sufficient quantities to enable adequate growth and development. Such families are then under pressure to adapt more reliable forms of food acquisition mechanisms like urban agriculture so as to meet household food demands. Most respondents reported engaging in urban agriculture to be able to provide food to the children residing in the household. They also reported that urban agriculture fills the nutrition gap and children's food needs by providing a wider variety of food and in sufficient quantities, which they would otherwise be unable to purchase given their low incomes. This was particularly true in households where elderly grandparents were taking care of the children. Households not practicing urban agriculture were experiencing difficulty in providing food due to the limited food coping options available to them that were not always successful.

4.2.1.3 GENDER AND URBAN AGRICULTURE

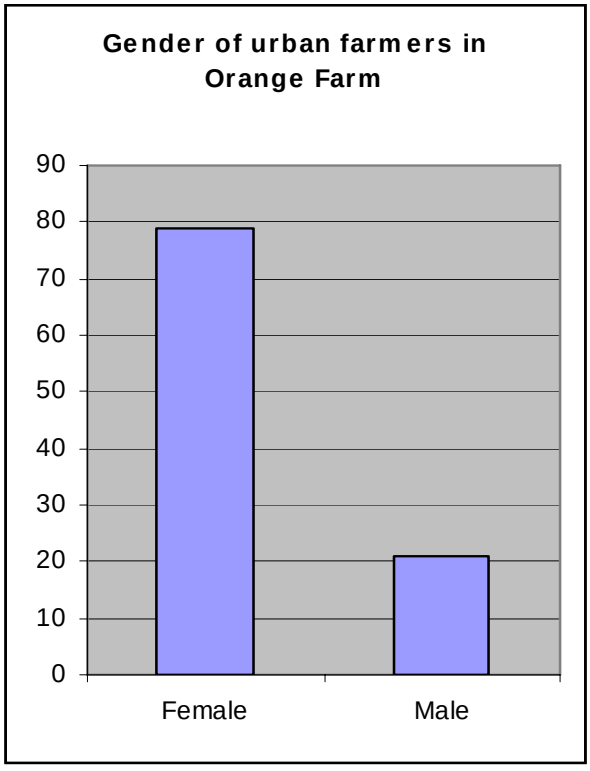
Women dominate the urban agriculture sector in the study area. Table 4.5 (derived from the question 1, Annexure 1) below illustrates the proportion of women and men in the study sample. Women represented 79 per cent of the sampled population, while men accounted for only 21 per cent. Most respondents interviewed were women who were carrying out farming themselves.

Table 4.5. Distribution by gender of urban farmers

Gender	Frequency (n=100)	Per cent
Female	79	79
Male	21	21
Total	**100**	**100**

Source: Field data

Figure 4.2 Distribution of urban farmers by gender



Source: field data

Plate 2. An urban farmer attending to her crop of butternut

Source: Author

This confirms studies in Kampala and Harare (Maxwell and Zziwa, 1992; Mbiba, 1995) who concluded that in most urban areas of Africa, women are increasingly resorting to urban agriculture to help meet the deficit in their families' food needs. Maxwell and Devereux (2001:77) also concluded that all over the world most urban farmers are found to be women, and farming generally contributed to household consumption, only occasionally for the market.

The high proportion of women who carry out urban agriculture has been explained by Landon-Lane (2004:17) who asserts that gender inequalities increase the vulnerability of women and children to poverty and malnutrition, making it difficult for them to earn livelihoods, especially in the formal sector. It also reduces their social standing. Urban agriculture is then an attractive alternative option for sourcing food and incomes for women, more so in cultures where women traditionally feed the family through their own work. The case of Orange Farm is similar, as illustrated by the low incomes and high

dependency of its residents on basic income grants provided by the government (table 4.11). Spies (1998:4) says that formulation of policies that encourage urban agriculture should emphasize the gendering aspect of the sector. Emphasis should be to protect women's rights to farm, to feed their families and transform their role from subsistence work to economic empowerment

4.2.1.4 EDUCATION AND URBAN AGRICULTURE IN ORANGE FARM

The study was interested in finding out if there is a relationship between education and the practice of urban agriculture (see Annexure 1, question 6). There has been a perception that practitioners of urban agriculture are illiterate with low levels of education. Table 4.6 below shows the level of education of respondents in the study sample.

Table 4.6. Education level of respondents

Level	Frequency (n=200)	Per cent of total
No formal education	13	6.3
Primary	148	74
High school	37	18.5
Tertiary	2	1
Total	**200**	**100**

Source: field data

The study observed that 4 per cent of the respondents had no formal education at all. 74 per cent of the sample had attended primary schooling, while 18 per cent had attended school up to secondary level. Less than 1 per cent of the sample population had attended a tertiary institution or college. This data is drawn from both samples: those engaging in urban agriculture and those not engaging in the practice. The figures compare favourably with education levels in Gauteng and the whole of Orange Farm (see table 3.1). Table 4.7 shows the level of education of respondents practicing urban agriculture.

Table 4.7. Education level of respondents carrying out urban agriculture

Level	Frequency (n=100)	Per cent of total
No formal education	8	8
Primary	79	79
High school	11	11
Tertiary	1	1
Total	**100**	**100**

Source: field data

Over 80 per cent of urban agriculture farmers have primary level of education or less. It can then be concluded that most practitioners of urban agriculture have primary level of education. This is in line with Kekana (2006) who in his study of urban agriculture in

Soshanguve concluded that urban agriculture farmers will have a comparatively lower level of education. Orange Farm is an informal settlement with a relatively high level of low income earners. It is to be expected then that levels of education will be comparatively lower in Orange Farm, being an informal settlement that is currently being upgraded. Serumaga-Zake and Naudé (2002:568) have asserted that education is a major determinant of poverty in urban areas. It would be expected that since the majority of residents have a comparatively lower level of education, they would tend to practice urban agriculture on a wider scale. What should be borne in mind is that practitioners of urban agriculture are represented in all education level groups (see table 4.7). What differs is the proportion of practitioners of the practice in each group.

In our study area, only 20 per cent of respondents have attended high school or higher. This contrasts with studies done in Dar es salaam in Tanzania, Harare in Zimbabwe and Kampala in Uganda which found that a significant percentage of urban farmers have post -high school education. Some urban farmers in these cities are professionals holding senior jobs in the public and private sector, even though they employ people to farm for them in these cities (Sawio, 2005, Mbiba, 1995, Maxwell and Zziwa, 1992). Even though education may have no effect on whether a family decides to carry out urban farming or not in other African countries; it definitely impacts on urban agriculture in the study area because the higher the level of education, the less will be the willingness to engage in urban farming.

Some of the respondents in our study with no formal education reported a need for more training on farming techniques to help them enter the sector or intensify their farming operations.

4.2.1.5 AGE DISTRIBUTION OF URBAN FARMERS

The study was interested in determining the mean age of urban farmers, compared to a similar sample of those not carrying out urban agriculture (see Annexure 1, question 5). The respondents were asked to indicate their age group in one of four broad categories. The categories were under 25, between 26 and 35 years, between 36 and 50 years, and those above fifty years. The selection of broad age groups was done to accommodate those who would not be comfortable stating their exact age. Tables 4.8 and 4.9 below shows the distribution of respondents' age according to whether they are carrying out urban agriculture or not:

Table 4.8. Distribution by age of urban agriculture practitioners

Age group (years)	Frequency (n=100)	Per cent
Under 25	4	4
26 – 35	23	23
36 - 50	42	42
Over 50	31	31
Total	**100**	**100**

Source: Field data

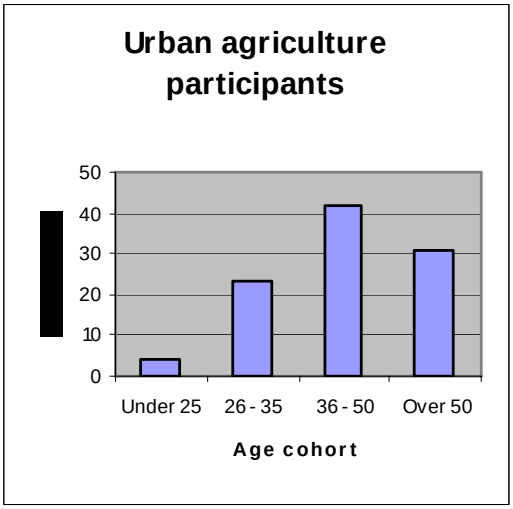
Table 4.9. Distribution by age of those not involved in urban agriculture

Age group (years)	Frequency (n=100)	Per cent
Under 25	12	12
26 – 35	41	41
36 - 50	29	29
Over 50	18	18
Total	**100**	**100**

Source: Field data

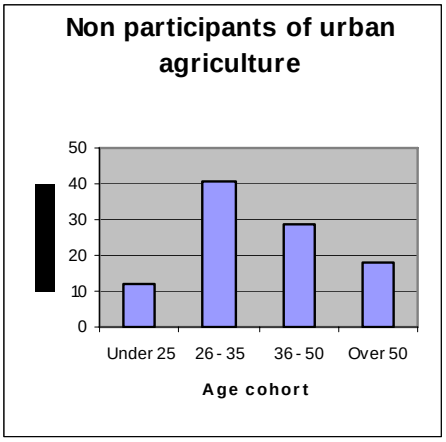
A comparison of the two tables reveals that while 4 per cent of those aged less than 25 engage in urban agriculture, the figure rises to 12 per cent in the sample of those not engaged in urban agriculture. In the 26 to 35 age group, 23 per cent engage in urban agriculture while the corresponding figure for those not engaged in urban agriculture is 41 per cent. 42 per cent of the age group 36 to 50 years engages in urban agriculture, while 29 per cent do not. 31 per cent of those over 50 years are involved in urban agriculture while the corresponding figure for the sample of those not engaged in urban agriculture is 18 per cent. The observation that can be made from the above two tables is that comparatively, older people are more interested in urban agriculture as compared to younger people. This skewness of older people tending to participate in urban agriculture is illustrated by figures 4.3 and 4.4 below.

Figure 4.3. Graph illustrating distribution of age of people involved in urban agriculture



Source: Field data

Figure 4.4.Graph illustrating distribution of age of people not involved in urban agriculture



Source: Field data

In the graph illustrating age groups of urban farmers, there is a definite skewness towards the right, showing more older people are engaged in urban agriculture. Over 96 per cent of urban agriculture practitioners are over 26 years. Figure 5 shows skewness towards the left, indicating that more young people are not involved in urban agriculture. Older people tend to participate in urban agriculture because of family responsibilities and need to have food security in the household. The observation that older people are the ones participating in urban agriculture in Orange Farm corresponds to findings by Maswikaneng et al (2002) who found that contemporary urban farmers in Atteridgeville in Pretoria were mainly middle-aged or old people, and that participation by the young was rare. This confirms our earlier observation in section 3.7 that young people consider agriculture to be tedious and would rather opt for some other income generating activity. It is these young people who do not have adequate knowledge about farming and are not aware of the potential benefits of the activity.

The study noted cases of urban farming grandparents who were looking after children whose parents had succumbed to HIV/AIDS. Some of these grandparents had apparently not registered to receive foster care grants from the government, and thus turned to urban agriculture in an attempt to provide nutritious meals to the children.

4.2.1.6 EMPLOYMENT, INCOMES AND URBAN AGRICULTURE

One of the goals of this study was to understand who was practicing urban agriculture (see Annexure 1, question 8). The aim was to find out if participants were employed in other sectors of the economy or solely depended on urban agriculture for livelihood. Studies of urban agriculture in Kampala (Maxwell and Zziwa, 1998), and Dar es Salaam (Sawio, 2000) show that urban farmers cross cut all strata of society, ranging from the very poor to well off working people. Respondents were asked whether they were formally employed or not, and whether they had an extra source of income. 42 per cent of the whole sample was formally employed. 121 respondents or 61 per cent of the sample reported not being employed at all, while 37 per cent of the respondents occasionally getting casual or ‘piece’ jobs both in Orange Farm and the surrounding areas. Table 4.10 shows employment status from the collected sample.

Table 4.10. Employment status of respondents

Status	Those engaged in urban farming Frequency (n=100)	Those not engaged in urban farming Frequency (n=100)
Formally employed	9	33
Not employed	89	32
Casual/ 'piece' work	2	35
Total	**100**	**100**

Source: Field data

The table indicates that most people in the study area are unemployed. Observation of the figures showed that participation in urban agriculture was reported for both those who were employed and those not employed. The 35 respondents who are employed in casual or piece job work were observed to be mainly working on the civil work projects that are going on in the area.

Landon-Lane (2004) points out that disabled or elderly people are often considered as non-productive dependents in a household. Limited care of home gardens and activities related to urban agriculture provides them with safe and feasible opportunities to contribute to household food and income.

All employed respondents who are employed reported that they did not have an extra source of income. Accurate household incomes are extremely difficult to obtain. In this study, respondents were asked to state their source and level of income (see Annexure 1, question 9, 10). Those who reported being unemployed were asked to approximate how much they made in a month, whether from welfare grants, casual work or informal sources.

The study divided income earned into three broad groups; those earning less than Rand 500 per month, between Rand 501 and 1000 per month, and in excess of Rand 1000 per month. This is shown in table 4.11 below.

Table 4.11. Income level by type (in Rand)

	Source of income (n=200)			
Income level	**Formal employment**	**Unemployed/ casual work**	**Old age/child/foster care /disability grants**	**Other**
Less than 500	0	130	83	0
501 to 1000	12	3	26	0
Above 1000	4	1	0	16

Source: Field data

83 respondents have an income of less than 500 Rand per month. This income is mainly from government welfare grants. 130 respondents in this cohort get their income from casual or 'piece' jobs. In the 501 to 1000 Rand cohort, 12 per cent reported to be formally employed, 3 respondents depended on casual employment while 26 were beneficiaries of government grants. In the cohort whose income is above 1000 Rand per month, 4 respondents were unemployed, 1 respondent was unemployed but got his income from temporary jobs. 16 respondents in this cohort did not want to name their source of income, but presence of crates of beer in some yards led the researcher to deduce that they were illegal shebeen operators. In some compounds the presence of motor vehicle parts led to the conclusion that they were taxi operators. Nearly all respondents who obtain their income from illegal and semi-legal activities were reluctant to report their sources of income due to fear of being reported to the authorities.

Sources of income such as illegal liquor brewing and selling, illegal shebeens, drug dealing, gambling, prostitution and black market operations were unreported, even though the researcher could observe such activities taking place. Some respondents were unable to approximate the income they obtain from informal activities such as hair salons, informal hawking, and scrap metal dealers. In spite of this non- reporting, it is apparent that incomes in the study area are extremely low and unable to meet the requirements of most households, food purchase included. Resorting to urban agriculture is a viable and easy option for income generation for these poor households.

It is also difficult to obtain accurate figures on the expenditure pattern of households, including those households that fall outside the traditional 'low income' bracket. Mougeot (2005:4) has observed that low income households spend 50 – 80 per cent of their disposable income on food and still do not meet their dietary needs.

The expenditure pattern of a household compared to its income can give us insight into why a household will resort to urban agriculture. Respondents were asked to approximate their monthly expenditure on food, rent, credit loans or accounts (consisting mainly credit from clothing stores like Jet-mart, PEP stores, Truworths, Woolworths, etc). Credit payments to stores were fairly easy to estimate. Most respondents could only give rough estimates about expenditure on food and other daily household consumables. This was also the case of miscellaneous expenses. Miscellaneous commitments include payment for insurance[8], burial societies, stokvels, entertainment, etc.

Table 4.12 and 4.13 give estimates on monthly expenditure patterns for households practicing urban agriculture and those not involved in urban agriculture (derived from Annexure 1, question 11). Figures 4.5 and 4.6 further illustrate the difference in expenditure patterns among the two groups. Households practicing urban agriculture on average spend Rand 350 per month on food. Households not practicing urban agriculture spend an average of 640 Rand per month on food. The study observed that the mean expenditure on accounts loans and accounts was Rand 173 for households carrying out urban agriculture. This figure dropped to a mean of Rand 150 for those households not

[8] Most households in the area have funeral insurance where they pay less than R 20 per month, administered by various financial service providers including the big credit stores like Jet-mart, PEP and Edgar's.

involved in urban agriculture. This can be attributed to more money being available for them to spend.

Table 4.12 Average monthly expenditure for households practicing urban agriculture (in Rands)

Item	**Amount**
Food	350
Rent	0
Loans/accounts	150
Traveling	200
Fees	100
Miscellaneous	400

Source: Field data

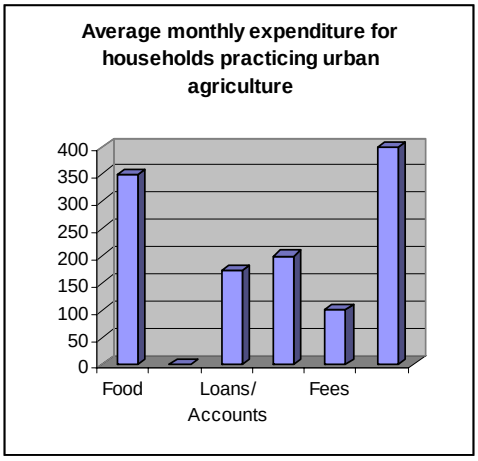
Table 4.13 Average monthly expenditure for households not practicing urban agriculture (in Rands)

Item	**Amount**
Food	640
Rent	0
Loans/accounts	150
Traveling	200
Fees	100
Miscellaneous	250

Source: Field data

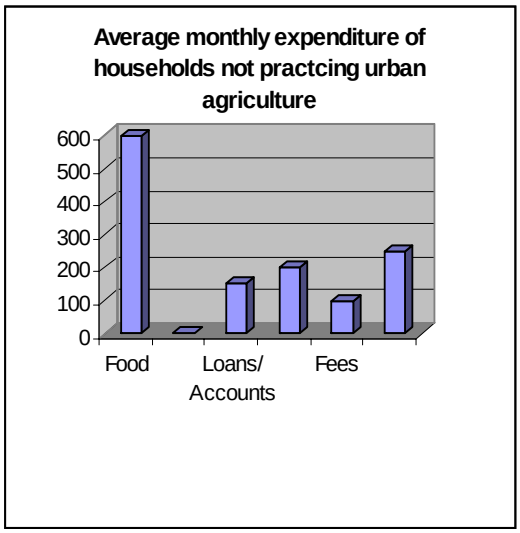
The study observed that expenditure on travelling was similar for both categories, with a mean of R200 for each category. Under miscellaneous expenditure, the mean expenditure of households practicing urban agriculture was R400. This dropped to R250 for those households not practicing urban agriculture. The difference in amounts spent on miscellaneous expenses can be attributed to more money being available for expenditure that has been saved from growing rather than purchasing some food items. It also comes from the sale of urban agriculture products. Households engaging in urban agriculture then have more disposable income than those not carrying out urban farming.

Figure 4.5. Graph showing expenditure of urban farming respondents



Source Field data

Figure 4.6. Graph showing expenditure of non urban farming respondents



Source: field data

The low income and expenditure as shown in the preceding sections indicates a clear need to supplement or diversify income sources. In the present constrained economic

environment, dwindling employment opportunities and declining incomes, urban agriculture becomes an attractive option to achieve higher incomes and increased expenditure. This can be achieved by intensification of urban agriculture production so that there is enough food for own consumption and a surplus that can be sold. Mougeot (2005: 8) says that with access to productive resources, urban agriculture can be an integral component of income and employment strategies, while also building a more self-reliant local food supply system. Nugent (2000:69) has proposed that urban agriculture can provide additional opportunities to the unemployed, underemployed, temporarily unemployed or long-term unemployed. This raises the question why households with low incomes are not currently participating in urban agriculture. Apathy and lack of appreciation of the vital role the sector can play in employment and income generation explain the reluctance by some households to participate in farming. There is need to encourage participation in the sector through sensitization, training and demonstration by relevant stakeholders. This will enable more households to access the benefits of urban agriculture, including a wider variety of food sources and added income for expenditure.

4.2.2. FOOD COPING STRATEGIES ADOPTED BY ORANGE FARM RESIDENTS

A comparison of the income and expenditure patterns of households under study as has been done above reveals that incomes available do not meet expenditure requirements of most households. Both categories of respondents involved in urban agriculture and not

involved in the practice were asked to explain the strategies that they employ to get food and survive when they have no money or their money has run out. Table 4.14 summarizes the food coping strategies adopted by both groups.

Table 4.14. Food coping strategies in Orange Farm

Strategy	Frequency (n=200)	Per cent of total
Reducing number of meals	52	26
Cooking less food	9	4.5
Borrowing food from neighbors	5	2.5
Borrowing money from neighbors/loan sharks/relatives	47	23.5
Obtain credit from stores/food vendors/spaza shops	24	12
Buying cheaper/inferior food	31	15.5
Food aid from churches/other charity organizations	61	30.5
Nothing	11	5.5
Other	36	18

Source: Field data

On average, 26 per cent of the respondents reported reducing the number of meals consumed per day. This was to enable the household to 'stretch' available food to cover the whole month. Many families reported consuming one main meal per day, preferably in the evening. The leftover food was saved to be eaten by children the next day for breakfast. 4.5 per cent of the respondents reported cooking less food. This resulted in a reduction in the portions served to individual members. 2.5 per cent reported borrowing food from neighbors, while 23.5 per cent reported borrowing money from friends, neighbors, relatives or loan sharks to cover the deficit. Respondents who reported using this method complained of being permanently indebted, especially to the money lenders because of the exorbitant interests that they were being charged.

Approximately 12 per cent of the respondents resorted to taking food on credit from neighboring stores, spaza shops and food vendors. A significant proportion of respondents comprising 15.5 per cent of the respondents reported that they resort to cheaper and inferior food. This included buying chicken feet, chicken intestines and skin from the chicken processing factories in Ennerdale and Vereeniging; pig intestines and other animal parts that would otherwise be discarded by the food factories.

Several churches and charity organizations operate feeding schemes in the area. Some of these organizations obtain food from the fresh produce market in Johannesburg and donations from supermarkets. These are then distributed free to poor households in the area. Most of these organizations provide food to recipients at least twice a week. 30.5 per cent of the respondents admitted to obtaining food form these organizations. Some

residents are able to exploit the different feeding days of the organizations and manage to get food at least five times a week from this source.

The sampled population showed that 5.5 % per cent of the respondents stated that they do nothing when they are out of food. Rather, they try to stretch their low incomes to ‘fit’ the month by not indulging in unnecessary expenditure.

About 18 per cent of the respondents were unwilling to divulge their food coping strategies. On further inquiry the researcher found out that some in this group were obtaining food from the black market, which discreetly operates in the area. This market has a wide range of products, both food and non food items, which are sourced from formal distribution systems sometimes illegally. These items are sold at extremely cheap prices, but only to known customers or people introduced by regular customers.

The study noted one enterprising business where goods that are nearing their expiry date are obtained form formal outlets and sold cheaply to the residents. These goods, which are mainly packaged food items, retail in these outlets at a fraction of their cost, thus becoming affordable to the residents.

Most respondents reported to resorting to a combination of one or more of the above strategies. This illustrates the observation by Kruger et al (2008:3) that poor households that face a dilemma of food shortage do not sit back and despair. To combat such shortages, the families engage in food acquiring activities or change their eating behavior.

Urban agriculture is a strategy available to many households, even if a large section of the residents in Orange Farm have either not realized its potential or are unaware of its impact. The allure of urban agriculture as a food coping strategy lies in its simplicity and ease of entrance. Using land adjacent to their homes or any available open space, gardens can be established and maintained with little capital and labour. As Landon-Lane (2004:1) observes, if intensively managed, they can be highly productive all year round in all kinds of weather, easing the need to resort to many of the food coping strategies mentioned above.

4.3 EXTENT AND PRACTICE OF URBAN AGRICULTURE IN ORANGE FARM

4.3.1 REASONS FOR URBAN FARMING IN ORANGE FARM

Mougeot (2005:2) has stated that there are basically two forces which drive people from all walks of life, particularly those on low incomes and the poor, to cultivate in urban areas: food security and income generation. Most practitioners of urban agriculture are attracted to the practice because of its ability to generate income rapidly. A small investment in seeds and a small amount of labour are all that is needed to provide a return from sale of vegetables within six to eight weeks. This study investigated the reasons why some households in the study area carry out urban agriculture while others do not. Respondents were asked to state the reason(s) why they engage in urban agriculture. The responses given are summarized in table 4.15 below. These are presented in order of popularity as given by respondents.

Table 4.15. Reasons for carrying out urban agriculture

Reason	Frequency (n=100)	Per cent of total
To supplement food	78	78
Because food is expensive	60	60
Unemployed	53	53
I need income	22	22
Because I have children	21	21
Poverty	19	19
Diversify the range of food consumed	16	16
Hobby/custom	9	9
other	6	6

Source: Field data

Most respondents gave a combination of reasons for engaging in urban agriculture. 78 per cent of the respondents cited the need to supplement their diets as the main reason for

engaging in urban agriculture. 60 per cent of the respondents stated that food that is purchased either in the market, on the street or in supermarkets is too expensive.[9]

19 percent of the respondents gave a straightforward answer as to why they engage in urban agriculture: "because we are poor". Landon-Lane (2004:16) has noted that in most countries of the world certain groups are vulnerable to food insecurity, poverty and poor social standing. Such families often resort to urban agriculture to reduce their vulnerability to food security. Spies (1998:6) refers to persons who engage in urban agriculture because of this reason as a distinct group which he calls 'no other means'. This group comprises those on the lowest edge of the poverty band. The present study observed that this group was composed of female headed households, widows and families suddenly abandoned by the primary wage earner. Urban agriculture was considered to be the easiest way to access food and income by these families. Such families are often forced to sell some of the food produced to meet other expenses, even if they do not have enough to eat.

The need for an extra source of income was another reason given for carrying out urban agriculture. 22 per cent of the respondents stated that they were unable to access a regular income, and had turned to urban farming so as to get a regular source of money. This group reported that they were able to sell the products of urban farming to neighbours and hawkers, enabling them to meet their financial obligations in other areas. 19 per cent of the respondents stated that they carry out urban agriculture in order to diversify their

[9] One woman candidly observed "three tomatoes cost five rand in the market, yet I only receive a grant for my child totaling two hundred and twenty Rands. I cannot afford to purchase tomatoes so the only option is to grow them in my yard"

food sources. There is a limited option of food available in the market. Some foods consumed in rural areas are not available in the nearby market and stores. Residents preferred to grow some of this food e.g. morogo.

About 9 per cent of the respondents reported that they carry out urban farming as a hobby, or a custom to remind them of their cultural roots. This group was composed mainly of retirees who needed to be active and at the same time provide food and income to their families.

The reasons given above by respondents about why they engage in urban agriculture confirms Pett's (2005:68) assumption about why people cultivate in urban areas. Pett ranked urban farmers' motives for engaging in urban and peri-urban agriculture as:

- Economic motive i.e. home consumption
- Income enhancement motive i.e. expenditure substitution
- Response to economic crises
- High prices of market produce.

All the above factors explain why some residents of Orange Farm are currently carrying out urban agriculture.

4.3.2 REASONS FOR NOT ENGAGING IN URBAN AGRICULTURE

Respondents not engaging in urban agriculture were asked to state the reasons behind their decision. The question read 'Why don't you engage in urban agriculture?' (see annexure 1, question 14). Table 4.16 summarizes the reasons behind their non participation in urban farming.

Table 4.16 Reasons for not engaging in urban farming

Reason	Frequency (n=100)
No reason	36
No knowledge of farming	34
I am too busy	30
Farming is too tedious	17
Other	17

Source: field data

36 per cent of the respondents stated that they had no reason at all for not participating in urban agriculture, even though they knew about its benefits. 34 per cent of the respondents stated that they had no knowledge about crop farming and livestock raising. Some respondents who gave this answer admitted that they would probably engage in urban agriculture if they were to be taught the basic skills on crop farming and livestock raising.

Over 30 per cent of respondents in this category claimed that they were too busy to engage in the practice because it was time consuming. Some respondents who gave this answer admitted to having knowledge about agriculture, and would participate in the activity if they could spare the time.

17 per cent of the respondents stated that they were not interested in urban farming because it was too tedious. The study noted that most of the respondents who gave this answer were young people, falling in the under 25 year category.

17 per cent of the respondents gave other reasons for not engaging in urban agriculture. Some of the reasons were trivial e.g. one claimed farming in town is not for a man. A significant number in this section claimed that urban farming would not make any difference in their income and expenditure pattern.

It emerges from the reasons given for not participating in urban agriculture that many residents are willing to take up the practice if given proper encouragement and motivation. There is a need to engage more with residents who are not involved in urban agriculture about the benefits of the practice. There is also a need to stimulate awareness and understanding of the potential of urban agriculture in improving livelihoods among households not currently engaged in the practice. The study noted that in areas where there was a well developed urban garden present, neighbouring households also took up the practice, albeit on a smaller scale. This resulted in pockets of households carrying out urban agriculture to be clustered together. This shows that development and

encouragement of well tended gardens can have a demonstration effect on people living nearby, hence encouraging them to take up the practice of urban farming.

4.3.3 AREA AND SIZE OF CULTIVATION

Availability of land for cultivation is a determining factor in urban agriculture. Kekana (2006:21) asserts that access to land is an important factor in determining who farms in urban environments. The study was interested in where cultivation was taking place, and reasons for cultivating at the chosen site. Respondents were asked whether they farm on the stand they reside on, on another site outside their compounds or whether they cultivate on both (see Annexure 1, question 15). As illustrated in table 4.17, most cultivation is takes place inside the compounds.

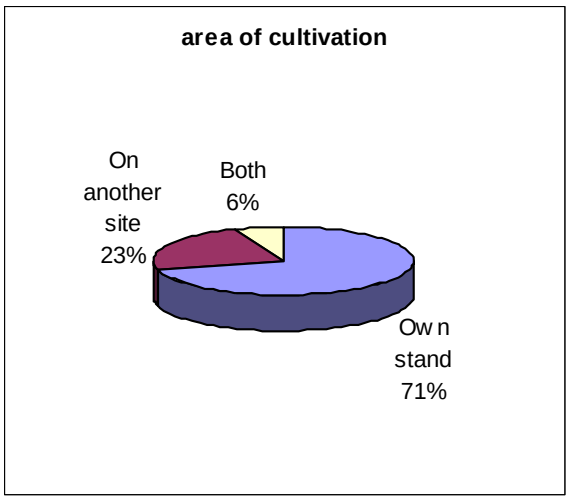
Table 4.17 Location of cultivated area

Site	Frequency (n=100)	Per cent of total
Own stand	71	71
On another site	23	23
Both	6	6
Total	**100**	**100**

Source: field data

71 per cent of the respondents cultivate inside the stands they reside in, which in most cases they own. 23 per cent of the respondents cultivate on sites located away from their compounds, while six per cent reported cultivating both on the site on which they reside and other sites located away from their place of residence. This is further illustrated in figure 4.7 below.

Figure 4.7. Location of cultivated area



Source: field data

Ability of the individual to work an area available for farming is a determining factor of the extent to which urban agriculture can be practiced by a household. Respondents farming on the plots on which they reside in cited lack of space as a major hindrance toward expanding their urban agriculture activities. These respondents showed a willingness to increase their area of cultivation only if they could be allocated extra space.

In other African cities, urban farmers are able to access idle land and utilize open spaces along roads, railways, electricity lines and abandoned lots. This is not observed in Orange Farm except towards the eastern end of extension 2, next to the railway line. The zoning of land uses in the area for residential and commercial purposes may explain the absence of urban agriculture in the numerous open spaces in the area. According to respondents, the metropolitan council keeps a close look on open spaces and discourages any form of activity that has not been officially sanctioned. The 23 per cent of respondents who cultivate outside their yards have to use vacant plots which are allocated but not yet developed. They also use open spaces owned by churches and charity institutions. Masibambane College and Qoqa High School have given part of their vacant land to neighboring families for urban agriculture.

When the cultivated area is located at a distance from the place of residence, the attention it receives from the cultivator tends to become limited. Distance reduces the number of visits to the plot especially if the farmer is elderly. The distance also creates a problem of security. Lack of security leads to the crops being exposed to theft and damage by unauthorized people and animals.

Use of open space for agricultural activities in Orange Farm has not been seriously considered by the metropolitan council, private and institutional land owners in the area. This is despite the fact that all stakeholders agree that the prevailing poverty conditions in the area is acute and needs to be addressed.

Respondents were required to approximate the size of their cultivated area. The approximation given was confirmed by the researcher's own observation. For most cultivators, the size of the building inside the yard was the determining factor of the cultivated area. As shown in table 4.16, most residents cultivate less than 10 square meters. It was observed that there is competition for use of space inside the yard. Some households have constructed backrooms for renting out. Others let out the space to individuals who construct temporary zinc shelters and pay a small monthly fee to the yard owner. There is also competition for space from drying lines, children's playing areas, pathways and flower beds. This severely limits the area available to carry out urban agriculture within the yard.

Eighteen per cent of the respondents reported a cultivated area of between 11 to 30 square meters. For such cultivators, agriculture was taking up most of the space in the yards, with cultivation virtually surrounding the whole dwelling.

Eleven per cent of the respondents approximated a growing area of between 31 and 60 square meters. Cultivation was taking place both inside the yard and the frontage outside the yard. Such cultivators also utilized vacant plots next to their yards.

Fourteen per cent of the respondents are cultivating between 61 and 100 square meters. This category of cultivators utilizes their own yards, open spaces next to their yards, schools and playing fields. 3 respondents reported cultivating more than 100 square meters. The study noted that these respondents were retired men, all over 50 years old,

and they were using land opposite their houses and adjacent to the railway. This land would otherwise have been bushy and constituted a health and security risk. The three reported that they had no intention of increasing their cultivated area at present because they had enough space which they could work on without using hired labour. Expanding the area would also result in an increase in the cost of farming because they would have to employ labour and use more inputs. They reported that they would only increase the size of the cultivated area if given credit and inputs which would make it easier to operate their fields. The study noted that plenty of land is available next to the three plots which can be utilized by others.

4.3.4 CROPS GROWN AND REASONS FOR CULTIVATING THEM

Observation of cultivation in the study area revealed that horticultural crops were the single biggest category of food grown in Orange Farm. Results of the survey show that vegetables are the preferred crop of cultivation (see Annexure 1, question 18 and 23). Pulse crops rank second. Table 4.18 ranks the crops grown in order of preference by the growers.

Table 4.18 crops grown in Orange Farm

Summer			Winter		
Crop	**Frequency (n=100)**	**% of total**	**Crop**	**Frequency (n=100)**	**% total**
Beans	100	100			
Potatoes	58	58	60	60	
Carrots	60	60			
Beetroot	70	70			
Mealies	22	22			
Pumpkin	43	43			
Cabbage	58	58	55	55	
Spinach	87	87	30	30	
Butternut	32	32			
Sweet potatoes	12	12			
Radish	45	45	32	32	
Green pepper	15	15			
Onion	18	18			
Swiss chard	5	5			
Lettuce	7	7			

Source: field data

Respondents were required to state their cropping pattern for summer and winter. Respondents prefer to grow beans, spinach, beetroot, cabbage, potatoes, onions, pumpkin, carrots and mealies (corn) during summer. This is due to conducive rainfall and temperature conditions during this period. Sweet potatoes, Swiss chard and radish are also grown. Many compounds have peach and plum trees which bear fruit during summer. Popular winter crops are spinach, cabbage, potatoes and radish. Respondents said they prefer to grow these crops during winter because they can withstand the harsh climatic conditions during this period.

Respondents were asked to state the reasons why they prefer growing the crops mentioned above. The reasons given are summarized in table 4.19 below.

Table 4.19. Reasons for cultivation of mentioned crops

Reason	Frequency (n=100)	Per cent
They are expensive in shops/market	56	56
I am used to them	57	57
They are easy to grow	60	60
They mature quickly	17	17
other	3	3

Source: field data

Sixty per cent of the respondents reported that the crops they grow are relatively easy to cultivate and do not make huge demands on time, labour and financial resources of the households. They also require minimum inputs. 56 per cent of the respondents said that they grow crops which are expensive to purchase in the market. 57 per cent reported that they grow crops which they are familiar with. Some respondents claimed that they grow crops which do not grow tall and cannot pose a security risk by hiding criminals. Others preferred to grow crops that enhanced the aesthetic value of their compounds.

Other reasons given include resistance to pests, curiosity after observing neighbours growing particular crops, and cheap and easy availability of seeds. Most respondents gave one or a combination of the above reasons for growing particular crops. Preference for growing vegetable crops arises from the simple reason that such households will be largely insulated from the high cost of those foodstuffs. Even though the income of such households may be low in monetary terms, such households will be relatively secure, except in the event of a bad growing season or drought (hailstones are a threat during summer).

Crop choice by respondents appears to be based on familiarity with the crop, climate conditions, plot size and end use of the final product. This explains why other urban agricultural systems like hydroponics, tree nurseries, and medicinal plant production is virtually absent in the study area.

The study observed that crops cultivated in Orange Farm are rather limited in scope. Maxwell and Zziwa (1992) have observed that in cities like Kampala, urban farmers prefer to grow a wide range of foodstuffs especially cereal and tuber crops like maize, sorghum, millet, bananas, cassava, coco yams and sweet potatoes. A wide variety of vegetable crops are also grown. Sawio (2005) also observed that urban farmers in Dar es Salaam grew a wide range of crops ranging from tree crops, annual crops, staples and vegetables. Companioni (2008) observed that in Havana, mixed farming involving a wide range of livestock and crops was intensively practiced.

4.3.5 ANIMAL HUSBANDRY AS AN ASPECT OF URBAN AGRICULTURE IN ORANGE FARM

Animal husbandry as an aspect of urban farming is not widespread in Orange Farm. This is surprising in light of the fact that the majority of residents are from communities which highly value animal rearing (especially the Nguni communities here in South Africa). From the total sample of 200 respondents, only 28 people or 14 per cent are practicing animal husbandry. 16 respondents admitted to keeping poultry, but only for eggs and consumption when they have problems with food availability. Table 4.20 below shows the type of animal husbandry practiced in Orange Farm.

Table 4.20. Animal husbandry in Orange Farm

Type	Frequency (n=200)	Per cent of total
Poultry	16	8
Sheep	3	1.5
Pigs	4	2
Cattle	2	1
Other	3	1.5
None	172	86
Total	**200**	**100**

Source: field data

Three respondents rear sheep. Market for the sheep is limited because they are sold to neighboring families for slaughter during ceremonies and rituals. Four of the respondents keep pigs, while two respondents are rearing cattle. The cattle are mainly for beef, with little emphasis on dairy production. The cattle are left to roam freely in the veld adjacent to Orange Farm, grazing on whatever grass available. Four respondents keep small ruminants especially rabbits. These four also keep pigeons and doves. One respondent is keeping donkeys and horses for draft purposes, transporting goods by horse drawn cart locally.

The poultry and small ruminants are kept in sheds and hutches at the back of the yards due to lack of space. 172 respondents, representing 86 per cent of the total sample, are not carrying out animal husbandry.

Aquaculture and bee keeping is absent in Orange Farm. The lack of extensive animal husbandry in Orange Farm can be attributed to restrictive municipal by-laws. Owners are fined for keeping animals within the townships. Sometimes the animals are confiscated and owners have to pay a fine to the local authorities to have them released. Residents involved in animal husbandry in the area do it discreetly to avoid being fined. Fear of the punitive measures imposed when found rearing animals could have led to under reporting of the practice in the area.

Keeping livestock in the study area can be advantageous, especially if zero grazing methods are employed where space permits. Sources of fodder can be waste material from hotels, markets, homes and grass from the veld. The grass can be cut during summer and dried for feed in winter months. Animal husbandry, especially dairy milk production, has been suggested by Somjee and Somjee (2005) as an alternative form of urban agriculture that can induct more people with little or no resources into the dairy industry. There is low consumption of milk and dairy products by residents of Orange Farm due to the high cost of these products on the market (personal observation). This can generate a surplus of cash, sometimes huge, enabling such farmers to diversify their economic undertaking. Somjee and Somjee (2005:19) add that savings from milk production in India have supported not only experiments in other cash crops, but also commercial

ventures and small industrial units. Encouragement of this industry in Orange Farm can definitely have an impact on poverty conditions.

4.4 INPUTS

A limited range of inputs and production practices were observed in the study of urban agriculture in Orange Farm (see Annexure 1, question 24). Table 4.21 reveals that there is heavy reliance on green manure and local seed in the farming process. Only 23 per cent purchase fertilizer from stores to apply on their plots. Over 96 per cent depend on manure from crop wastes. Animal manure from poultry and livestock is applied by a few respondents.

Table 4.21. Inputs used by urban farmers

Input	Frequency (n=100)	Per cent of total
Commercial fertilizer	23	23
Manure/crop residues	96	96
Local seed	80	80
Improved seed	21	21
pesticides	14	14

Source: Field data

Some farmers in this category collect manure form the roadside or the surrounding veld. Respondents were asked how they got rid of waste from their farming operations. Almost all respondents reported recycling the waste back into the gardens to maintain or improve soil fertility. One farmer collects treated waste form the sewerage works located 15 kilometers away. A popular method of obtaining this manure is composting the waste from the field and household and applying it during the next planting season. Composting is an efficient method of nutrient recycling and helps with rubbish collection problems. The study noted that most of the urban cultivators are using material from their fields for composting. This is despite the fact that a great variety of materials are available that can be incorporated into the composting process for the garden – all crop and weed residues, kitchen waste, old newspapers, the leaves of city trees and any plant waste that can be collected by the farmer.

Twenty one per cent of the respondents use improved seed which is purchased in the stores. Most farmers prefer to use their own seed due to the high cost of purchased seed. The seed is normally saved from the previous crop. Some seed is obtained by throwing leftover from household food preparation e.g. tomatoes, potatoes peelings, pumpkin and butternut waste into the fields which sprout and grow into crops. Some farmers borrow seeds from neighbours, friends or relatives.

Only 14 per cent of the respondents use pesticides. The low level of pesticide use by urban farmers in the area can be attributed to the high cost of commercial pesticides. Most respondents stated that pesticides are very expensive. Most reported to resorting to

biological control, especially inter planting their crops with Mexican marigold to control insect pests.

Fifty six per cent of the respondents practice crop rotation. Some farmers plant different crops on a monthly basis to ensure availability of food throughout the year. Table 4.22 shows the farming practices common among household farmers (derived from Annexure 1, question 28). The study noted that most farmers are practicing multi-cropping, and that several crops would be planted in one field at the same time. The popular combination during summer was to intercrop mealies, beans, carrots, spinach and cabbage at the same time. This illustrates the intensity of land use in urban agriculture practice.

Table 4.22 Farming practices

Practice	Frequency (n=100)	Per cent of Total
Crop rotation	56	56
Use of manure	69	69
Irrigation	100	100
Bird control	41	41
Erosion control	32	32
Fallow	22	22

Source: field data

4.5 OUTPUT

Due to the small scale nature of urban farming practiced in the study area, accurate figures on production and consumption of the different crops grown are difficult to obtain. Some of the food produced enters formal marketing channels while some is bartered, given away or consumed by the producers. Respondents were asked to estimate how much food they obtained from their gardens. Table 4.23 summarizes the proportion of household food that is obtained from urban agriculture (see Annexure 1, question 29).

Table 4.23. Proportion of household food obtained from the garden

Proportion	Frequency (n=100)	Per cent
None (0 – 10%)	21	21
Little (10 – 20%)	25	25
Some (20 – 40%)	21	21
Half (40 – 60%)	19	19
Much (60 – 80%)	9	9
Most (80 – 100%)	5	5
Total	**100**	**100**

(Source: Field data)

Twenty one per cent of the respondents reported obtaining less than 10 per cent of their household food requirements from their gardens. Five per cent reported obtaining little food from their gardens (between 10 – 20 per cent). Most respondents stated that they obtain some food from their gardens (20 – 40 per cent). 19 per cent obtain over half of their requirements from the garden. These were observed to be growing a wider variety of both winter and summer crops. It was also this category that preferred to plant a small portion of their plots on a monthly basis so that they could have a continuous harvest throughout the year. Over 14 per cent of the respondents stated that they get over 60 per cent of their household food requirements from urban agriculture. The study noted that this category was cultivating inside their yards and areas outside the yards, especially on roadsides.

The weighted average of the amount of food obtained from urban agriculture is 19.5 per cent. This figure represents a proportion of total food consumed in the household, and not a proportion of total value of food used in the house. It is evident that urban agriculture contributes a significant amount of the total food consumed in the household. Although urban agriculture does not provide all the food requirements that a household needs, its contribution can be seen as being important because it saves money that would have been used on food purchases.

Respondents were asked to estimate the proportion of their produce sold or given away (and by inference, what proportion was left for consumption within the household) (see Annexure 1, question 27). The proportion sold, bartered or given away differs according

to household needs. This is summarized in table 4.23 below. Food is either sold or given to neighbours, friends and relatives when it cannot be consumed.

Table 4.24 Proportion of food sold/given away

Proportion	Frequency (n=200)	Per cent of total
None (0%)	51	51
Little (more than 20%)	19	19
Some (20 – 40%)	12	12
Half (40 – 60%)	4	4
Much (60 – 80%)	11	11
Most (over 80%)	3	3
Total	**100**	**100**

Source: field data

Most households practice urban agriculture with little intention for commercial purposes. Some households will invariably sell part of their harvest to generate income which is used on other household expenditure. Fifty one per cent of the respondents do not sell or give away any of their produce. Nineteen per cent of the respondents give or sell very little of their total produce. Twelve per cent of the respondents reported giving away some of their produce, which amounted to between 20 and 40 per cent of their total

output. Sixteen per cent of the respondents sell or give away over half of their output (0 – 80%), while only 3 per cent sell or give away most of their output (over 80%).

Selling or giving away what has been produced tends to depend on having a surplus after all household food needs have been met rather than maximization of profit. It can also depend on the need to raise cash to meet some household emergency. The only exception to this rule applies to the group earlier referred to as ‘no other means’ that are sometimes forced to sell their output even when their household needs are not fully met.

4.6 TIME EXPENDED ON URBAN AGRICULTURE

Table 4.24 below illustrates the average number of days urban agriculture practitioners spend on farming (see Annexure 1, question 30). The study noted that in most households it is a single person involved in the practice with very little help from other family members.

Table 4.25 Days spent farming

Days spent on UA	Frequency (n=100)	Percent of total
1	14	14
2	30	30
3	41	41
4	15	15
More than 5	0	0
Total	**100**	**100**

Source: field data

The most number of days spent working on the farmed plot is four, which is done by less than 15 per cent of the respondents. Most residents spend one or two days carrying out urban agriculture. Family labour is sometimes used to help in planting, weeding and watering. The study observed that if the primary farmer was a man, often his wife served as back-up labour. This was not always true if the primary farmer was a woman. The small scale nature of urban agriculture in the area precludes use of hired labour. Virtually all respondents reported not employing external labour for their farming operations. This contrasts with urban agriculture practices in other parts of Africa, where urban agriculture employs a significant number of the populations of these cities. Nugent (2005: 82) has shown that 25 per cent of the population of Nairobi is employed in the urban agriculture

sector. Similar conclusions have been drawn for Harare (Mbiba, 1995), Dar es Salaam (Sawio, 2005), and Kampala (Maxwell, 2005).

4.7 SOURCE OF KNOWLEDGE ABOUT FARMING

Respondents were asked to state where they obtained their knowledge about farming. 61 per cent of the respondents got their farming knowledge either from their parents, or from the areas that they originally came from. (Table 4.25). 18 per cent of the respondents started urban farming after observing their neighbors, and by trial and error methods. The group using trial and error methods or observing neighbors were mostly whose area of origin had an urban background, and mainly from the Gauteng region.

Table 4.26 Source of farming knowledge

Source of knowledge	Frequency (n=100)	Per cent of total
From parents/area of origin	61	61
Observing neighbors/trial and error	18	18
Schools/tertiary institutions	21	21
Total	**100**	**100**

Source: field data

Twenty one per cent of the respondents stated that their source of knowledge about farming was from school or tertiary institutions.

While area of origin is an important source of knowledge about farming, the idea of starting an urban garden can be infused by observing neighbours and the rewards they reap from carrying out urban agriculture. Projects training residents about farming methods can be particularly useful in generating interest about urban agriculture to households not currently involved in the practice. Well tended urban gardens by institutions can have a significant impact in generating interest about farming. Group farming projects can also be an important means of diffusing farming knowledge to individuals who lack farming skills.

4.8. CONCLUSION

This chapter has given a typology of farming residents in Orange Farm. It has also described and analyzed the main attributes of the practice of urban agriculture in the study area. The low level of animal husbandry in the area limits the scope of urban farming, preventing access to protein sources that can be obtained cheaply. Even though some residents lack the know-how to carry out urban agriculture, they expressed a willingness to learn and adapt the practice as they are confident that it can improve their livelihoods. . It emerges that though practitioners of urban agriculture still depend on markets to meet most of their food needs, the sector is providing a significant amount of the food consumed by households that are engaged in the practice. The result is that there

is money available for other household uses. This would not be the case if such households were not carrying out urban farming. This helps in easing the poverty conditions of those households involved in the practice. The need to sensitize more families interested in urban farming is paramount if the food security and poverty problems are to be solved.

CHAPTER V

THE POTENTIAL OF URBAN AGRICULTURE AS A LIVELIHOOD STRATEGY IN ORANGE FARM

5.1. INTRODUCTION

The previous chapter highlighted the salient characteristics of urban agriculture in Orange Farm. This chapter examines factors that encourage and discourage the practice of farming in the study area, focusing on the sector's potential role to improve household conditions in the area. This chapter focuses on what respondents perceive to be the major impediments to their active participation in urban agriculture. Interlinkages among various stakeholders involved in the urban agriculture system are examined so as to obtain an insight as to how the sector can be encouraged and improved as a livelihood enhancing strategy.

5.2. FACTORS ENCOURAGING URBAN AGRICULTURE IN THE STUDY AREA

Poverty is the driving force behind the decision by most families to participate in urban agriculture. Low incomes coupled to recurring household expenditure leads families to seek alternative means to meet their household food requirements. Most families in Orange Farm are dependent on welfare grants which are insufficient to meet all their

household needs. Urban agriculture as a practice releases money that would otherwise be spent to buy food for other uses.

The high unemployment rates (see table 3.2, 3.3), linked to diminishing formal employment opportunities leads to the consideration of alternative ways of income generation. The combination of low income, unemployment and lack of economic opportunity then become a definite factor in encouraging the growth of urban agriculture in the study area. There is also availability of cheap and accessible labour that can be employed in urban farming. In most households there will be grown up people who can carry out the practice.

Accessibility to agriculturally cultivable land is a factor that encourages urban agriculture. Reuther and Dewar (2005: 101) identify insufficient land availability as being the most significant constraint on urban agriculture. There is plenty of land available inside and around Orange Farm which can be converted for urban agriculture activities. There are many open spaces of land adjacent to the railway and electricity lines that can be used for urban agriculture. Land under electric pylons is widely used for urban agricultural practices in Soshanguve (Kekana:2006), Harare (Mbiba:2005), and Kampala (Maxwell and Zziwa, 1992). There is also vacant space in along storm water management facilities in the area. The research identified land next to schools and inside most school compounds as been unutilized. This is a viable alternative for converting into urban agriculture sites. There are numerous church institutions in the area with plenty of land which is lying idle. It is only in the Methodist church compound that urban agriculture is

taking place. This is because the church has been encouraging its members to participate in its food growing program. Reuther and Dewar (2005:101) have noted that in Khayelitsha township of Cape Town food gardens have been established in churches because of shortage of cultivating land and prevention from theft of matured crops.

Consumption of local seasonal crops is a factor that can encourage urban agriculture in the study area. This creates demand for the crops which can be provided by urban farming.

The periphery of Orange Farm has a lot of land that is partly used for grazing. The proper planning and organization by relevant stake holders can lead to allotment of this land for urban agriculture practices which in turn can help residents who do not have enough space and land to take up urban agriculture. Methods of allotment as practiced in the United Kingdom (Viljoen, 2005:12) where spaces are allotted to interested individuals for non-commercial growing of food by the local authority can be replicated in Orange Farm. This will solve the problem of insufficient land as reported by most residents interested in urban agriculture. This form of usufruct is ideal because the allotted land can revert back to its intended use instead of just lying idle.

Even though environmental conditions in Orange Farm can be described as harsh (hot windy summers and cold dry winters), they are able to support horticulture and silviculture. The summer season witnesses a wider range of being grown due to high temperatures and moderate rainfall. The cold winters where temperatures are an average

of ten degrees Celsius limits the range of crops that can be grown. But winter crops (cabbage, carrots, potatoes, spinach, etc) grow well. This is a factor that encourages urban agriculture in the area.

With the population of over 300000 people (Statssa: 2006) Orange Farm is a ready market for regular and cheap supplies of quality food. This market can be supplied by practitioners of urban agriculture in the area. Petts (2005:70) has observed that demand for food is unlikely to change very much with changes in price or other economic circumstances i.e. It is fairly inelastic in demand. This suggests that even when incomes are low, urban cultivators will still have buyers for their produce. The presence of street food vendors also provides a ready market for urban cultivators.

There is easy availability of water that can be used for irrigation on gardens inside the stands and near the households. The Metropolitan council does not charge the residents for any water that they use. Water availability is a factor that encourages urban agriculture in the study area. This may become a problem if the metropolitan council decides to charge water use at cost by installing prepaid meters as is happening in Soweto. This may limit the viability of the practice.

5.3. FACTORS CONSTRAINING URBAN AGRICULTURE IN ORANGE FARM

Most of the practitioners of urban agriculture complain of the small size of their planting area. The problem here seems to be lack of access to other spaces available for cultivation

or fear of utilizing open spaces. This fear stems from discouragement by local authorities of using vacant land for purposes it was not intended for. The open spaces and vacant land adjacent to the settlement may be located at a distance from the household unit. This discourages the practice of urban agriculture. Distance from area of cultivating results in other problems, including theft of produce and destruction by live stock and birds especially where there is no fencing. It also limits the irrigation potential because most families have to use tap water or 'gray' water on their crops.

There seems to be lack of proper crop production and animal husbandry skills among those interested in carrying out urban agriculture. As shown previously in table 4.16, a significant percentage of the area population does not have any farming skills. Even for those who are carrying out urban agriculture the skills they have may be insufficient to properly carry out crop cultivation and animal husbandry. This may be militating against the growth and expansion of urban agriculture in Orange Farm. There is need to establish some training and skills imparting programs on urban agriculture to interested residents which will help to greatly improve the practice.

The high cost of inputs needed to carry out urban agriculture is a factor militating against the expansion of the sector in the era. Respondents cited the high cost of seeds, chemical fertilizes and pesticides as the major limiting factor in their farming operations. Use of buckets to irrigate crops severely curtails both the location of the area that can be farmed and the size of the cultivable area. Provision and subsidy of basic inputs like seeds,

fertilizer and pesticides can encourage growth of the sector in the area. So too can provision of farming implements like hoes, rakes and horse pipes.

5.4. INSTITUTIONS AND THEIR ROLE IN URBAN AND PERI URBAN AGRICULTURE IN ORANGE FARM

Very few institutions are involved in the urban agriculture sector in Orange Farm. Both the national and provincial departments of agriculture have no program to support small scale urban farming in the area. The Metropolitan council also does not have any specific program to encourage establishment and growth of urban agriculture in the area. Spies (1998:16) candidly asserts that municipalities are the most important service providers with a mandate and responsibility to implement urban agriculture developments on public open spaces. The Johannesburg Metropolitan Council seems to be lukewarm in its support of the sector. This is apparent by their lack of any sustained program to support urban agriculture in the area.

Maswikaneng, Van Averbeke and Bőhringer (2002:265) have noted that many non governmental organizations, welfare and church institutions have recognized the importance of small scale urban farming in terms of food security and social function. These organizations are actively promoting gardening activities through extension, encouragement, training and occasional input supply (seed and fertilizer). A good case study is the encouragement of the practice in Mamelodi Township in Pretoria by a consortium of Not-for-Profit organizations (Kekana, 2006).

Inquiries at the social development office reveal that there is no non-governmental organization dealing with urban agriculture operating in Orange Farm. Residents interviewed reported that an organization that supplied seeds for planting was once active in the year 2005, but had never been heard of since. Further inquiry revealed it to be Thuso Development Trust, which is now defunct. Women's Voice, a not-for-profit organization seems to be one of the two charity organizations encouraging urban farming in the area. This organization is at the forefront of promoting the growing of vegetables by families afflicted or affected by HIV/AIDS to set up vegetable gardens so as to broaden their nutritional intake in an effort to mitigate the AIDS pandemic (Mphuting, 2009).

There is an urgent need for government and other institutions to play a more active role in supporting urban agriculture in the area. As Nugent (2003:88) has observed, local government and non governmental institutions are the most important policy influences on the viability of urban agriculture. These authorities are responsible for determining where an activity can occur, if at all, through zoning; what resources are available and in what condition; provision of informational services and orderly marketing arrangements; and the provision of a secure legal and economic environment.

The National and Provincial departments of agriculture can play a more pro active role in encouraging urban agriculture by formulating policies that encourage growth of the urban agriculture sector. They can also provide training and extension facilities to emergent

urban farmers. Non-governmental organizations can actively mobilize support for the practice of urban farming. They can also help in provision of startup implements, seed and other inputs that are hindering the very poor from participating in urban agriculture. There has been a growing shift in recognition and appreciation of the role of urban agriculture in household food security. Institutions can take advantage of this shift by the formulation of policy tools to support the process thereby minimizing problems associated with urban farming. Involvement of local communities in formulating these policies is crucial. Fox and Liebenthal (2006:29) assert that experience throughout the world, including Africa, shows that community driven development projects and processes deliver public investment to poor people faster, cheaper and better. They do so by building into the policy design a strong channel for local communities - who are the stakeholders – to make their own decisions, within a clear and transparent accountable structure. Involving households that are practicing urban agriculture, and those interested in joining the practice is paramount if the sector is to play an important role in the local economy.

5.5. THE POTENTIAL OF URBAN AGRICULTURE IN IMPROVING LIVING STANDARDS IN THE STUDY AREA

Observation of living conditions in Orange Farm reveals a life characterized by extreme poverty, with few options available to residents to improve their living conditions. Urban agriculture is one of the few options that residents can resort to. Urban agriculture on an informal small scale basis is relatively easy to enter. Residents can start with a few

inexpensive inputs and limited technical knowledge, probably on land with no rent. It does not require any substantial capital. What is needed is space and a few basic inputs which can be bought or borrowed from neighbours.

There has been little recognition in official structures and development practitioners about the importance of urban agriculture in household food security. This study noted that urban agriculture in Orange Farm remains largely unrecognized, unassisted and sometimes discriminated against through discouragement of use of open spaces in the area for farming.

All respondents interviewed reported that the market is their major source of food. The urban garden or farmed plot was a secondary source, but one that provided an important buffer against short term shortages of food and cash. Mougeot (2005:7) has reported that in countries like Kenya, Zimbabwe, Uganda and Haiti where poor households practicing urban agriculture have been compared with poor non-practicing households, the former have been found to have lower food insecurity, eat more meals, maintain a more balanced diet year round, and use their savings to buy other food items that would otherwise be unaffordable. Their children have better health and nutritional status. They also add that women practicing urban agriculture in such countries give more maternal care time to young children. Practicing urban agriculture in Orange Farm should see households in the area achieving the same advantages.

If properly conducted and managed, urban agriculture can result in the supply of food products to the market. This market can be both the local hawkers and formal retailers

that are operating in the area. If urban farmers in the area are encouraged to grow more high value crops, especially fruits and high end vegetables like asparagus, cauliflower and broccoli, it can substantially contribute to household income. Monetary benefits can accrue to urban farmers if they are supported through provision of enough space for operations, input supply, training and extension services. It will also result in provision of a wider range of sufficient and nutritious food to the households themselves. In this context, it is able to meet the dietary demand and food security of poor households in the area. The already established farmers can be encouraged to intensify production for the market, with subsequent provision of marketing avenues. Viljoen (2005:70) proposes change in local food purchasing policies in the statutory sector to encourage the growth urban agriculture. Hospitals, schools, and prisons can provide a major impetus to the development of urban agriculture given that a large proportion of all food consumed is through these institutions. Such policies, if applied to Orange Farm can result in steady demand for the produce of urban agriculture thus encouraging growth and development of the sector.

Urban agriculture in Orange Farm is capable of having a multiplier effect on the local economy. Income saved from cost of purchasing food, and income earned from sale of urban agriculture produce can be used for other purposes in an effort to improve the situation of participating households.

Mougeot (2005:8) observed that incomes and wages from urban agriculture activities compared favourably with those of unskilled construction workers and low level civil

servants in Tanzania and Cuba. The same can be achieved in Orange Farm if there is a sustained effort to develop the sector so that it can be a proper income generating sector and not just a means of survival as it is at present. By growing most of their food, producers can save most of their income because they will have to purchase less food. Annual savings on the food purchases can help meet other needs such as schooling, or investment in other income generating activities that can contribute to improved household well-being.

Crop cultivation is the popular urban agriculture practice in Orange Farm. There is a need to encourage the keeping of poultry and small ruminants to boost the protein intake of participating households. The keeping of poultry (chicken, ducks and geese) and small ruminants like rabbits does not take up a lot of space. The provision of minimal credit to start such ventures can result in benefits such as more income and access to a wider range of livelihoods.

Keeping of livestock can diversify incomes and food sources for participating households. The plots in Orange Farm are large enough to allow zero grazing systems of livestock rearing. This can provide milk and dairy products to poor households. But this should be done in an integrated manner. Such producers should receive training on animal husbandry. They should be able to adhere to obligations and responsibilities of following certain ‘rules’ such as acceptable animal management and elimination of foul smells. Flies and rats that are frequently associated with animal husbandry should not be a resultant problem of urban animal husbandry.

There is also need for area residents to diversify their dietary range so as to accommodate foods that have proved to flourish easily in other urban agriculture systems in different countries. An important crop that could be introduced in the area is the cassava plant. The crop does not need any purchased inputs, does not need irrigation and is resistant to pests. Farmers in many parts of Africa have adopted different cassava varieties, thereby maintaining a downward pressure on staple food prices hence benefiting urban families who consume cassava products (Djurfeldt et al, 2002: 140). If residents of the area were to be introduced to the crop it would help solve the problem of availability of food because it would be available throughout the year. Other vegetables like amaranth which are popular elsewhere can be introduced in the area. The amaranth flourishes during summer months, but can be dried to be consumed in winter when food availability is a problem.

Spies (1998:2) recommends that urban agriculture should be stimulated through sponsored programs of action. These programs should involve introduction of other food varieties, training, awareness campaigns, nutritional information and efforts at portraying the benefits of urban framing. This will provide the impetus and encouragement of non participating households to take up the practice.

A case study of an Orange Farm urban farmer – Mr. Jacob 'Conti' Mavimbela

Mr. Jacob Mavimbela, known by his nick name 'Conti', is 77 years old. He originally comes from Swaziland. He came to South Africa in 1947 as a young man to work for an

Afrikaner doctor in Pretoria. He was one of the first inhabitants of the settlement, arriving in 1988 when the area was being set up as a township. After being allocated a stand, he constructed a ‘mkukhu’ on the plot. The government allocated and built him a two roomed RDP house in 2003.

Mr. Mavimbela receives an old age pension of R870 per month from the government. This is all he depends on to cater for himself, his wife and four grandchildren. His wife is 56 years old. Even though she now qualifies to receive an old age pension she is not accessing the money yet due to lack of an identity document. She lost the document ten years ago, but has not got around to applying for one. Two of the children receive grants, but the money goes into their mother’s account. The mother does not live with Mr. Mavimbela so he never sees that money, yet he has to take care of the children. The parents of the other two children died from the AIDS pandemic. He does not pay for his electricity, though he has never been disconnected.

To feed the family Mr. Mavimbela uses nearly all his income on food. There are times when the family has to subsist on one meal a day. When meals are prepared there has to be provision for leftovers which the children can eat the following day. Food is never enough. To help meet the household food needs he grows potatoes, mealies, spinach, beans, onions, tomatoes and other horticultural crops. The cultivation takes place both inside his plot and on the adjacent space facing his house that borders the railway line. The size of his cultivated area is approximately 250 square meters. The farming activities enable Mr. Mavimbela to supply his family with green vegetables throughout the year.

He is also able to sell part of his produce to neighbours and hawkers. This boosts his income and he is thus able to meet school fees, clothing and other needs of his family. Part of this money comes from the income obtained from direct selling of the produce, and that which he saves by not buying some food items.

Sometimes when times are tough and he needs money to buy mealie meal or rice, he takes his wheel barrow and goes scavenging for glass bottles, plastics and metal in Sebokeng and Walkerville, which are the nearest suburbs. He sells these to the scrap yards in Orange Farm. Given his age this is quite an arduous task that really tires him out. This ensures that the family has a decent meal at least once a day.

Urban farming is a survival mechanism for him, without which the situation would be far worse. He began farming from the first period when he settled in the area. He utilizes the knowledge he gained from his parents who were subsistence farmers and observation of his neighbours carrying out the practice. His plea to the authorities is to be provided with inputs especially a hoe, hose pipe, seeds and pesticides so that he can expand the area he is currently cultivating. His vision is to expand his cultivable area and supply the local supermarkets with green vegetables.

5.6. LINKAGES AMONG VARIOUS STAKEHOLDERS INVOLVED IN POVERTY ALLEVIATION IN ORANGE FARM

There is a glaring absence of holistic programs to tackle poverty in Orange Farm. There is lack of coordination, inadequate public planning and absence of a willingness of relevant actors to work together to address problems related to poverty in the study area. Effective action to tackling poverty is proving to be elusive in the area (as evident by deepening poverty conditions) due to conflict of interest among disparate actors.

The department of Social Development tackles poverty alleviation in the area by encouraging people to apply for income grants from the government. The National and Provincial departments of agriculture concentrate on large scale commercial farming in the province, and also encourage growth of emergent black commercial farmers. Non governmental organizations tackle the problem of poverty through feeding schemes. Other organizations work by providing basic necessities to poor families. Charitable organizations dealing with HIV/AIDS encourage growing of vegetables and access to anti-retroviral drugs. They however do not provide practical help on crop growing and animal husbandry.

While all these methods are practical and effective in the short term, they do not adequately tackle the problem of poverty in the long run. There is need to focus on an integrated approach to tackle poverty in the area. In doing so, it is important that all involved (including the poor themselves) share a clear understanding of what ‘poverty’

and ‘effective poverty’ alleviation means. This can help create a common poverty alleviation language which will allow all stakeholders to communicate and explore possibilities on how to proceed.

While it is appreciated that local authorities and other stakeholders may lack expertise to implement programs in the urban agriculture sector, there are organizations which can help in provision of the necessary skills. Interlinkages of key stakeholders in the poverty alleviation process in Orange Farm can result in proper investigation of the key issues (institutional, environmental, urban agriculture practice) where action needs to be prioritized to combat poverty. This can lead to planned interventions where specific policies detailing integrated methods of dealing with urban poverty can be outlined. Such policies can help highlight the importance of urban agriculture in improving livelihoods.

Agreement on holistic methods of tackling the problem of poverty can clear the way for the next step of identifying long term strategies to combat the problem. This should lead to the recognition of the importance of urban agriculture as a poverty alleviation tactic. It will also lead to the development of a sustainable, long term vision of urban economic practices that effectively tackle poverty issues.

5.7 CONCLUSION

This chapter has highlighted the potential of urban farming in improving livelihoods in the study area. Many people in Orange Farm would like to carry out urban farming but

they lack the capacity to do so. Unavailability of land to carry out the practice is a factor hindering growth of the sector in the area. There is need to encourage urban farmers in the area to intensify their practices so that they can sell more products to the formal market. This will increase their incomes and provide employment.

CHAPTER VI

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 EXECUTIVE SUMMARY

Research Problem….

In South Africa, low income families living in informal settlements experience difficulties in accessing food. The food coping strategies that they employ in order to survive have not been fully understood, analyzed and appreciated. Families living in urban areas have to depend on cash incomes to meet their food requirements. Sometimes the food accessed may not be adequate and of full nutritional value. Urban agriculture as a food coping strategy is an easy option for low income families in Orange Farm to meet a substantial portion of their food needs. Money saved from growing their own food and not purchasing it can be utilized for other household needs. Urban agriculture can provide food, employment and income to most of the area residents. The salient characteristics of urban agriculture as a poverty alleviation strategy have not been fully understood and analyzed.

…..and objectives

The overall objective of the study was to gain an understanding of the practice of urban agriculture in Orange Farm, focusing on its role as a poverty alleviation strategy. The

attributes and dynamics of urban agriculture need to be understood by both households involved in the practice, and the relevant stake holders in order to advance the sector as a viable solution to food insecurity and low incomes experienced in Orange Farm. Understanding the processes involved in urban agriculture can help popularized it among households not currently participating in urban farming, and can be an impetus for the growth and development of the sector. The sector can be a relevant strategy in the improvement of livelihoods in the area.

Methodology and theoretical framework

The study uses the survey technique for data collection and analysis. Purposive sampling is utilized to select a population sample. Descriptive and qualitative methods are used to analyse and present the collected data. Urban agriculture has often been viewed as an adaptive response by urban families to improve their food situation. Urban agriculture is an easy method that poor families can resort to in their efforts to diversify livelihood options under conditions of persistent economic uncertainty and threats such as unemployment and declining purchasing power. Urban gardening is also a result of long standing traditions of adopting food coping mechanisms in times of hardship.

Even though the practice of urban agriculture contributes to households and nutritional food security, informal employment creation and diversification of diets, it remains marginalized. For a long time the practice has been regarded as backward and an eyesore to the neat arrangements of modern cities. Modernization theory does not recognize the

importance of urban agriculture, viewing farming as a practice only suitable for rural areas. Urban food growing is not viewed as a necessary condition that is vital to economic development and growth, but as inimical to formal urban systems. Rather, movement from rural to urban areas should result in changes in the socio-cultural and political frameworks of societies, which should follow formal means of achieving livelihood expectations. Such formal means are employment and participation in modern economic sectors. Trends in global and national economies in association with rapid urbanization have on the contrary resulted in fewer formal economy jobs and opportunities.

Urban areas have been recognized to have great potential for food growing. This applies to locations in the urban areas which are less suitable for household construction, commercials or industrial use (e.g. under electrical wires, adjacent to roads, railway lines and storm waterways, etc). Urban agriculture has the ability to ease the ecological footprint of food production and hence has to be viewed in the context of the sustainable development debate. It should be appreciated from an ecological perspective, being seen as part of a greater urban system that is striving for self sufficiency and growth, not exerting negative effects on the environment, and at the same time helping solve the pressing problem of hunger and food scarcity.

The research context of the study

The study is based in Orange Farm, which is a fast growing cosmopolitan informal settlement where conditions of life are minimal. Poverty is widespread in the area and families struggle to survive. The study area has a fast growing population; incomes are low, employment and economic opportunities are at minimum. It is an area that typifies most urban informal settlements in South Africa, and reflects conditions of life faced by many South Africans.

6.2. FINDINGS AND DISCUSSION

It has been a common assumption that urban residents have to purchase food to meet all their dietary requirements. Low incomes, widespread unemployment and declining standards of living result in poor urban families being unable to meet all their food needs. They have to resort to different food coping strategies to survive. In an attempt to ascertain the role urban agriculture can play in poverty alleviation for poor urban families, this dissertation commenced with an exploration of the background of urban agriculture practitioners and features of urban farming. It emerges that Orange Farm residents originate from Gauteng province, all the other eight South African provinces and neighboring countries. Most urban farmers in the study area obtained knowledge about farming from their areas of origin, from school, or from observing neighbors carry out the practice. The knowledge about farming that residents possess can be a first step of

popularizing the practice of urban farming in the area, but only if conditions that recognize and allow the practice to flourish can be established.

Most of the urban farmers have been residing in Orange Farm for more than five years, and own the plots on which they reside. What emerges is that the practice of urban farming is not an accidental or temporary venture by recent immigrants from rural areas. It is a reliable means of obtaining sufficient supplies of food to supplement household needs, an option that is easily available for most people living in urban areas. Urban agriculture is becoming a popular means of accessing food and can be explained by the 'logic of survival' – poor people resorting to easily available options to fend for themselves.

Many households in the study area have children, whose nutritional needs require a wider variety of food on a regular basis to help their growth and development. Participating in urban agriculture provides food which would be beyond the purchasing power of poor households.

The study revealed that most urban farmers in Orange Farm are women. This is consistent with studies from other parts of the world. Women, as the people responsible for feeding members of a household, opt for urban agriculture to supplement household food needs. Providing food to the household through urban agriculture by women not only increases the food security for the participants, but also permits them to use their own cash income on items other than purchase of food. The fungible income of

households derived from the substitution of market produce with home grown products is a factor that makes urban agriculture attractive to women and the unemployed. Urban agriculture can then be viewed as an empowerment strategy that allows women to be in control of what the family eats, in what quantity and how often, resulting in greater household food security.

Where women are disproportionately represented in the formal urban employment sector, urban agriculture can be a source of income and livelihood, negating the need to participate in poorly paying, exploitative and demeaning activities. Since the income earned from urban agriculture can be controlled by women themselves, it gives them a wider option to spend on items that are important for improving their social status, especially in families and situations where men have a dominant social position.

Women should be encouraged to establish kitchen gardens inexpensively. Such gardens should be a feature of every home, especially those struggling to obtain food. This can be a small garden from which vegetables and garnishes are taken each day to improve a meal.

The study revealed that most practitioners of urban agriculture have primary level of education. Education level has often been linked to poverty. Income and employment opportunities for people with only primary level schooling have considerably diminished in South Africa. Urban agriculture is a sector that can contribute to employment and income provision, especially for those residents who lack the opportunity to join the

formal employment sector due to among other things low levels of education. This group can be provided with training on crop and animal husbandry without radical demands in terms of finances, materials and resources.

The study shows that most urban farmers are elderly people. Participation in urban farming by young people is infrequent. This can be attributed to the lack of knowledge among young people about the potential benefits of the sector. There is a need to bring young people into the practice of urban agriculture. Programs should be put in place that will result in an appreciation of the sector as an income generator. The sector should be popularized as having potential to provide employment and favorable incomes. This requires a shift of the goal of urban agriculture from being household food security – to one of providing food, employment and incomes through intensification of operations and a focus on the urban food market. High incomes deriving form the sector can make it attractive to the many young people who are unemployed in the area.

Orange Farm faces a harsh economic climate manifesting itself in widespread unemployment and underemployment. Most residents are either unemployed or underemployed. Many households in the area rely on government grants to meet their day-to-day requirements. The incomes in most cases are not sufficient to meet the required expenditure, especially provision of food. Residents have to resort to other food coping strategies to acquire food and meet expenditure.

There is relatively little use of wage labour in urban agriculture in the area. This is due to the small scale nature of urban farming as currently practiced. Expansion of the area under cultivation, coupled to intensification of production with the aim of selling to the market should lead to creation of employment opportunities by the sector. This requires a re-focusing of the current view of urban agriculture as a survival mechanism of low income people, to that of the sector as an integral part of the urban development strategy of providing employment and raising incomes for the poor.

Urban farmers in Orange Farm are at present constrained by the size and area of their operations. Urban agriculture is proving to be a major land-use, due to its mobility and adaptability. Empty spaces that are not currently being utilized can be converted into allotments. The allotments should be only for urban farming, with provision that they will revert to their intended use when needed. This will enable owners of vacant spaces be willing to cede temporary usage of spaces for farming by the poor. Vacant areas that abut the railway line (see figure 3.1) line next extensions 1, 7, 2, 4 and Lakeside extensions 1 and 3 is idle and can provide good farming sites. Driezek extension 5 and the area bordered by the Golden highway, St. Patrick road and Evaton west are also suitable for allotment. There are huge tracts of open veldt surrounding Orange Farm. To the west is Johannesburg Rural and to the East is Vereeniging NU Outlying. These tracts of land are the property of Johannesburg Metropolitan Council. This land can be allotted on a usufruct basis. They can be allotted to interested individuals to carry out urban agriculture for the time being before development for their intended use.

Residents interested in farming inside or near their own yards can carry out container farming as an alternative to growing crops in the allotments. This will need provision of the necessary materials needed by either government institutions or other donors.

The scale of production of the urban agriculture sector in Orange Farm is still at a minimal level, concentrating mostly on production for self consumption. The range of products is also limited, with little emphasis on high value crops like fruits and exotic vegetables. Fruits, especially oranges, apples, peaches and apricots can be grown in the yards without need for extensive inputs and demand for large spaces. Urban farmers in Orange Farm need to be encouraged to produce high value crops and animal products. This will result in increased incomes and employment creation. Animal husbandry needs to be emphasized and encouraged as a profitable aspect of urban farming.

Urban agriculture practitioners in Orange Farm are playing an important role in the urban waste recycling process. Composting of household waste and use of ‘gray’ water to maintain soil fertility helps keep the cost of farming low by cutting out the need for purchased fertilizer. Utilization of urban waste in food growing in the area offers a win-win situation where waste disposal is tackled at the same time as increasing food security. This waste would otherwise be lost or used as landfill. The practice of urban agriculture also reduces transportation and packaging costs, since food is grown and consumed on site. This has a direct ecological benefit because it reduces the ecological footprint of the practice by cutting out transportation and packaging costs.

6.3. CONCLUSIONS

Urban agriculture plays an important role in the lives of residents currently engaging in the practice. The practice has a dual impact on poverty conditions: It provides food which would otherwise be unaffordable to many residents, and by utilizing money saved from buying food on other uses, it helps ease poverty conditions thus improving livelihoods. The practice has great potential to alleviate poverty. For this to succeed, it has to be made an integral part of urban land use and urban planning. Urban agriculture needs to be viewed in a broader context – not so much as a need to survive by the poor, but as a lucrative commercial activity that can generate high incomes and provide employment. Proper urban planning that allows use of vacant land for crop production, micro credit and food safe practices can help improve the urban food supply system and contribute to food security.

Urban agriculture has sound environmental benefits. It can preserve biodiversity (urban plots generally have more crops growing at the same time), tackle waste reduction and reduce the amount of energy needed to produce and redistribute food.

There is need to amalgamate the different policy approaches by various stakeholders in their efforts to alleviate poverty. Linking the various players so as to have an integrated approach to eliminating poverty in the study area should result in the recognition of urban agriculture as a viable poverty alleviation strategy. The necessity for policy inclusion of urban agriculture in mainstream development planning cannot be overemphasized.

Strategies for inclusion should start at the local level by allowing participants to input their ideas for a successful enabling environment of the practice. Planning should then proceed to the metropolitan, provincial and national levels, with reference to success stories of the practice locally and internationally.

6.4. RECOMMENDATIONS

There is a need for facilitative and reactive programs to support urban agriculture by low income urban residents. Such programs should be embedded in policies and planning frameworks in order to lead to a recognition of the sector as a salient feature of urban landscapes. High value urban agriculture systems like dairying, bee keeping, aquaculture, silviculture and stall feeding need to be adapted to small scale operations so that low income residents can enter into the practice to improve their livelihoods.

There is also need to revisit land use planning and regulation policies that restrict or inhibit the practice of urban agriculture. Negative policies that deem the activity unsuitable for urban areas need to be removed. Urban open space management should prioritize activities that can uplift disadvantaged communities in their drive to improve their own livelihoods.

In recognition of the important role urban agriculture plays in the lives of poor urban residents, it should not be excluded from urban development planning. Rather, an attempt should be made to understand and optimize its role in urban systems.

Development specialists and policy makers should quantify the actual output and monetary value of urban agriculture. This should be done with a view to addressing problems faced by the urban farmers. Legal and institutional support should be afforded to the sector so that it can be systematically integrated into the urban ecological system.

There is need to research the applicability of different urban farming systems that have proved successful in creating employment and raising incomes in other countries to the South African context. Practices such as zero-grazing, growing of medicinal plants, herbs and spices; poultry and egg production on a commercial basis and agro-forestry need to be considered as options poor urban residents can engage in to better their incomes. If urban agriculture is to become part of the solution to economic deprivation and ecological decline of urban areas, then it needs to address the whole spectrum of food production, marketing, land use and health concerns. Innovative approaches that encourage the practice while at the same time conserving the environment should be prioritized. Where land for carrying out urban agriculture is not available, technologies should be devised for poor households to make more efficient use of the spaces they are living in such as walls (mural hydroponics), rooftops, window sills, and indoor containers.

Effort needs to be initiated to promote group commercial ventures in urban farming, especially those involving women, both in the study area and other poverty stricken informal urban settlements of South Africa. This could lead to new forms of citizen-

controlled urban economic farming systems that combine both subsistence and market-oriented activities.

We need to consider the type of city that we really want to live in at present given the prevailing notions of sustainable development and environmental conservation. The city should allow improved livelihoods, greenery, sustainability and ecological efficiency. This may require us to ‘re-think’ the western model of urban centers where animals are kept for pets and plants are grown for aesthetic reasons. Our conception of urban areas should be one of integrating development in harmony with nature and based on a system emanating from the needs of urban residents themselves. This will place urban agriculture firmly on the agenda of alleviating poverty, improving livelihoods, employment and incomes.

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ANNEXURE 1 – THE SURVEY QUESTIONNAIRE USED

Qn. No. _____

URBAN AND PERI-URBAN AGRICULTURE AS A POVERTY ALLEVIATION STRATEGY AMONG LOW INCOME HOUSEHOLDS: THE CASE OF ORANGE FARM, SOUTH-JOHANNESBURG

Survey Questionnaire

GENERAL

1. Gender ☐ Male ☐ Female (Please tick)

2. Are you the head or the primary provider in the household? ……

3. Where do you originally come from? …….

4. How long have you resided in Orange Farm?…….

5. What is your age group? (Please tick)

☐ Under 25
☐ 26 – 35
☐ 36 – 50
☐ Over 50

6. What is your education level? (Please tick)

☐ No formal education
☐ Primary
☐ Matric
☐ Tertiary

7. How many people live in your household?

Children……
Adults …….

INCOME AND EXPENDITURE

8. Are you formally employed? …… if yes, for how long?.....

9. Do you have an extra source of income ? …… If yes name it …….

10. What is your approximate income per week/month ……..

11. On a monthly basis, how much do you spend on:

a. Food …….
b. Rent ……
c. Loan payments (accounts) …….
d. Traveling…….
e. Fees…….
f. Other …….

12. Which food coping strategy do you adopt when you have no food and no money to buy food? ……

…….

…….

URBAN AGRICULTURE

13. Do you engage in urban agriculture ? ☐ Yes ☐ No (please tick)

14. If you answered no to question 13 above, why don't you engage in urban agriculture ?

……

……

Then move to question 41.

15. If you answered yes to question 13 above, where do you cultivate?

☐ On the stand I reside on

☐ On another site (State distance from your house in (kms) ……

☐ Both (Please tick)

16. Why do you engage in urban agriculture? …….

……..

……

17. What is the approximate size of your cultivated area in square meters? ……

Your plot ……..
Other plot ……..

18. Please list the crops you cultivate: …….

……

…….

19. Are there any specific reasons why you the above mentioned crops? ……

……

…….

20. Approximately how much do you harvest of each crop mentioned above? ……

…….

…….

21. Do you keep any poultry or livestock? ☐ Yes ☐ No (please tick)

22. If yes to question 21 above, please list the type of livestock kept and the number of each:

…….

…….

……

23. What is your cropping pattern according to seasons? ……

…….

…….

24. List any inputs that you use: ……

……

……

……..

25. Do you irrigate your crops? ☐ Yes ☐ No (Please tick)

26. If yes, what is the source of your irrigation water? ……

27. Do you sell/give away any of the products that you grow? Yes ☐ No ☐

If yes please indicate the proportion sold/given away

None (0 – 10%) …….
Little (10 – 20% ……
Some (20 – 40%) …….
Half (40 – 60%) …….
Much (60 – 80%) …….
Most (Over 80%) ……

28. If yes, to who? ……

29. What proportion of household food do you obtain from the garden (Please tick)

None (0 – 10%) …….
Little (10 – 20% ……
Some (20 – 40%) …….
Half (40 – 60%) …….
Much (60 – 80%) …….
Most (Over 80%) ……

30. How many days in a week do you engage in farming? ……

31. State any problems that you experience while carrying out urban agriculture:

…….

……

……..

32. Do you get any kind of support from government and any other institutions while carrying out urban agriculture? ☐ Yes ☐ No (Please tick)

33. If yes, state the kind of support that you get:……

……..

……..

34. How do you get rid of the waste from your agricultural activities? ……

……

……

35. In your view, what can the government and other institutions do to help you improve/boost urban agriculture? ……..

……

……..

36. Do you plan to increase the area that you are cultivating and why?.....

37. Do you employ any people to help you with urban agriculture ? ……

if yes, how many? …….

38. How do you pay them ? ……

39. Are you involved in any farming group? ……..

40. (a) If you answered yes to question 38 above what is the name of your group and how many members does your group have ? ……..

…….

(b). Where is the group farm located? ……

41. How big is the plot your group cultivates on? …….

42. Where and how did you get the knowledge about farming? ……..

……..

……

……..

……

43. Do you consume any of the foods mentioned below? (Please tick)

Morogo	Plantains	Yams	Cassava	Sweet Potatoes
Mapami worms	Umngqusho	Kales	Mabele	Lentils

If yes explain why……

……

If no explain why ……..

…….

Thank you for your time and patience.

ANNEXURE 2 – MAP OF THE STUDY AREA