UNIVERSITY OF NAIROBI

TO INVESTIGATE THE EFFECT OF URBAN AGRICULTURE IN REDUCING POVERTY IN URBAN AREAS.

(A CASE STUDY OF WAITHAKA LOCATION, DAGORETTI DIVISION, NAIROBI)

PRESENTED BY

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DECLARATION

DECLARATION BY THE CANDIDATE

I, **KINUTHIA BANCY NYAMBURA**, hereby declare that this paper is my own original work and has not been presented for a degree in any other university;

SIGNED:.....

DATE:.....7/7/2008.....

KINUTHIA BANCY NYAMBURA

DECLARATION BY THE SUPERVISOR

This project paper has been submitted for examination with my approval as a University Supervisor.

SIGNED:.....

DATE:.....7/7/08.....

SUPERVISOR: PROF. PAUL .M. SYAGGA

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DEDICATION

I dedicate this work to my Dear Parents, Sammy and Lucy Kinuthia and to my Brother Anthony, for their love, inspiration, continued support and encouragement throughout the entire project. May God Bless you all.

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LIST OF ABBREVIATIONS

UA – Urban Agriculture.

UoN – University of Nairobi.

KEMRI – Kenya Medical Research Institute.

ILRI – International Livestock Research Institute.

LDCs – Less Developed Countries.

MOH – Ministry of Health.

MOA – Ministry of Agriculture.

MOL – Ministry of Livestock and Fisheries.

ABSTRACT

The rate of urbanization in Kenya has been increasing rapidly over the years and this has contributed to the rising levels of poverty in urban areas. As result, majority of the people in urban areas have engaged themselves in various activities so as to enable them to obtain some income to cater for their daily basic needs. An example of such activities is Urban Agriculture.

However in Kenya, Urban Agriculture has been excluded from the urban land use system and it therefore lacks the official support it requires, in order to realize its potential. This research demonstrates that Urban Agriculture is an important feature of the urban land use system. Despite the fact that it is not integrated into the urban land use system, it is an important feature of the urban economy. It is evident that Urban Agriculture makes important contribution to employment, income and food supply. It is an important source of food to the commercial and poor urban farmers respectively. The urban economies can greatly benefit from Urban Agriculture, if the Government can develop a policy and institutional framework on the sector. This would ensure enhanced agricultural productivity and safety of the produce.

This study is also aimed at creating awareness on the importance of Urban Agriculture and also indicating the ways in which the practice can be used to alleviate poverty in the urban areas.

The study is divided into four chapters. Chapter one lays down the basis of the project. It is the introductory part covering the general problem and shows ways on how to undertake the study. Chapter two lays down the theoretical framework of the study. It deals with the review of relevant literature concerning Urban Agriculture. The chapter is also a basis of evaluation of the field evaluation to make research conclusions.

Chapter three deals with the case study and the data analysis and presentation of the data collected. It presents the field work, where data is collected through surveys, analyzed, presented and findings deduced from the data.

The project paper closes with the researchers own conclusion of the study, which shows the relationship between the findings and foundation of the study. The latter part of the chapter contains recommendations, which are based on the research findings and objectives of the project paper.

CHAPTER ONE

INTRODUCTION TO THE STUDY.

1.0 INTRODUCTION

The biggest challenge of the next decade facing mankind is the growing population and increasing urbanization. The world's current population is around 6 billion whereby it is indicated that majority of the people live in urban areas. This is especially the case in the less developed countries (LDCs) where this trend is mainly observed. The main cause of such trend for example in Kenya is due to natural increase and also the fact that most people move from rural to urban areas in search for better opportunities such as employment. Most LDCs have majority of the employment opportunities concentrated in the urban areas and hence causing the increased population. More often than not, the better opportunities are not met as the people are encountered with various problems and some of the factors arising include:

- Lack of employment opportunities.
- Increased urban poverty due to lack of adequate finance.
- Increased development of slums
- Lack or shortage of food.
- Increase in crime rates and breakdown of moral fabric.
- Growth of the informal sector.
- Increased strain on infrastructural facilities.

In Kenya as well as other African countries activities and job opportunities in urban areas fall under two categories:

- Formal sector.
- Informal sector.

The formal sector refers to those activities that are licensed and from which the state obtains some revenue. The sector is characterized by capital-intensive technology and bureaucratic procedures in its organization, regular salaries and also has institutional and regulatory frameworks.
The informal sector comprises of activities that operate outside the formal system of control and regulations. It is characterized by technology being labor intensive, irregular wages, mostly small-scale and little capital is required. Urban Agriculture falls under this category.

As a result of these, cities and town authorities are faced with great challenges of trying to meet the needs of the ever-rising population and from these, institutions and individuals are confronted with the task of initiating sustainable urban development especially in developing countries. According to Agenda 21 (Rio Summit) it aims at identifying ways to provide food, shelter and basic services to the urban residents. Also according to the Millennium Development goals (MDGS) –1 it calls for a reduction of 50% of the population whose income is less than a dollar a day and those people who suffer from hunger, by the year 2015.

The decision makers are faced with complex and often difficult frame conditions hence their main task is to develop strategies to cope with them. One of the strategies that is used by the urban people themselves and that is today witnessed in many cities throughout the world, is the involvement in Urban Agriculture.

According to the history of urbanization it shows that Urban Agriculture forms an integral part of urban form and function. Urban agriculture is an economic activity both to the poor and commercial urban farmers and it contributes to improving food security especially to the poor urban farming families. Farming in urban centers has increased enormously over the years due to the economic crisis that has prevailed in most African countries. For

the poor, increasing their food security is usually the main motivation, and for some it is a survival strategy. Nevertheless, many of the poor also sell their produce in order to be able to pay for other basic household needs. Middle and high-income households also engage in Urban Farming for commercial purposes, hence making a significant contribution to employment and income generation.

The role of Urban Agriculture has even become more critical in Kenya because of the deteriorating Urban Poverty situation. Kenya's urban poverty is estimated at 50% and it is feared that the situation will increase in the future. Also Urban Agriculture and Peri-Urban agriculture are considered to be informal and hence they lack official support causing the practice not to be developed further.

However it is increasingly being recognized that Urban Agriculture is an element of the wider urban environment and hence an aspect of urban management and urban development. Households engaged in farming activities within the town or city boundaries make use of urban resources such as land and water, but often in a detrimental way. Moreover access to these resources is limited and hence highly competitive and can easily lead to conflicts, not only between the producers, but also between the producers and local authorities. By regulating and guiding farming practices it is believed that not only the producers but also the urban environment will benefit, thus making urban development 'sustainable' (Foeken & Owour: 1996).

Urban Agriculture is attributed a potentially beneficial role in the terms of the urban economy, urban food supply and urban development in general (Smit et al: 1996). Although largely an informal economic activity, urban farming provides employment as well as an income for those involved. The income can be directly realized through the sale of crops or indirectly as a result of

the need to purchase less food. In the towns or cities, urban farming contributes positively to the provision of affordable food for poorer urban dwellers. However because of its low productivity, the sectors potential in terms of employment and food supply is much higher than it is currently appreciated.

In 3rd world countries Urban Agriculture is a means of combating poverty and increasing food security on an individual level. It is a strategy used by the poor urbanites to survive in harsh economic conditions as it provides significant quantity of food and income for households.

In order to build cities of the future it requires a society of the better fed, the healthier, wealthier and more equitable and cleaner cities. The above knowledge can enhance potential for Urban Agriculture to serve as a strategic tool to reduce urban food insecurity and poverty and to improve the urban environment as well. In general Urban Agriculture is beneficial to the urban poor and hence contributes to poverty alleviation as one provides their own food and thus translating to cash savings, additional income and improved nutrition.

1.1 PROBLEM STATEMENT

Since independence, urban centers have continued to grow at a very fast rate with population increasing and at the same time there has been an increase in poverty. The increasing urban poverty has been contributed to by the lack of other alternatives of increasing the household income. People's responses to urban poverty are mainly two-fold: first they try to raise or at least to maintain their income level and, secondly, they reduce their expenses. Raising or maintaining one's income can be achieved by diversifying income sources especially in the informal sector. Livelihoods have become increasingly dependent on the informal sector and on casual work.

Urban households are faced with a serious decline in their purchasing power due to unemployment and the high costs of goods and services, and hence have responded by diversifying their income sources, by engaging in the informal sector where a range of activities are employed. Urban Agriculture is an important aspect of this informal process and it has continued to expand over the past decades. It is an adaptive response by the urban poor households to improve their food situation and to diversify their livelihood options, under the current conditions of economic uncertainty and threats such as unemployment and declining purchasing power (Mougeot: 2005).

With a few exceptions, Urban Agriculture in Africa today is less efficient and less productive than in Asia and Europe, this is due to the fact that it falls into the informal 'quasi-illegal' category. By-laws frequently date from colonial times and forbid all agricultural activity within the boundaries of urban centers. The Kenyan planning regulation also excludes the practice from formal urban land use system. Since it is not official, it does not have codes hence farmers cultivate anywhere they deem appropriate which could lead to hazardous practices such as usage of sewerage water and use of abandoned or contaminated land. The lack of official support from the officials makes it difficult to engage in the practice fully as the area is mainly under-financed and uses lower quality inputs such as seeds and feeds. Problems of insecurity of tenure also arise causing the farmers to grow crops that require short periods of time to grow. Lack of credit is another major problem facing the development of Urban Agriculture in Kenya especially in Nairobi, as there are few special credit and investment opportunities available and the cost of such credit is high, hence putting off the poor urban farmers.

As the practice of Urban Agriculture has become increasingly widespread over the past decades a change of policy has occurred; (Bakker et al; 2000) During earlier times the policies were restrictive in the sense that

harassment and destroying of crops were common measures taken by Local Authorities. A gradual shift has taken place nowadays and the activity has become tolerable as long as it does not become a nuisance.

However the lack of information and awareness on the importance of urban Agriculture is a problem that has led to the lack of support and legitimization hence causing it not to achieve its full potential. The aim of this study will include ways of creating awareness on the importance of Urban Agriculture and how it can be used to alleviate poverty so as to try and convince authorities to give it more support.

1.2 OBJECTIVES

1. To investigate the nature and extent of Urban Agriculture in Waithaka Location.
2. To find out the importance of Urban Agriculture to households.
3. To find the problems faced by Urban Farmers.
4. To find out ways of incorporating Urban Agriculture in Urban Physical planning.

1.3 HYPOTHESIS

The inhibitions of Urban Agriculture are one of the major causes of the increasing poverty. Also the lack of support from government officials and local authorities is a reason for the poor development of Urban Agriculture. The 'supporting' factors give an indication about the quality or performance of agricultural activities in a city. They make it easier for people to get involved in it and raise its preference as a survival strategy against other alternatives.

1.4 SCOPE AND AREA OF THE STUDY.

The study was carried out in Waithaka area, Dagoretti Division in Nairobi. It is considered to be an urban area, which has relatively grown over the

recent past. It can be considered a suitable area to practice Urban Agriculture, because it is in the peri- urban area and hence there is plenty of space where small-scale and large-scale farming can be found. It is also less congested although the population is increasing rapidly. The area can be termed as one, which has become part of the urban area due to the expansion of the urban boundaries as the urban center grows outwards.

1.5 SIGNIFICANCE OF THE STUDY.

The significance of this study lies in the realization that Urban Agriculture is an important economic activity that can help in alleviating poverty such as through creation of employment opportunities, food sufficiency and growth of industries through forward and backward linkages.

The study also seeks to explain why policies that support Urban Agriculture have not been implemented yet the activity continues to be practiced to a large extent especially by the urban poor who really benefit from the practice.

However the study continues to indicate that the more Urban Agricultural activities in the city, the higher the yield potentials, better management and food safety and also a higher degree of integration into other urban issues. In many cases supporting factors indicate the shift of Urban Agriculture from being an informal/partly illegal activity to an accepted legal income opportunity.

1.6 RESEARCH METHODOLOGY.

The method used in gathering this information is from both primary and secondary data sources:

Primary data – The data was obtained by way of field observation and survey of the area. Direct interviews and discussions were conducted and questionnaires administered to key actors and informants to get their opinions on Urban Agriculture. The key actors involved are:

- 60 households in Waithaka Location – 30 of those practicing Urban Agriculture and 30 of those who do not practice, so as to know whether the incomes of those practicing it are better off than of those who do not engage in the activity.
- Local Government Officials:

- Councilors – to obtain their political view on the practice.
- Clerks – to obtain the official information relating to the practice of Urban Agriculture.

- The District Agricultural Officer
- Director of City Planning – to obtain views as to why they have not incorporated the practice in physical planning.
- The Environmental Department - to know the effect of Urban Agriculture to the environment.

Secondary data was obtained through review of relevant literature from:

- Textbooks
- Newspapers
- Magazines and Journals.
- Projects carried out in Public Works as well as work practiced in Kenya and East Africa.
- Acts of Parliament such as the Local Government Act, Public Health Act.
- The Council by-laws so as to know what they allow and what they do not.
- The Internet.

The data analysis of the information gathered was done by editing the questionnaires for the purposes of checking on the completeness, clarity and consistency. The statistical package for social sciences (SPSS) was also used for data analysis as well as both quantitative and qualitative statistical techniques.

1.7 CONSTRAINTS.

1. Time shortage due to other academic commitments.
2. Finance to tour the area of study.
3. Some of the interviewees were suspicious of the researcher's intentions and as such they did not cooperate fully.

CHAPTER 2

LITERATURE REVIEW

2.0 URBANIZATION

In the 2nd worldwide Habitat conference that took place in Istanbul the conference was entirely devoted to the rapidly increasing urban population in the world and the problems regarding urban management. In the beginning of the 20th century only 13% of the world's population were living in cities but by the year 2010 over half of all people on earth will be urbanites (UNCHS 1996:12). Especially in the Developing countries, the urbanization process is taking place at an extremely rapid rate. Although Sub –Sahara Africa is still the least urbanized continent in the world, during recent decades it has known the most rapid growth of the urban population (UNCHS 1996:84).

Besides natural growth, a major cause of the rapidly increasing population is the influx of migrants from the rural areas. Most of the migrants have only one way to go as soon as they reach the city, notably to one of the slums and shantytowns where the urban poor live. Since the beginning of the 1980s in particular, these low-income areas have continued to grow substantially.

For many of these slum dwellers, it is very hard to find employment and it is because of this reason that in order to make a living or to at least maintain their present standard of living, an increasing number of African urbanites had to resort to all kinds of income generating activities mainly in the urban informal sector. Some people started with farming activity, which falls under the informal sector. (Lee Smith & Memon, 1994).

The growth of Urban Farming during the last two decades is generally considered a response – particularly but certainly not only by the urban poor – to the declining economic situation, as was the case experienced in Lusaka (Sanyal 1985).

2.1 URBAN AGRICULTURE

Urban Agriculture is an activity that produces, processes and markets food and other products, on land and water in urban and peri- urban areas applying intensive production methods, and (re) using natural resources and urban wastes, to yield a diversity of crops and livestock (UNDP:1996)

Urban Agriculture and Peri – Urban Agriculture are agricultural practices within and around cities which compete for resources (land, labor, water and energy) that could serve other purposes to satisfy the requirements of the urban population. Important sectors include horticulture, livestock, fodder and milk production, aquaculture and forestry (FAO COAG: 1999)
Urban food production is more than food related to community based or individual food production in cities, hence meeting further needs of the urban population like sustainable urban development and environmental protection.

Mougeot (1994) also defines Urban Agriculture as an agricultural activity that involves the growing of crops and animal husbandry – either within the city boundaries or in the peri-urban areas.

Mougeot (1999) also defines Urban Agriculture as an industry located within (intra-urban) or on the fringe (peri-urban) of a town, an urban center, a city or metropolis, which grows or raises, process and distributes diversity of food and non- food products, re-using mainly human and material resources, products and services found in and around that urban area.

2.1.1 Characteristics of Urban Agriculture.

It is difficult to fully characterize Urban Agriculture because of its long history and varied definitions. However the following features can help discern the practice.

- The origin and history of urban agriculture, which dates back to 1899 when the railway workers started practicing it on the main lands.
- Commodities grown or kept.
- The location where urban agriculture is practiced.
- The people practicing the urban farming, that is, the poor and the rich.
- The gender roles in urban agriculture.

2.1.2 Types of Urban Agriculture:

There are 3 types of Urban Agriculture (Memon & Lee Smith:1993 and Streiffeler:1994) and they include the following;

- On-plot cultivation where households grow food or keep some small animals in their own gardens. The plot is located near the house and is usually owned by the urban dweller.
- Off-plot cultivation where crops can be cultivated or animals kept in public land such as along roads, railways and rivers, under power lines, in parks or in any other unused, open urban space. It is typical for the urban poor.
- Due to extensions of town and city boundaries, former rural areas have become part of the urban area. As a rule the peri-urban farmers are the owners of the plot although there are exceptions (Igoche: 1995).

Research in Kenya shows that urban farming takes place in land on transitional use (Lee Smith et al:1985) and so does not affect the highest and best use of land.

In urban areas there are a number of idle lands that are reserved for other uses in the long-term hence rendering them unutilized or under-utilized tracts of land. These areas have a great potential for food production, waste processing and other uses that enhance the environment. Resistance from those holding the land is often encountered, usually due to the fear of loss of control (Ngeta: 1993).

Farming activities do not have to be permanent, but of course there is need to secure the interim use of the land for at least one season. This is to assure the farmer that he will not be unknowingly evicted.

2.1.3 Factors leading to the growth of Urban Agriculture:

- Rapid urbanization
- Rising unemployment
- Declining purchasing power
- Laxity in urban land use regulations and enforcements.
- Soaring inflation rates.
- Ineffective agricultural policies.
- Crippled domestic food distribution systems.
- Constrained public spending and subsidies.
- Wage cuts

2.1.4 Determinants of successful Urban Agriculture.

Agricultural activities in a given city require basic conditions. Five major areas determine the occurrence of urban agriculture:

- Natural conditions;
- Physical infrastructure and services;
- Socio-cultural conditions;
- Institutional conditions;
- Economic conditions.

a. Natural Conditions

Climatic conditions in terms of, amount and seasonality of rainfall and temperature, determine urban food production. Very low annual rainfall is restrictive to the development of urban crop and vegetable production but can offer opportunities for animal husbandry. In areas with favorable climatic conditions higher occurrence of Urban Agriculture is expected, because no major investments are necessary to start production, which makes it an option for all income groups.

b. Physical infrastructure and services

Basic requirements for production are the availability of water and space. If either one or both are not available households cannot respond to crisis by entering into any kind of production. The availability of infrastructure for water coupled with access to water can compensate for lack of rainfall and, in spite of this, lead to Urban Agriculture. If Urban Agriculture is dependent on infrastructure, certain groups who have access to it will then dominate it and most likely the more economic oriented.

c. Socio-cultural conditions

This refers to the households farming traditions and food preferences as an entry point into urban agriculture and indicates that urban agriculture is not a completely unknown and unskilled activity in many cases. Groups who culturally have a farming background easily start urban Agriculture. Food preferences are related to specific types of vegetables and other agricultural produce, often local varieties, which are not marketable or not available on local markets and therefore produced on household basis.

d. Institutional conditions

It is identified as the capability of institutions to provide or at least not to restrict access to water and space. Access to water and space is reported to

be a social and institutional problem, often gender specific. Such access can sometimes be influenced through law and proper land use planning.

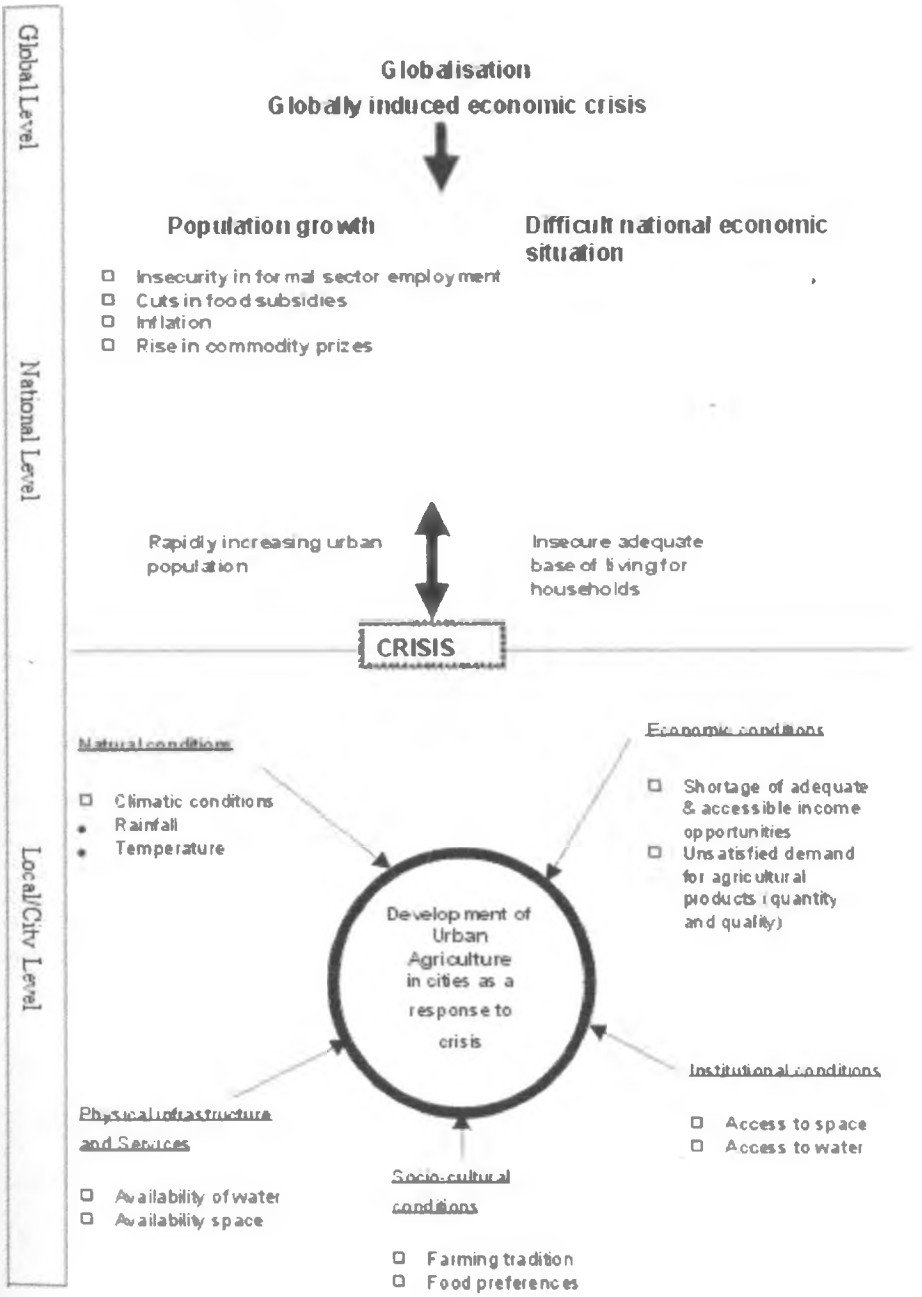
Institutional conditions have to be linked with the legal framework for urban production. In cases where the legal framework is restrictive weakness of institutions will favor Urban Agriculture, but make it an illegal activity.

e. Economic conditions

Refers to the urban labor market and the shortage of adequate and accessible income opportunities and an unsatisfied demand for agricultural products in quantity and quality. The question of employment opportunities is self-explaining if we consider population growth rates of 5-8% in many cities. Therefore people are forced to enter into informal jobs, like urban agriculture to gain income.

Poor rural-urban infrastructure and/ or high transport costs generally favour the production of perishable products (e.g. leafy vegetables, milk and milk products) when they are integral parts of the human consumption.

Chart 2.1 Conditions for Development of Urban Agriculture as a response to crises.



Source: Urban Vegetable Promotion Project.

2.1.5 Areas where Urban Agriculture is practiced:

One of the greatest challenges that the urban farmers face is the lack of access to land. Most of the land that is available is restricted hence causing the farmers to be opportunistic and find creative ways such as farming on land set aside for other purposes in the future, hazardous land and abandoned or contaminated land.

Planners have come up with ways in which they can assist poor families to access farming areas. The following methods are used:

- Recycle farms - at the dump, landfill and below sewage treatment plant.
- Natural resource conservation farms – steep slopes, flood plains, over aquifers.
- Use of buildings – roofs, walls, balconies, rooms for food production. It is also known as 'edible buildings'.
- Integrated use of home gardens or backyards, mainly for the growth of vegetable for subsistence use and also for aesthetic purposes. The home gardens are also known as 'edible landscapes'.
- The secondary use of institutional and public lands. For example farming along railways, under power lines, parks, military base, school gardens, golf courses and airport approach farms.
- Public private partnerships between companies, Local Authorities, state enterprises and Urban and Peri- Urban farmers.

2.2 URBAN FARMERS AND FARMING PRACTICES.

The urban farmers are women and men who come from all income groups, but majority are low-medium income earners who grow food for self-consumption or for income generation.

According to Maxwell(1994;1995), people practice urban farming for one or more of the following reasons:

- Commercial undertakings.
- To try to reach food self-sufficiency.

- To raise the households level of food security.
- Survival strategy.

The large majority of the African urban farmers engage in Urban Agriculture mainly in order to increase their level of food security, although for many of the poorest it can be a survival strategy (Sawio: 1994). In general, farming is first of all done for self-consumption, not much of the produce is sold. With the money that is indirectly saved by having to buy less food of all kinds of other necessary spending can be done. The importance of producing at least part of one's own food needs, is revealed by surveys conducted in the late 1980s showing that poor urban households in various cities in 3rd world countries spent 60-90% of their income on food (Mougeot 1993).

Urban farmers face various constraints such as irregular rainfall, drought, flooding, water logging, poor soils, pests and diseases and the destruction of crops by animals, all of which are no different from the problems faced by the rural farmers. More problems relating to the urban context and that particularly confront the urban poor who practice off-plot farming include uncertainty regarding land tenure, theft of crops, lack of capital and inputs, threat of eviction and the possible destruction of crops.

Women play an important role in urban farming, especially from the low-income households who have inadequate money. The majority of the African urban farmers are women. In most parts of Africa, women have traditionally been responsible for household provision and farming is relatively easy to combine with the care of children. Women also have lower educational levels than men so it is difficult for them to compete in a shrinking labor market. Farming may thus be the only option left to them in a situation of unemployment and poverty. Several studies have found that the number of female-headed households is disproportionately high among urban farmers.

Farming practices:

Home gardening is a common feature in urban areas worldwide except for Asia. Nevertheless it appears that household based small-scale food production activities are often overlooked. Open space production of crops and vegetables is most common in African countries, but in a similar way practiced in the so-called "solares" in Latin America. Livestock and small animal husbandry is widely spread all over the world's cities. Studies in the peri-urban sector indicate the more commercial character of peri-urban food production (Jacobi et al: 2000).

Average farm sizes vary greatly. While home gardens by nature occupy small plots of 5 - 400 metres, open spaces are generally greater than 400 metres up to one hectare and sometimes even larger. Men dominate the peri-urban production in Africa, but this seems to be different in Latin America and Asia, where the distribution of work among the family members seems to be more equal.

Home gardens are women's business all over the world. Gender specific differences are not only related to the degree of commercialization but also to the kind of crops grown. Typically the produce of women's gardens is contributing to household food security and small income generation. Women tend to be more involved in vegetable production and small animal husbandry than men are.

In Nairobi, four farming practices can be distinguished (Dick Foeken and Alice Mboganie Mwangi)

- Small-scale subsistence crop cultivation which is the most dominant.
- Small-scale livestock production, which is often combined with the small-scale crop cultivation.
- Small-scale market oriented crop production.

- Large-scale commercial farming. It is evident on the southwest part of the city in Karen. Irrigated vegetable fields, battery hen houses and grade dairy cattle characterize the area.

2.3 URBAN AGRICULTURE IN SUB-SAHARAN AFRICA.

Farming in town is a common feature in this region (Obudho and Foeken 1999). It is estimated that as much as 40% of the urban population in Africa is involved in Urban Agriculture (Mougeot: 1994). Farming is undertaken wherever land is available, for example off-plot or on-plot, the owner being the government, private institution or individual. Farming is particularly common on the outskirts of urban centers, on formerly rural land that has now become part of the urban center due to boundary expansion. In these zones both small scale and large-scale farming can be found. However as the urban center grows, these areas gradually lose their rural character and farming becomes increasingly either of-plot or on-plot.

Farming in town has increased enormously over the past two decades due to the economic crisis that prevailed in most African countries. For the poor, increasing their food security is usually the main motivation and for others it is a survival strategy. Nevertheless, many of the poor also sell some of their produce, partly to be able to pay for other basic household needs, but also because some crops are perishable and cannot be stored and also due to the lack of storage space. For middle-income and high-income households, commercial considerations are usually of more importance than among the poor, although the consumption of self-produced vegetables and milk is highly valued. But for most of these households, the basic reason to do so is the same as for the poor, namely as is mainly stated by the farmers themselves, 'to subsidize my income'.

In many African countries urban farming is illegal. By-laws frequently date from colonial times and forbid all agricultural activity within the boundaries of

urban centers. However, as the practice has become increasingly widespread over the last two decades a change in policy has occurred. In the 1980s a gradual shift in attitude took place and nowadays, urban farming is usually permitted as long as it does not become a nuisance. As far as crop production is concerned, the height of a crop, particularly maize, is important because it said that criminals can hide in it and mosquitoes are assumed to breed in the axils.

Government policy has played an important role in legitimizing or restricting urban farming. Land use regulations affect whether urban agriculture is a temporary or permanent phenomenon through urban land-use policy, zoning laws, tax structures and urban statutes all of which can be modified to promote or discourage urban agriculture. Government policy is the most constraining in Africa where cultivation of food plants is banned outright in urban areas and it is termed as rural and backward. Where the governments have recognized the important role Urban Agriculture plays to low-income households, policies favoring urban agriculture have been founded.

In general most countries in Africa use Urban Agriculture as means to combat poverty and to increase food security on an individual level. It is a strategy used by poor urbanites to survive in harsh economic conditions as it provides significant quantity of food and income for households.

2.4 URBAN AGRICULTURE AS AN URBAN LAND USE

Urban Agriculture has the potential to prosper in most modern cities of the world, because of its multiple functions and relations with city issues. Cities provide easy access to markets and the prevailing high demand for food. Urban farming practices have always been part of the city, but the integration into the urban economy is what is lacking in the urban planning and policies.

Urban Land use planning is the discipline that deals with the physical, social and economic development. It is the process of organizing the use of land and its resources to best meet the peoples needs. This means that even as urban areas continue to grow, proper planning should be undertaken to ensure that there are spaces available to practice some farming activities, as it aims at meeting the people's basic need of food security. Such areas should be well planned to ensure organized farming hence yielding high results.

Urban agriculture is a unique land use, in the sense that it is practiced in an environment with intense land use competition, which requires careful integration to minimize land use conflicts. For example urban agriculture in residential neighborhood must take cognizance of the pollution and health risks that may result from the practice.

In order to influence policy makers to support Urban Agriculture there is need for verifiable data about its importance in a city. An obvious demand from planners is the information about the land under agricultural use. It is seen that city authorities especially town planners are largely lacking this feedback, but it can be a major argument to lobby for support to urban farmers. Limited financial resources, equipment and manpower often restrict the scope of survey about urban agriculture in any of the fast growing cities. This was the case in Dare\salaam.

2.5 URBAN FARMING AND THE RISING POVERTY LEVELS

Urbanization is one of the major issues facing mankind today and is in its extent unique in world history. Neither international government bodies nor national or local governments are well prepared to deal appropriately with this development but none of them can afford to ignore this phenomenon. Recent surveys suggest that the locus of poverty is shifting to urban areas (Haddad et al. 1998), making food insecurity and malnutrition urban as well

as rural problems. Malnutrition in the poorest areas of cities often rivals that found in rural areas (IFPRI 1998a). Many decision makers in the world's cities are today confronted with this development of increasing urban poverty.

The impact of globally induced crisis and their effects on regional level are reasons why urban poor face worsening conditions. The burdens imposed on consumers by structural adjustment programmes (SAPs) can add to the pressure (Foeken & Mwangi 2000, Mbiba 2000 and others).

Globally induced economic crisis, rapid population growth and migration, deteriorating national economies or persisting economic difficulties are the cause for urban food production in many developing countries. Nevertheless urban food production would have less importance by far if there were not a shortage of adequate and accessible income opportunities and an unsatisfied demand for appropriate quantity and quality of agricultural products in cities on local levels.

Urban food production is in many cases a response of urban poor to:

- Inadequate, unreliable and irregular access to food supplies, due to either a lack of availability or a lack of purchasing power. Unreliable and irregular access can be caused by natural disasters such as earthquakes or floods or economic disasters such as strikes, causing food shortages for several days
- Inadequate access to formal employment opportunities, due to deteriorating national economies in developing countries.
- An additional reason for the involvement in Urban Agriculture is the desire for a better habitat e.g. leisure/ personal satisfaction or green cities (e.g. maintaining open spaces), waste management, composting (overall vision).

However the latter is more prominent for those groups who have already satisfied their basic needs or for decision makers and town-planners as it

indicates a vision for the city as a habitat (Sawio,1998). Focusing on the first objectives, urban food production can be seen as a "crisis strategy", ensuring survival of the poorer segment of the population.

Involvement in Urban Agriculture has been introduced as a strategy used by the poorer urban population to cope with crisis (Jacobi, 1998), however not all cities in the developing world show the same degree of agricultural activities. Urban Agriculture and consequently the effect it can have on the living standard of the urban households depends on a variety of factors and even more their combination. Major factors influencing the rise of Urban Agriculture on the global and national level, can be combined with the basic conditions necessary on a local/city level.

Basic factors or preconditions are those, which are essential for the "consideration" of Urban Agriculture as a survival strategy, they have to be met to allow the practice. A certain favorable combination of some can compensate shortcomings in other fields. The factors are natural, socio-cultural, institutional or economic conditions or related to physical infrastructure and services.

Decision makers and urban planners have to assess these factors in their city and decide which role Urban Agriculture can and maybe should play. Often this is a matter of available alternatives. Various factors can be actively influenced. Depending on the efforts, which have to be undertaken Urban Agriculture is a very economic strategy to fight urban poverty and improve sustainable city development.

2.6 URBAN AGRICULTURE AND THE ENVIRONMENT

Urban Agriculture is considered by many as an environmental hazard. It can cause soil erosion, contaminated water can be used for irrigation purposes and crops cultivated along roadsides are prone to air pollution.

Since urban farming tends to be more intensive than rural farming, the use of chemical fertilizers, pesticides and insecticides can have an impact on the urban environment, causing pollution in not only the plants but also the soil and the ground water.

However it is increasingly being recognized that Urban Farming is an element of the wider urban environment and hence an aspect of urban management and urban development. Households engaged in farming activities within the town and city boundaries, made use of urban resources such as land and water, but often in a detrimental way. The poor people, due to the lack of access to land, tend to carry out the farming practices in areas that are not suitable or even use resources, which are harmful to public health. For example they cultivate in wastelands and waterlogged areas, they irrigate the land using sewerage water and may at times use inputs such as seeds and fertilizers, which are not appropriate. Moreover access to these resources is limited and hence highly competitive and can lead to conflicts not only between the producers but also between producers and Local Authorities. By regulating and guiding farming practices, it is believed that not only the producers will benefit, but also the urban environment as a whole, thus making urban development 'sustainable'.

The recycling of sewage and urban solid waste and turning it into compost is often put forward as a kind of panacea for both urban crop production and the improvement of the urban environment (Sam Owour: 2002). Although environmental awareness is growing in the country, such measures have not yet been put into practice.

It is therefore noted that Urban Agriculture plays an important role in improving the urban environment and thus in urban development and planning.

Urban farming can help to create an improved micro-climate and to conserve soils, to minimize waste in cities and to improve nutrient recycling, and to improve water management, bio-diversity, the oxygen-carbon dioxide balance and the environmental awareness of the inhabitants (Deelstra & Girardet 2000:47)

2.7 IMPACTS OF URBAN AGRICULTURE.

2.7.1 Economic Impacts.

1. Urban Agriculture has led to the creation of employment opportunities to many of the low-income families. For example in Tanzania (1988 Census) Urban Agriculture was ranked as the 2nd largest employer in Dare›salaam. Jobs such as selling vegetables and dairy products, labor are common.
2. Available data on Urban Agriculture in Kenya (IDRC: 1994) indicates that Urban Agriculture is making an invaluable contribution to national development. Case study survey reveals that commercial urban agriculture plays an important role in urban economy. It is an important source of income and employment. The investment capital is comparatively low for both pig and poultry farming and one can get good return within a period of two to three years.
3. Urban Agriculture has contributed to the improved living conditions of the low-income households in the country. This is because it provides an alternative of increasing the household income through sale of vegetables and animal products. As a result the purchasing power of the households is likely to increase.
4. The practice of urban farming has led to the assurance of food security in the country as a whole. The people do not to have to worry about food insufficiency during difficult times such as drought or flood periods. For example in Zimbabwe the persistent droughts that hit the country caused an increase in the practice of Urban Agriculture.

5. Urban Agriculture has led to the growth of a number of industries through forward and backward linkages. The industries rely on the practice in order to obtain the raw materials necessary for the manufacturing of various products.
6. It has promoted the effective land use management and physical planning.
7. It has led to an improved economy through the creation of employment opportunities, income generation and food security.
8. It has contributed to improved infrastructure such as roads. This has come about as a result of the need to access the crop growing areas and to promote good transportation of the produce.

2.7.2 Environmental Impacts.

1. It has led to effective waste management. For example, the animal wastes can be used as fertilizers hence reducing the use of chemical fertilizers, which could have detrimental effects.
2. Improved health issues have been promoted through proper nutrition. The availability and supply of fresh vegetables to the urban dwellers, has led to the increase in the nutritional status and hence reduces the health risks.
3. It enhances the photosynthetic activity of plants, which consume carbon dioxide and produce oxygen. In a congested urban area urban farming will improve the air quality and the people's health.
4. It enhances the aesthetic value of an area.
5. Greening of the urban spaces by homestead farming, roof top farming and vacant area farming, creates 'greenbelts' in the urban area hence improving both micro and macro climate.
6. It preserves biodiversity.

2.8 THE LEGAL STATUS OF CROP CULTIVATION AND LIVESTOCK KEEPING IN URBAN AREAS.

Urban Agriculture in Kenya is affected by development legislation such as that indicated below:

2.8.1 Local Government Act Cap 265:

According to the Local Government Act CAP 265 the local authorities have power to prohibit or permit crop cultivation in certain areas of the urban center.

Section 154 C of the Act states that: - Every Municipal council, county council or town council shall have power to prohibit cultivation by unauthorized persons of any enclosed and unoccupied in the private ownership and of any government land and land reserved for any public road. The local authority may enact by-laws, which are restrictive or permissive or take no action in this respect in which case the cultivation could be deemed illegal.

Section 155 C of the same Act empowers the Local Authorities to require the planting of crops in areas suffering from famine.

It states that:- Every county, municipal and town council shall have power to require the planting of any specified crop of persons for the support of themselves and families, in areas which in the opinion of the Local Authority are suffering from or likely to suffer from a shortage of foodstuff.

Section 144 (5) of the Local Government Act gives the Local Authority power to grant any person a license to occupy land, which it owns for a term of up to 7 years. It is therefore able to 'allot' its own land for temporary cultivation without permission of the minister of the Local Government. It may charge or not as it chooses.

It states that: A Local Authority may let or grant to any person a license to occupy any land it may possess;

a. With the consent of the minister for any term.

b. Without the consent of the minister, unless such consent is required by Section 177 or by other written law, for a term exceeding 7 years and it may in respect thereof charge rents, premiums or fees.

The Local Government Act CAP 265 as earlier stated, empowers Local Authorities to prohibit or control livestock keeping meaning that they can permit it.

Section 162(b) of the Act states: - Every municipal or town council, and except in regard to matters contained in (a) and (i) shall have power to control or prohibit the keeping of animals, birds and bees so that their keeping shall not be a nuisance or injurious to health.

Section 155 (b) of the Act also empowers the local authority to engage in livestock production, provide extension services and take measures for the prevention of spread of diseases.

2.8.2 Public Health Act Cap 242:

According to the Public Health Act CAP 242 it empowers the minister of Health to prohibit cultivation of crops or irrigation within and around townships.

Section 157 (1) of the Act states: - Where it is shown to the satisfaction of the minister upon advice of the board that the growing of crops or irrigation of any land being within the boundary of the township or within three miles of such boundary is unhealthy and unsanitary, the minister may, after consultation with the minister for the time being responsible for Agriculture, by order, prohibit the growing or irrigating and may cause any permission issued for diversion, obstruction or use of water for such purpose to be cancelled upon such terms as may appear to him to be equitable.

The Public Health Act CAP 242 specify the livestock and livestock buildings which may be judged nuisances and subject to proceedings for removal under the Act.

Section 118 (g): - Any animal so kept as to be a nuisance or injurious to health such as obstructing traffic.

Section 118 (f):- Any stable cow-shed or any other building or premises used for keeping animals or birds which is so constructed, situated, used or kept as so be offensive or which is injurious or dangerous to health.

Small animals such as poultry and rabbits may be kept. This is as long as they do not become a nuisance.

2.8.3 Environment Management and Co-ordination Act Cap 8 of 1999:

According to the Environment Management and Co-ordination Act (EMCA) CAP 8 1999 gives the District Environment committee power to take measures for the management of certain areas such as hilltops, hillsides and mountainous areas because they are likely to suffer from environmental degradation, soil erosion and occurrence of landslides.

Section 46(2) states that:- Every District Environment Committee shall take measures, through encouraging voluntary self-help activities in their respective local community, to plant trees or other vegetation in any area specified under subsection (1) which are within the limits of its jurisdiction.

2.8.4 Physical planning Act 6 of 1996:

According to the Physical Planning Act, Act 6 of 1996 the Local Authorities have power to determine the type of land uses that are undertaken in a given area.

Section 29 of the Act states that: A local authority shall have the power to

a. To prohibit or control the use and development of land and buildings in the interest of proper and orderly development of its area;
e. Formulate by-laws to regulate zoning in respect of use and density of

development.

f. To reserve and maintain all the land planned for open spaces, parks, urban

forests and green belts in accordance with the approved physical physical development plan.

2.8.5 Draft National Land Policy:

Also according to the Draft National Land Policy the planning for Urban Agriculture and Forestry has been considered, this is due to the fact that Urban Agriculture has not been properly regulated and facilitated. The following principles should be implemented to provide a framework for the proper carrying out of the practice:

- Promotion of a multi-functional urban land use.
- Putting in place an appropriate legal framework to facilitate and regulate Urban Agriculture and Forestry.

2.8.6 'Localizing Agenda 21'

It is the action planning for sustainable urban development and it is being practiced in 3 towns in the World, which are Nakuru in Kenya, Essaouira in Morocco and Vinh City in Vietnam. The programme launched by UNCHS (Habitat), is a direct result of the Earth Summit of Rio de Janeiro in 1992 and it is based on the awareness that urban development and environmental protection have to be harmonized in order to make urban development sustainable.

The objective of this programme is to provide training in order to develop a new approach towards urban planning and management, focusing on an environmentally conscious development of Nakuru ('People's Green City), with particular attention to the low-income groups.

CHAPTER 3

DATA ANALYSIS AND PRESENTATION.

3.0 INTRODUCTION

Before data presentation and analysis, it is necessary to highlight some issues related to the background of the area under study. This is to help the reader to have a better perception of the context under which the study is centered.

This chapter covers the background of the area, its geographical setting, topography, soils and geology, climate, demographic and social characteristics and economic base. The analysis of the field data and presentation of the findings are also given in this chapter.

3.1 BACKGROUND OF THE AREA.

Nairobi province is divided into 8 divisions. Dagoretti is one of the divisions and it is located to the west about 15km from the city center. The area of Dagoretti is 39 sq km. It has an urban and peri-urban outlook. The major part of Dagoretti was included into Nairobi in 1960's when the town plan boundaries were enlarged. Waithaka is one of the locations in Dagoretti division and is located almost at the center of the division. It is approximately 18km from the city center and it is located off the Naivasha main road, along Kikuyu Road.

3.1.1 Geographical Setting.

The location lies within Dagoretti Division in Nairobi. It lays along longitude 36 degrees and 43 minutes East and along latitude 1 degree and 16 minutes south of the Equator. It borders Mutuini location on the South, Kawangware and Riruta on the East, Kabete and Uthiru on the North and Mutego and Kagondo on the West.

3.1.2 Topography, soils and geology.

Waithaka location is gentle sloping and it has an altitude of about 5967 feet above sea level. The Location has acidic soils that are good for agriculture in the upper zones and the middle zones have red soil that is also good for cultivation.

3.1.3 Climate.

The climate experienced in the area is of equatorial type. It has two rainfall peaks, a highest peak occurs during April/May and the lower peaks occur during October/November. The average rainfall is between 1700mm and 2300mm per year. The temperatures vary from 7 to 29 degrees centigrade. Waithaka is cold and misty during morning hours.

3.1.4 Demographic characteristics.

The 1999 population census indicates that the population of Waithaka was estimated at 19937 persons. The area within the shopping center has a relatively high density as compared to the surrounding areas where the population is low. According to the 1999 population census, it was indicated that around 40-50% of Waithaka's population lived below the poverty line.

3.1.5 Economic structure.

The major economic sectors of Waithaka are agriculture, commerce and tertiary services. The commercial activities are concentrated in the original central shopping center. Informal commercial activities have become an increasingly common feature in the area due to problems such as lack of formal employment.

DATA ANALYSIS

3.2 The character and size of household.

30 households in Waithaka location residential area were interviewed using a questionnaire survey so as to know their feel of urban agriculture and to know how the practice has impacted their lives. The mean household size was (5) persons, so the total number of people interviewed was 150. The study was undertaken on weekends when the households were at home. However the data from the town officials was collected on weekdays.

The respondents were willing to give more information and therefore few difficulties were met. This was because another research study was being undertaken by KEMRI, UON and MOH regarding ways of improving the lives of the farmers in the area.

3.2.1 The Socio-Economic background of the respondents.

The respondents gave basic information about their own background and the issues that arose included gender, age, marital status, level of income and the size of the family.

A large majority of the respondents were either the head of the household him/herself or the spouse. Since the spouse is always a woman, the majority of the respondents were women at about 80%, most of them were married whereas a few were divorced or widowed. Most of the respondents were willing to give information about their age and it was noted that the average age of the respondents was 51 years, majority of the farmers being of an older age.

The respondents had lived in the area for a period of time ranging from five (5) years to slightly over forty (40) years. Majority of them had been

residents of the area for over twenty-five (25) years and some had started farming as early as the 1960s. Over a half (1/2) of the respondents were farmers, some of whom had private business such as running a kiosk or shop, sale of vegetables and clothes. The others were either in formal employment such as teachers, social workers or unemployed.

Plate 3.1 Kiosks and Shops in the area.

Source: Field Survey 2008.

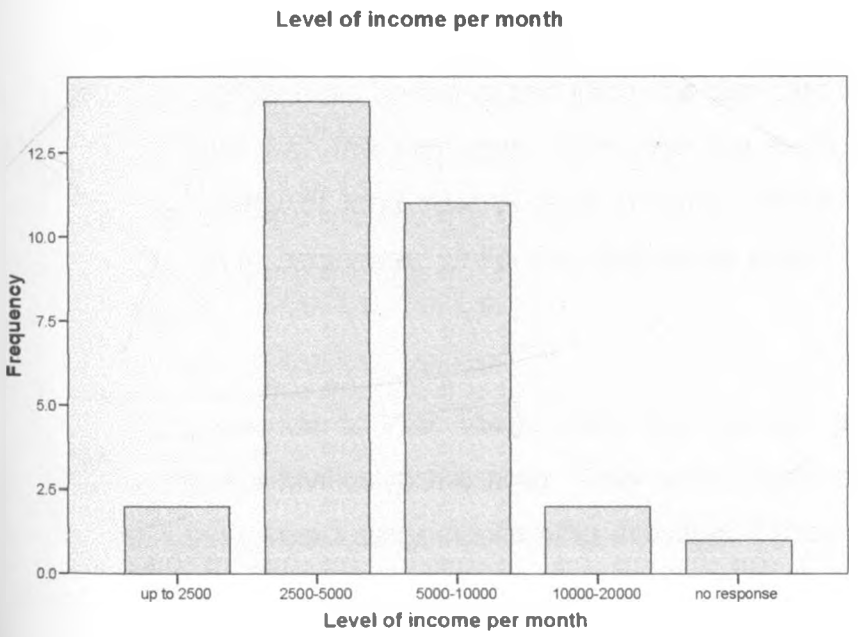
The large majority (over 80%) of the households fall in the category of low-income households, at least in terms of monthly cash income during the time when the survey was held and according to the respondent's estimation and willingness to provide the right answer. The level of income varied widely from none to sh. 20000. About 46% of the households could be categorized as 'poor' and the well-to-do households formed a small minority of about 6%. This can be illustrated in the table below:

Table 3.1 Level of income per month.

		Frequency	Percent
Valid	up to 2500	2	6.7
	2500-5000	14	46.7
	5000-10000	11	36.7
	10000-20000	2	6.7
	no response	1	3.3
	Total	30	100.0

Source: Field Survey.

Chart 3.1 Level of income.



Source: Field Survey 2008.

Of all the households interviewed over 50% did some meaningful agriculture growing enough food for their own subsistence. Most of the respondents had begun farming as early as the 1960s and have continued to maintain

the practice despite the rapidly growing urban center. However it can also be noted that farming tended to increase with the number of years a respondent had lived in the town. This can be explained firstly by the fact that as one lives in an area for a long period of time, he/she can acquire a private plot where he can farm. Secondly as one becomes a permanent resident of the area, he/she stops going back to the rural areas to get food and tends to grow it where he is.

Most of the respondents interviewed (over 60%) carried out farming in land belonging to the family. This can be attributed to the fact that the respondents have continued to farm the land since time immemorial and hence the land is passed on from the parents to the children. About 23% of the respondents had acquired or bought their own piece of land whereas others had rented a small area of land to carry out their farming activities.

One character of Waithaka area that can easily be depicted is that the richer tend to farm more than the very poor. This could be explained by the fact that they had plenty of land next to their houses. Three quarters of the farmers used their backyards while the rest used public land along the Kavuthe River.

Some of the respondents interviewed were non-farmers who carried out different business activities in the area. They were however unanimous in affirming that they would carry out farming activities if they could get a plot on which to cultivate.

3.3 IMPORTANCE OF FARMING.

The farmers in Waithaka are both crop cultivators and livestock keepers. The most common crops grown are maize (on 62% of the plots, beans (56%), bananas (61%), kales or sukuma wiki (40%), spinach (20%), local

vegetables such as managu (10%) and saget (11%), Irish potatoes (25%), onions (16%), cabbage (16%) and Napier grass (10%).

Majority of the farmers also keep livestock. Livestock not only includes cattle, goats and sheep, but also smaller animals like chicken, rabbits and ducks. The most important types were cattle (about 70% of the households). Each household had around 2-3 cows. Others included chicken (40%), goats (10%), sheep (1.7%) and rabbits (1.3%).

Plate 3.2 Maize Cultivation.

Source: Field Survey 2008.

Plate 3.3 Cultivated Bananas.

Source: Field Survey 2008.

The importance of urban farming in Waithaka can also be measured in a more subjective way, namely by the relevance attached to the activity by the people concerned. First, both the crop cultivators and the livestock keepers were asked for what reason(s) they practiced this type of activity. For the large majority of both the crop cultivators and livestock keepers, the extra food produced was mentioned not only as one of the reasons but also as the main reason.

Table 3.2 Reason for farming.

	Crop cultivation	Livestock keeping
	Percentage	Percentage
Need food	50.0	21.7
Needed income	27.8	53.3
To diversify income	22.2	13.3
Hobby/ custom	-	11.7
TOTAL	100.0	100.0

Source: Field Survey 2008.

However, for one quarter of the livestock keepers the additional income obtained with this activity was said to be the major reason. For some, though a small minority, urban farming is more a kind of a hobby.

There were hardly any differences between the income groups as far as the reasons for crop cultivation and livestock keeping are concerned. If the lowest-income and the highest- income groups are compared, the percentages of the households mentioning the need for food were very high in both groups. Moreover those mentioning 'hobby' were almost all from the highest income category.

In regards to how much urban crop cultivation contributed to the household food consumption 51% of the crop cultivators in Waithaka said that it constituted half or more of the food they consumed. For another 42% it added less than half to a small portion. Only a small minority stated that the urban crop production was of negligible importance in terms of household food consumption.

As could be expected, the contribution of urban crop cultivation to household food consumption – as perceived by the respondents – is larger among the low-income households than among the high-income households. For 60% of the poorest crop cultivators (i.e. with a monthly household income of sh.5000 and less), the self-produced crops constituted at least half of the food consumed in the household. This applied to 23% of the middle to high categories of income.

Both crop and livestock keepers were asked about the general importance of the respective activities (Table 3.3). For the large majorities, urban farming forms at least an additional food and/or income source and for about a quarter it is a major source. Some even stated that they could not survive without it, while, on the other hand, no one said the reverse.

Table 3.3 Importance of urban farming activities for crop cultivators and livestock keepers (%)

	Urban crop cultivators	Urban livestock keepers
Could not survive without it	13.2	2.5
Major food and/or income source	21.2	20.7
Additional food and/or income source	65.6	76.8
Could do without it	-	-
Total	100.0	100.0

Source: Field Survey 2008.

The figures presented in Table 3.3 show no marked differences for the four income groups. For poor and rich households alike, urban farming activities

are both a food and an income source. Only in the lowest income group, was the percentage of households stating that they 'could not do without' urban crop cultivation higher.

Crop cultivation is more of a subsistence nature than livestock keeping. Only 11% of the crop cultivators indicated that this activity was a major or additional income source, against 37% for livestock keepers. There are no differences among the income groups in this respect.

3.4 CROP PRODUCTION.

Crop production in Waithaka is mainly for self-consumption. Of all the ten main crops grown in the area, an average of about 75% of the harvest is consumed in the producers' household whereas the rest was sold so as to get some income. However some respondents were only able to produce crops just enough to feed their households and therefore did not benefit from the sale of the crops. This was a common aspect in the lower income groups, who said that this was contributed to, by the lack of adequate land to grow crops.

3.4.1 Inputs for crop production

Table? shows the percentages of crop cultivating households using certain inputs. Almost all crop cultivators used at least one type of fertilizer, the common one being the 'traditional' (organic) type such as manure, crop residues and urban waste. The manure was either from one's own farm especially those practicing mixed farming, or from a neighbor. The use of chemical fertilizers, as well as the use of pesticides and insecticides, was rarely used by the crop cultivators. Most of the farmers used local (traditional) seeds and seedlings, although some used improved materials as well. Finally irrigation was practiced by some of the cultivators who obtained water from the Kabuthe River.

Table 3.4 Inputs for crop cultivation (% of households)

Type of input	%
No inputs	6.3
Chemical fertilizer	12.6
Manure as fertilizer	53.1
Crop residue as fertilizer	35.0
Urban waste as fertilizer	3.1
Chemical pesticides	11.4
Local seeds/seedlings	70.6
Improved seeds/seedlings	30.4
Irrigation	40.0

Source: Field Survey 2008.

Majority of the farmers as shown above, use the traditional type of fertilizers. This is due to the fact that they are easy to obtain and are affordable. The situation is however more or less the same for both the low- income and the high-income groups.

3.4.2 Problems faced by the crop cultivators.

Table 3.5 presents the most frequently mentioned problems related to the crop cultivation in Waithaka location as perceived by the cultivators. The respondents were asked to mention any problems they had encountered in the farming practice, as well as the main problem. Many problems are not specific to the urban setting in which the crop cultivation takes place; examples are pests/ insects, destruction by animals, inadequate rainfall, diseases, poor soils and others. The most frequently mentioned constraint was the lack of fertilizers that hindered the farmers from producing optimally. The other major problem mentioned and that can be termed as an 'urban' constraint, was theft of the crops. Many farmers said that theft of their crops

was high and this was a situation that was experienced by farmers who had plots away from their homes.

Some respondents also mentioned other 'urban' constraints such as harassment and lack of space/ land. The same applies to such problems as lack of inputs, lack of labor and lack of capital.

Table 3.5 Problems faced in crop cultivation.

		Responses	
		Frequency	Percent
problems in cultivating	drought	4	12.9%
	theft	8	25.8%
	eviction	2	6.5%
	lack of fertilizers	16	51.6%
	lack of tools	1	3.2%
Total		31	100.0%

Source: Field Survey 2008.

3.5 LIVESTOCK KEEPING.

One of the unique features of Waithaka Location is the interest of the farmers in keeping livestock. Most notable in the area is that almost every household has some form of livestock kept with the majority of the farmers rearing cattle.

In this analysis however, a distinction has to be made between large livestock and small livestock. Large livestock comprises of cattle, sheep, goats and pigs. Small livestock are chicken, ducks, rabbits and turkeys. About 20% of the farmers kept both large and small livestock. 43% kept only large animals, while 37% kept small livestock. A relationship was also noted regarding the type of animals' households' keep and the household's income situation. The lower- income households had large animals but the number was less as compared to the high- income households. The low-income farmers had one to four large animals, whereas the high- income

farmers had many large animals. The case is also the same for the small livestock.

3.5.1 Rearing Systems.

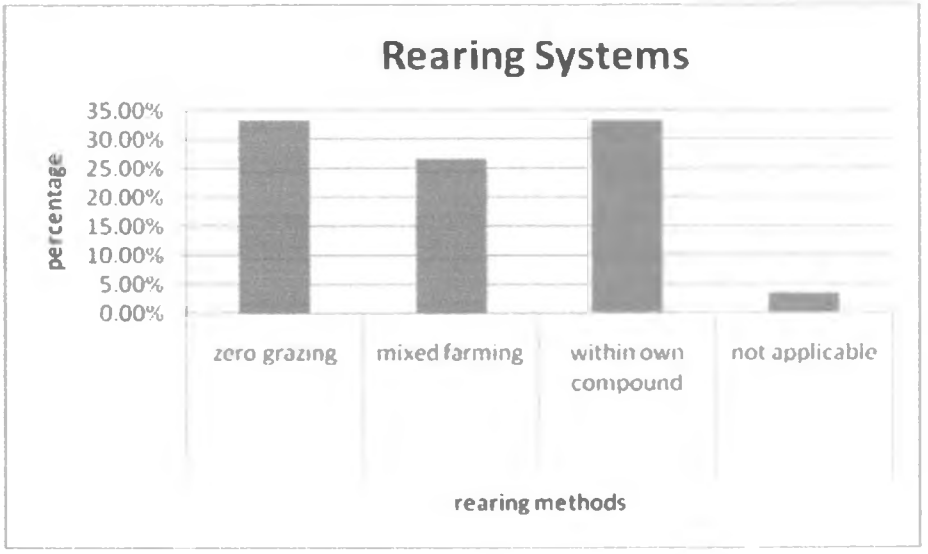
Data on the rearing systems of large and small livestock is presented in the table below.

Table 3.6 Rearing Systems.

		Frequency	Percent
Valid	zero grazing	10	33.3
	mixed farming	8	26.7
	within own compound	10	33.3
	not applicable	1	3.3
	Total	29	96.7
Missing	System	1	3.3
Total		30	100.0

Source: Field Survey 2008.

Chart 3.2 Rearing Systems

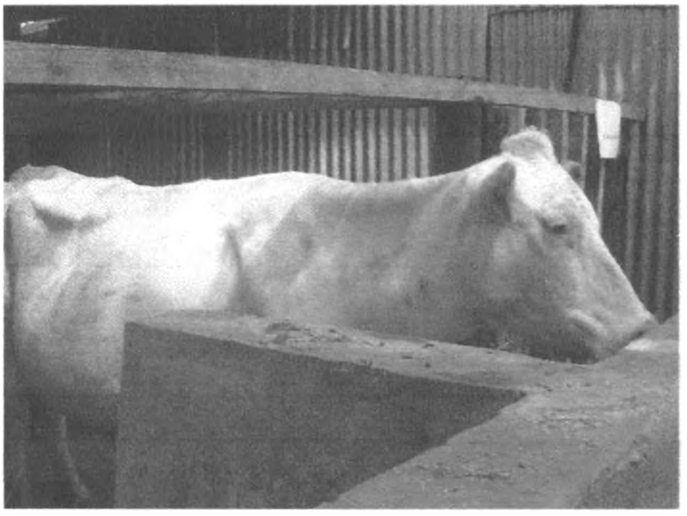


Source: Field survey 2008.

The farmers in the area mainly kept livestock within their own compound or practiced zero grazing; this is as a result of lack of space in which to herd the livestock. None of the farmers in the area practiced free range. The response given by many farmers about this issue was the fact that they did not want to get in the wrong hands of the city council and also they did not want their animals getting diseases by roaming around.

There were no clear differences between households of different income groups as far as the rearing systems were concerned. However it was evident that the low-income households had a very small compound and hence less space was available as compared to the middle- income households who had compounds with a little more space available. The farmers thus look for the best utilization of space in their compounds. One of the unique features noted in the area is that due to the lack of adequate space in the compound, the farmers have put up double storey structures that are made of mabati and timber to rear livestock.

Plate 3.4 Cattle Shed for Zero grazing.



Source: Field Survey 2008.

Plate 3.5 Goat shed.

Source: Field Survey 2008.

Large and small livestock differ to some extent as far as the purpose of rearing is concerned. Small livestock is kept first of all for own consumption: almost 60% of those who keep these animals eat most or all of them whereas the rest consume part of the animals and sell the rest. The keepers consume less of the large livestock and majority of the farmers keep them for the purpose of obtaining their products. However some farmers kept livestock as a contingency for sale when the family needed immediate cash such as school fees or for consumption during feasts. The farmers hence kept livestock mainly to get income and also for consumption. However, 13.3% of the respondents said that the main purpose of keeping livestock was so as to diversify their income. This is shown in the table below.

The keeping of livestock, either large or small solely for commercial purposes is very rare in Waithaka. Again, there are no clear differences between the richer and poorer households as far as the purpose for rearing livestock is concerned.

Table 3.7 Purpose of keeping livestock

		Responses	
		Frequency	Percent
reasons for keeping livestock(a)	need food	13	21.7%
	needed income	32	53.3%
	to diversify income	8	13.3%
	not applicable	7	11.7%
Total		60	100.0%

Source: Field Survey 2008.

3.5.2 Inputs used for Animal Production.

Table below shows the type of inputs the Waithaka Livestock keepers use for their animals.

Table 3.8 Inputs used in livestock keeping.

		Responses	
		Frequency	Percent
do you use any of the following(a)	improved breed	3	13.6%
	veterinary drugs	6	27.3%
	feed supplement	2	9.1%
	urban waste as feed	2	9.1%
	crop residue as feed	9	40.9%
Total		22	100.0%

Source: Field Survey 2008.

The most common input for livestock rearing that is mainly used in this area is the use of crop residue as feed. 40.9% of the farmers used this input as they claimed that it was easily available and cheap to obtain, as most

livestock keepers were crop cultivators. To some of the farmers, livestock keeping seemed to be no serious business, as they rarely used any of the inputs listed in the table above. However about 27.3% of the farmers used veterinary drugs and feed supplements and also 13.6% of the farmers used improved breeds. The use of inputs is more common in the well-off households than among the poorer ones. For instance the well-off households mainly used the relatively expensive inputs such as feed supplements and improved breeds, whereas many of the poorer livestock keepers could not afford them.

Despite this fact, Waithaka is seen to be a unique area as majority of the livestock keepers receive assistance from extension officers from the Ministry of Agriculture, University of Nairobi (Kabete Campus) and the International Livestock Research Institute (ILRI). The assistance received from these institutions benefited all livestock keepers from different income groups but especially the poorer households. It can therefore be noted that the increase of livestock keeping in Waithaka area has been contributed to by the support given to the farmers.

3.5.3 Problems with Livestock Keeping.

The table lists the most frequently mentioned problems encountered by the Livestock keepers in Waithaka.

Table 3.9 Problems with Livestock Keeping.

Problems	%
No problem	9.1
Diseases	75.8
Theft	24.2
Lack of feed	27.3
Lack of funds/capital	15.2
Lack of space	30.5
Harassment	3.0

Despite the various problems involved in livestock keeping, a number of the respondents (9.1%) said that they did not face any problems. However majority of the farmers (about 76%) said that the main problem they faced was the increase of animal diseases in the area and hence it was of great concern to them. Another major problem in the area was lack of space. The farmers said that due to the lack of space, they could not rear their animals appropriately and therefore had to come up with ways of utilizing the little space they had. On the same issue some farmers said that, for example, they could not rear large livestock such as cattle because the land was too small, and hence were forced to rear small livestock such as chicken.

Theft, lack of feed and lack of funds were also some of the constraints mentioned by the respondents. The issue of harassment, though not frequently mentioned, is a constraint specific to large livestock. This may be related to the regulation, which says that, it is forbidden to let large animals roam freely around.

Richer and poorer livestock keeping households showed hardly any difference as far as the various types of constraints are concerned. Constraints relating to diseases, theft and lack of funds were common among all income groups. However, the most prevalent constraint to the low- income group was the lack of space as the farmers said that they did not have enough money to purchase land.

3.5.4 Waste Disposal.

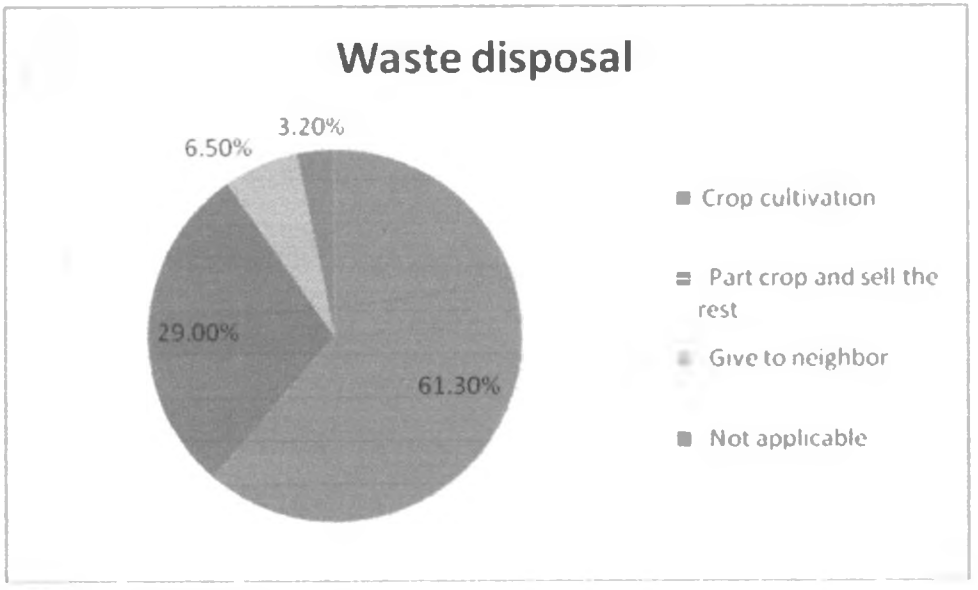
One of the major nuisances of livestock keeping in town concerns the animals' waste. If the animal waste is dumped in the streets then it becomes a nuisance to the people of that area. The table below shows what the farmers do with the animal waste in Waithaka.

Table 3.10 The use of Animal Waste.

		Responses	
		Frequency	Percent
Waste disposal (a)	Crop cultivation	19	61.3%
	Part crop and sell the rest	9	29.0%
	Give to neighbor	2	6.5%
	Not applicable	1	3.2%
Total		31	100.0%

Source: Field Survey 2008.

Chart 3.3 Waste Disposals.



Source: Field Survey 2008

It is clear that majority of the farmers (about 61%) use most of the animal waste for crop cultivation especially in the low-income households. This is because they do not have enough money to buy the fertilizers required in

their crop production. Other respondents (29%) used part of the waste for crop cultivation and sold the rest. This enabled them to get some income, which they used in the household. Very few farmers gave the animal waste to their neighbors or dumped the waste in the street.

3.6 NON-FARMERS

Some of the respondents interviewed were the non- farmers, who were asked why they had not cultivated crops or kept livestock in Waithaka. A summary of the reasons mentioned, including the main reason, is presented in the table below. It is clear that although a wide variety of reasons were given, the land issue is the main one.

Table 3.11 Reasons for not farming

		No crop cultivation Main reason %	No livestock keeping Main reason %
Land Issues	No access to land.	77.9	64.7
Lack of other Resources.	No capital	9.4	10.6
	Lack of time	4.4	4.4
Legal Considerations	Harassment	0.2	1.7
	Disapproved by landlord or myself.	0.9	3.8
Other reasons	Not worthwhile	4.6	6.8
	Had not thought about it.	0.7	2.5

Source: Field Survey 2008.

The lack of access to land within the town is by far the most important reason for the non- farmers not to be engaged in some agricultural activity. This applies even more to crop cultivation than to livestock keeping, probably because generally speaking, there is more land required for growing crops than for keeping a few animals. For some farmers, there was no need to farm in the area because they had access to a plot in the rural areas.

Lack of other resources such as capital, labor and time was also frequently mentioned as indicated in the table above. Capital in particular was a problem for many. The respondents said that due to the lack of adequate capital they could not venture into the farming activities, as they could not afford the seeds as well as the fertilizer required.

For other respondents, farming was not worthwhile as they said that the returns received from the practice were minimal, as compared to engaging in other business such as kiosks or selling of second-hand clothes. They even continued to say that farming was affected by so many constraints such as lack of rainfall and therefore at times one would not receive any returns.

However about 5 respondents who were not practicing urban farming currently, had actually done so before, as they had cultivated crops and kept livestock. A variety of reasons were given as to why they had stopped farming, for instance theft of crops, plot being used for another purpose, plot repossessed by the owner, lack of rain and the activity not being 'profitable'. In relation to livestock keeping, they stopped because of the problems of diseases, theft and insecurity.

3.7 OFFICIAL VIEW ON URBAN AGRICULTURE

Questionnaires were administered to various town officials in order to obtain their views on urban farming. In some cases interviews were carried out.

- District Agricultural Officer.

According to the District Agricultural Officer in charge of the Nairobi west district, he expressed his strong support for urban farming, this is because it contributes to food security, income generation and job creation and hence according to him it is a legal practice. He said that Urban Agriculture should be promoted in areas that are conducive. For example in areas that have not yet been developed, at backyards in the home and in any other land that

is vacant excluding the road reserves and riverbanks. Coming up with technologies that are compatible with city planning can accelerate the growth of urban farming.

The Ministry of Agriculture and Livestock is pushing the city council to amend their by-laws by trying to formulate an Urban and Peri-urban Agriculture policy, which aims at supporting the practice. However, in the recent times, urban farming is becoming more tolerable and a lot of farming is carried out under power lines and vacant land. The officers in this ministry provide extension services to the urban farmers as well as agronomic techniques so as to promote the production of certain crops such as sorghum, managu, kunde, dhania, pulses and mushrooms, which are being regarded as high value crops that take a short time to grow. This enables the farmer to utilize the land optimally. It should be noted however that the officers do not offer financial assistance to the farmers but they readily offer technical assistance.

- National Environmental Management Authority.

According to the environmentalists from NEMA, they expressed no problem with the practice of urban farming as long as it is done in a sustainable and organized manner. However the main problem to them was the use of sewage water and farming on road reserves, which would lead to an increase in health hazards. Due to the lack of land to grow crops, the poor households have opted to grow crops on vacant land, which may not be suitable for crop production, and also they irrigate the farms with sewage water. The environmentalists were also of the opinion that the great challenge facing the urban farming practice is bureaucracy in the offices of the officials such as the city council, hence hindering the effective practice of farming in urban areas.

- Director of City Planning.

The director of city planning in City Hall together with his colleagues said that urban farming should not be allowed completely. They referred to the practice as an illegal activity such as hawking, which did not take into account the highest and best use of the land. According to them, they would prefer people putting up houses since even the amount of food produced is negligible hence they did not see the importance of the practice. When asked why the practice of urban farming had been incorporated in Tanzania as an urban land use, they held that laxity in the implementation of policies supporting the practice was the major problem.

- Public Health Officer.

According to the Public Health Chief Officer, he expressed a need to regulate farming activity in the area because of the health and environmental threat it could pose, by use of improperly treated wastewater for agriculture. He expressed the fear of food poisoning and contamination by growing crops in such wastes. He also expressed fear that the area's water supply would be contaminated by excess use of chemical inputs and untreated animal waste not well disposed off.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS.

4.0 INTRODUCTION.

This chapter gives the conclusions and recommendations emanating from the research findings as well as the area of further study. It will involve the giving of conclusions and recommendations regarding Urban Agriculture in Waithaka. The areas of further study are meant to throw more light on ways of hastening effective practice of farming in an urban area.

4.1 CONCLUSIONS.

Urban Agriculture is a productive economic activity both at the macro and micro-level. In the macro-level, it makes use of the otherwise under utilized urban resources of land and labor and also makes a significant contribution to the towns food supply, employment and income. At the micro-level, it is largely a component of the survival strategy of middle and low-income households.

4.1.1 Crop cultivation.

Over half of Waithaka's population is engaged in farming practices. Majority of the people grow crops on land belonging to the family while others have their own land. Some of the low-income households farm in areas away from their compound, either in a rented land or in an area with vacant land near the Kavuthe River. Although a large range of different crops is being cultivated in the area, some crops have stood out from the rest. The most common crops include maize, beans, bananas, Kales and managu's. These are the crops that were likely to be found in almost all the farms.

The cultivation practices in the area are quite traditional, with simple tools. The inputs used were varied and mostly of the organic type, however, very few farmers used chemical inputs, as most of them could not afford them. The farmers who obtained the water from the nearby river also practiced irrigation. Irrigation was very beneficial to the farmers especially during the dry seasons, hence enabling them to continue with the crop cultivation.
Farming in Waithaka, as earlier stated, is faced with problems such as drought and theft of the crops, thus leading to a major set back in achieving a high crop yield.

4.1.2 Livestock keeping.

A very unique factor of Waithaka town is the zeal of the farmers in keeping livestock. Almost all households in the area keep some form of livestock, the common ones being cattle, goats and chicken. The method of rearing in the town is mainly zero grazing or within the compound. There are very few cases of livestock roaming around and hence the farmers do not have problems with the local authorities of the area. The feed for the animals is mainly the crop residues, which most of the farmers find readily available, however, a few farmers use feed supplements.

An environmental issue in town is related to the waste from the livestock. Most of the waste is used for crop cultivation and where it is excess the farmers give out to their neighbors.

Livestock keeping in the area is an important activity and most of the farmers find the practice very beneficial as they can sell the animals when they need some money, for example, to pay school fees. One of the factors that has lead to the continued growth of livestock rearing is the technical assistance obtained by the farmers. The farmers hold meetings where they are educated and informed on how to improve the health of their livestock by institutions such as ILRI and the Ministry of Agriculture and Livestock.

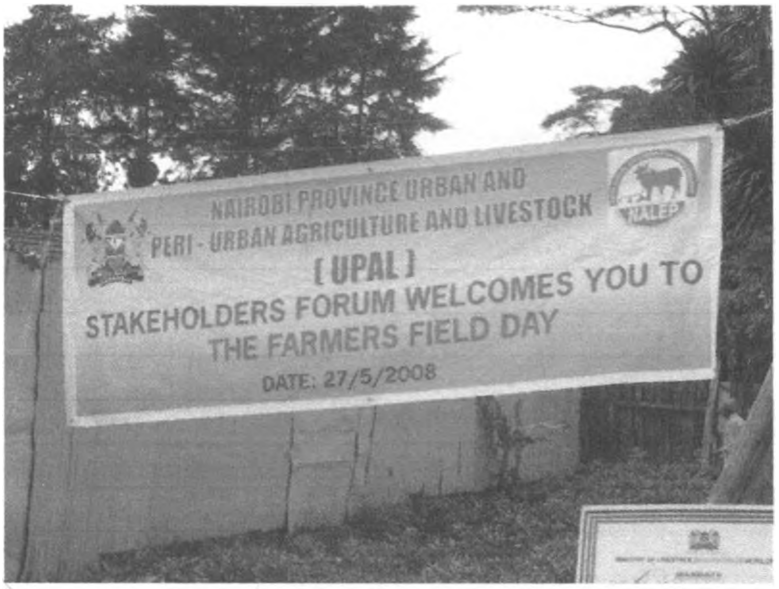
4.1.3 Reasons for Growth of UA.

For the large majority of the households engaged in farming in Waithaka, the need for food was the main reason to do so. In the low-income households urban farming forms a major part of their livelihoods as it is a survival strategy and to some they cannot do without it. Other farmers are engaged in the practice so as to diversify income as well as to generate some income. This is seen when the farmers sell their produce such as milk and eggs or the vegetables, to a readily available market in the area. In this case majority of the farmers sell their products in the nearby Dagoretti Market.

The fact that in present time, with all its economic and social uncertainties and stress, urban farming is an important source of food, income and employment and it is an activity that cannot be neglected by policy makers. At the same time, however, the municipal by-laws, which date from the colonial period, render farming in urban areas an illegal activity. Despite this Urban Agriculture is inevitable as it forms a backbone of many people's livelihood in urban areas.

One of the factors leading to the increase in the practice of Urban Agriculture is the support that is given to the farmers in Waithaka. Various institutions offer technical support to the farmers by informing them of appropriate methods of practicing farming. Institutions such as UON Kabete Campus, ILRI, MOAL and MOH organize forums with the farmers in the area, with the aim of educating them as well as getting to know the problems and challenges they are facing. The farmers in conjunction with their supporters hold Field Days, which are aimed at informing the farmers of the best ways to carry out their farming activities and also to give them a chance to display their work in farming activities. An example is shown below:

Plate 3.6 Field Day.



Source: Field Survey 2008.

4.1.4 Income Classes.

Urban Farming is an omnipresent fact of life in Waithaka. People with a compound farm there and many of those who do not have a compound farm elsewhere in the area, wherever some vacant land is available. Hence urban farming is not restricted to certain areas in Waithaka or certain strata of the urban society. This is because farming is very common in the area as the housing density is low and also the fact that the town has retained its rural setting. The low-income households form majority of the urban inhabitants as well as the majority of the urban farming households. It is exactly for this group that their urban farming activities have become a necessity of life and hence forbidding such a practice is not an option at the present time of economic crisis, as it would hit this low-income people very hard.

Although many urban farming households indicated the importance of this economic activity in terms of household food provision and as a source of income, yields from crop cultivation are very low, in particular among the

poorer households. Moreover, the livestock that many households keep is suffering from diseases and hence some farmers end up loosing their livestock.

Plot sizes do not differ very much between the income categories. However, there is an important difference as far as yield from cultivation are concerned. For instance the middle-income households realize a harvest, which is more than that from the low-income households. This may be partly related to the use of improved seeds and irrigation, inputs that are more common to the higher income groups, and partly to the factor of labor as they can afford to hire additional labor when needed. Theft of crops was more of a problem for the low income households, which is likely to be due to the fact that their plots are more often not located in the compound.

Livestock keeping can also be found among all income categories and the animals are kept for the same reason, namely partly for own consumption and partly for selling. However the higher income groups use more often relatively expensive inputs and receive more technical assistance. They also hire additional labor more frequently. However, for all income groups the health of the animals was a dominant constraint.

4.1.5 Farmers and Non Farmers.

Urban farmers in this project are defined as the urban dwellers engaged in farming activities within the municipal boundaries of the town. Compared with the non-urban farming households, the households performing Urban Agriculture are generally larger. If there are more mouths to be fed, it is more likely that that household will be engaged in the practice. Another difference between the farmers and the non-farmers is the household welfare level in terms of monthly cash income. The low-income households are the largest group among the urban farmers and it is particularly for this group that Urban Agriculture is very important as a food and income source.

The main reason for the non-farmers not to farm in the town was the lack of access to urban land, at some distance followed by other considerations of which lack of capital was the most important one. For some there was no necessity because to them engaging in other business ventures brought better and reliable returns.

4.1.6 Environment and Health.

Urban Agriculture is often considered as a menace for the town in terms of environment and health. Animals freely wandering around and the disposal of their waste on the streets can cause a serious problem. The crops cultivated on polluted sites or irrigated with untreated sewage water or polluted with exhaust fumes can be a very serious health hazard, which would then have a negative impact on the people. According to this study, the incidence of animal waste on the streets is negligible. The farmers are often advised on how to keep their animals well and how to dispose off the wastes. For example most of the waste from large animals is used for crop cultivation. However recent studies have also indicated the importance of poultry manure and have encouraged its usage in crop cultivation. The benefits include improving the crop vigor, aids drought resistance, increases yield and it is cheaper than inorganic fertilizers. The farmers are hence encouraged to utilize the waste or dispose it off in an appropriate manner. However, the Local Authorities and the local community groups should co-operate to ensure that the activities undertaken are done in a sustainable manner and hence protect the environment.

4.2 RECOMMENDATIONS.

In order for Urban Agriculture to be carried out in an efficient and effective manner, various issues that hinder the practice from reaching its potential limit need to be addressed. This study therefore recommends the following:

- Kenya's planning regulations exclude Urban Agriculture from the formal urban land use system. The local authority by-laws, which date

back to the colonial period, view urban farming as an illegal activity. There is therefore need to establish a policy and institutional framework. This is because Urban Agriculture constitutes a critical food security strategy for low-income urban farmers and it is also an aspect of urban agribusiness, where the sector generates important income and employment opportunities.

- Lack of credit is a major problem facing development of Urban Agriculture in Nairobi. There are no special credit and investment opportunities for the development of the practice. There is need to promote credit and investments in Urban Agriculture, which will require the involvement of various stakeholders in the sector. The practice will require efforts of the Government, farmers and development partners in the provision of technical and material support. The farmers should form associations and marketing co-operatives societies to support development of the sector.
- The availability and access to land is another issue that needs to be looked into. Due to lack of land, farmers have carried out their cultivation in areas that are hazardous such as road reserves and riverbanks, which pose a risk to health as a result of consuming the contaminated produce. The Government can designate specific areas in which the activity can be carried out. For example, land banks in urban areas that are acquired for future use can be put into some useful activity such as urban farming. This will be mutually beneficial to the farmer as well as the unsuspecting consumer who would be guaranteed of safe produce.

  Temporary occupancy permits (TOPs) can be issued to willing urban farmers so as to enable them to carry out their farming activities in private and public open spaces.
- There is also a need to regulate the farming activities in the town. This is because farming that is not carried out appropriately can have very serious impacts on health as well as the environment. The use

of untreated sewage water for agriculture is likely to cause food contamination and the use of chemical fertilizers can contaminate soil and water in urban areas. The farmers, through community groups, should co-operate with the local authorities so as to ensure that urban farming is carried out in an appropriate manner. An example would be that the number of cattle should be bound to a certain maximum and should only be kept under zero grazing in the peri-urban areas and/ or in compounds of a certain minimum size in the built up area. The same principle could be implemented for the tall crops such as maize.

- Lastly, some prerequisites for any policy regarding the integration of Urban Agriculture in urban planning can include:
    - The recognition that agriculture is not only a rural activity but an accepted form of urban land use as well.
    - The understanding that farming is an important economic activity for many urban dwellers as it generates income and provides employment opportunities.
    - The conviction that Urban Agriculture has to be incorporated in any future town planning exercise.
    - A fruitful working relationship between the local authorities and community-based organizations.

4.3 AREAS OF FURTHER STUDY.

There is need to study the ways of improving the quality of food crops in urban areas, this is because more often than not the food crops are subjected to pollution. Crops cultivated on polluted sites or irrigated with untreated sewage water or polluted with exhaust fumes are thought to be unhealthy. There is therefore need to look into this further so as to improve the practice of Urban Farming.

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APPENDIX 1

UNIVERSITY OF NAIROBI

DEPARTMENT OF REAL ESTATE AND CONSTRUCTION MANAGEMENT

QUESTIONNAIRE

NB. This questionnaire is meant to assist me in carrying out a study on how Urban Agriculture can be used as a form of reducing poverty in urban areas. The information so given will be used for academic purposes only. It will thus be treated with utmost confidentiality.

1. Are you a resident of Dagoretti division?
   A. YES B. NO
2. How long have you lived in Dagoretti division Waithaka area?
   A. TEMPORARY
   B. LESS THAN 5 YEARS
   C. 5 – 10 YEARS
   D. 11 – 15 YEARS
   E. 16 – 20 YEARS
   F. 21 – 25 YEARS
   G. OVER 25 YEARS
3. Gender.
   A. MALE B. FEMALE
4. Marital status.
   A. SINGLE B. MARRIED C. DIVORCED D. WIDOWED
5. Total number in household.....
6. What is your age?.....
7. What do you do for a living?.....
8. What is the level of your income per month?
   A. UP TO 2500
   B. 2500 – 5000
   C. 5000 – 10000
   D. 10000 - 20000
   E. ABOVE 20000
   F. DON'T KNOW
9. Do you practice farming activities on the side?
   A. YES B.NO C. USED TO BUT STOPPED D. OCCASSIONALLY
10. If not what is your reason?
    A. LACK OF ACCESS TO LAND
    B. NO CAPITAL AVAILABLE

C. NO LABOUR AVAILABLE
D. HARASSMENTS
E. NOT WORTHWHILE
F. DISAPPROVE OF CROP CULTIVATION
G. OTHER (SPECIFY)

11. If you do not farm, would you like to have access to land to grow crops here?
A. YES B. NO C. DON'T KNOW

12. If you farm, why do you farm?
A. FOR FOOD
B. NEED INCOME
C. TO DIVERSIFY INCOME
D. HAD UNUSED LAND
E. HOBBY/CUSTOM
F. OTHER

13. Where do you grow your crops (site)?.....

14. Who owns the land?
A. SELF
B. FAMILY LAND
C. RELATIVE'S LAND
D. LANDLORD
E. GOVERNMENT
F. DON'T KNOW
G. OTHER.

15. How big is the land in terms of:
A. HECTARES
B. ACRES
C. SQUARE METRES
D. SQUARE FEET
E. OTHER (SPECIFY)

16. When did you start farming?
A. 2000 B. 1990'S C. 1980'S D. 1970'S E. 1960'S

17. If you used to farm but stopped, why did you stop?

.....

18. What type of crops do you grow?

.....

19. How many kilograms/ bags do you produce per month?

……

20. What do you do with the produce?
    A. CONSUME B. SELL C. GIVE AWAY

21. What problems do you face in producing your crops?
    A. EROSION E. EVICTION
    B. DROUGHT F. LACK OF FERTILIZERS
    C. FLOODING G. LACK OF TOOLSB
    D. THEFT H. OTHER

22. Did you use any of the following inputs in your crop cultivation? (Tick where appropriate)

- Chemical fertilizers
- Manure as fertilizer…… If Yes source……
- Crop residue as fertilizer…… If Yes source……
- Urban waste as fertilizer…… If Yes source……
- Chemical pesticides……
- Chemical insecticide……
- Local seeds/ seedlings……
- Improved seeds/ seedlings……
- Irrigation…… If Yes source……
- Other (specify)

23. Do you keep any livestock?
    A. YES B. NO

24. If you do which type of livestock do you keep?
    A. CATTLE E. CHICKEN
    B. SHEEP F. RABBITS
    C. GOATS G. DUCKS
    D. PIGS H. OTHER (SPECIFY)

25. What were the reasons to keep livestock?
    A. NEEDED FOOD
    B. NEEDED INCOME
    C. TO DIVERSIFY INCOME
    D. HOBBY/ CUSTOM
    E. OTHER (SPECIFY)

26. Do you use/ do any of the following?
    A. IMPROVED BREED D. URBAN WASTE AS FEED
    B. VETERINARY DRUGS E. CROP RESIDUE AS FEED
    C. FEED SUPPLEMENTS F. OTHER (SPECIFY)

27. What is your rearing system?
    A. ZERO GRAZING
    B. MIXED FARMING

C. WITHIN OWN COMPOUND
D. FREE RANGE
E. OTHER (SPECIFY)

28. What do you do with the animal waste?
    A. USE IT FOR CROP CULTIVATION
    B. USE PART FOR CROP AND SELL THE REST
    C. SELL ALL OF IT
    D. DUMP IT
    E. GIVE TO A NEIGHBOUR
    F. OTHER (SPECIFY)

29. What do you finally do with the animals?
    A. SELL
    B. FOR CONSUMPTION
    C. TO GET MILK, EGGS, HONEY
    D. OTHER (SPECIFY)

30. How many animals do you sell in a year?.....

31. How many animals die in a year.....Reason.....

32. What problems do you face with livestock keeping in Waithaka?
.....

33. Why do you think the City Council does not encourage livestock keeping?
.....

34. Irrespective of whether you grow crops or keep livestock what are your biggest problems here?

.....

35. What do you think would benefit Agriculture in this area?

.....

36. If you got another job would you abandon farming?
    A YES B. NO C. DON'T KNOW

37. Do you have an organization/ cooperative to market your crops or sell to you inputs?
    A YES B. NO C. IN THE PROCESS OF FORMING ONE

APPENDIX 2

OFFICIAL VIEW ON URBAN AGRICULTURE.

cc. District Agricultural Officer.
Director of City Planning.
Town Council Chairman, clerk.
Public Health Officer.
The Environmental Officers.

1) What is your view about the legality and presence of Urban Agriculture in Waithaka?
2) Despite the fact that Urban Agriculture is considered illegal in the municipality, there is some farming going on in the town. What do you plan to do?
3) Do you think the farming going on in Waithaka has any significant contribution to the town's economy, in terms of food, employment e.t.c?
4) Do you have plans to officially allow farming to be carried out here? If no, why not?
5) It has been noted that the urban farming practice is moving from a restricted state to one, which is tolerable. What is your take on this?
6) Are you supporting the urban farmers in any way in your official capacity, for example by giving credit, inputs, extension services?
7) What is your case for and against Urban Agriculture?