The Role of Urban Agriculture towards Livelihood and Food Security

The case of Addis Ababa, Ethiopia

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Abstract

Urban agriculture plays a major role in providing food and income in cities. It also serves as a tool for poverty alleviation. Any agricultural activities including crop and vegetable growing, animal rearing, beekeeping, dairy and poultry farms practiced at backyards, open spaces, river banks and small farm lands in peri-urban areas are considered as urban agriculture. This study quantifies cultivated land size in Addis Ababa city and explores the contribution of urban agriculture to livelihood and food security of the actors in the city. The study primarily uses ArcMap and Google Earth software to quantify Addis Ababa's land used for urban agriculture. Questionnaire interview, Key Informants Interview (KII), Focus Group Discussion (FGD), and observation are employed as primary data collection methods complemented by secondary data obtained by reviewing documents related literature. This study finds that 22% of Addis Ababa's land is covered with cultivated land whereas water, one of agricultural activities major inputs, constitutes only 1% of the city's land. The study also finds that urban agriculture is the main source of food and income for the sample households of the study. Furthermore, urbanization, unskilled agricultural practices, lack of collaborative action and networking, as well as inadequate water and irrigation schemes have been identified as main determinants of urban agriculture in the city.

Keywords: *Urban agriculture, livelihood, food security, Urbanization, Addis Ababa*

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Acronyms and Abbreviations

ACDI/VOCA	Agricultural cooperative development international/Volunteers in overseas cooperation
CAP	Crop and Animal Production
CP	Crop Production
CSA	Central Statistical Agency
CVAP	Crop, Vegetable and Animal Production
CVP	Crop and Vegetable Production
ENDA	Environmental Development Action
ETB	Ethiopian Birr
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
GDP	Gross Domestic Product
GIS	Geographical Information System
HIV/AIDS	Human Immune-Deficiency Virus/Acquired Immune Deficiency Syndrome
ISD	Institute of Sustainable Development
MDG	Millennium Development Goals
MoARD	Ministry of Agriculture and Rural Development
NGO	Non-Governmental Organization
PICDO	Progress integrated community development organization
PLWH	People Living with HIV/AIDS
PPP	Purchasing Power Parity
RUAF	Resources Center on Urban Agriculture & Food Security
SWOT	Strength, Weakness, Opportunity, and Threat
UNDP	United Nations Development Program
UNFPA	United Nation Population Fund
UN-HABITAT	United Nations Human Settlements Programme
UPAPS	Urban and Peri-urban Agriculture Policies and Strategies
US$	United States Dollar
USAID	United States Aid for International Development

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1 Introduction

1.1. Background of the study

The global urban population has been expanding over the last few decades. In early 2010s, half of the world's population was living in cities (The World Bank, 2014). This proportion is expected to reach 70 percent by 2050 mainly driven by the growing urbanization in the developing world, particularly in sub-Saharan Africa (SSA) (FAO, 2012; Poulsen et al., 2015). By the end of the current decade, 24 of the world's 30 fastest growing cities will be African, and within 18 years, the urban population of SSA is projected to reach almost 600 million, twice how much it was in 2010 (FAO, 2012). As a result of this rapid urbanization, ensuring food security of urban residents has become a critical challenge (Poulsen et al., 2015) and the focus of food insecurity has shifted and expanded from rural to urban areas (Crush and Frayne, 2011; Davies et al., 2020).

This challenge of food insecurity in urban areas in SSA needs to be addresses in order to achieve some of the sustainable development goals set by the United Nations, specifically the goal to achieve 'zero hunger' and 'no poverty' (Davies et al., 2020; Perez-Escamilla, 2017; United Nations, 2015). As argued by Padgham et al. (2015, p.184), achieving these goals largely depends on "how developing-country cities are planned, managed and governed" as well as implementation of targeted policy initiatives to enhance food security. One mechanism considered as a solution to do so is improved urban agriculture, which may play an important role in providing fresh, accessible, cheaper and nutritious food products to the urban population (FAO, 2012; Mougeot, 2005; Pribadi and Pauleit, 2016; Korir et al., 2015). While urban agriculture is defined as ''small areas within cities, such as vacant lots, gardens, verges, balconies and containers, that are used for growing crops and raising small livestock or milk cows for own-consumption or sale in neighborhood markets'' (Poulsen et al., 2015, p. 132).

Urban Agriculture has a potential to increase food security in several ways (Poulsen et al., 2015). First, it may create easier and stable access to nutritious food for those households producing their own food (Redwood, 2009; Binns and Etienne Nel, 2013; Zezza and Tasciotti, 2010). Second, household may be able to generate additional income by selling their products and hence improve their livelihood (Mougeot, 2005; Redwood, 2009). Third, it could help to improve food security of the community by increasing the total production output available in the market (Poulsen et al.,

2015). Yet, the debate on whether urban agriculture practically improves urban livelihood or not remains debatable (Davies et al., 2020; de Zeeuw et al., 2011; Frayne et al., 2014, 2016) and scholars call for more clarity on the significance and benefits of urban agriculture (Poulsen et al., 2015; Webb, 2011). More specifically studies that estimate the prevalence of urban agriculture are lacking in the literature (Hamilton et al., 2014), and hence a need for additional context-specific research to evaluate how urban agriculture is linked with food security to provide input for local policies (Poulsen et al., 2015). This study, thus, aims to contribute towards this by assessing the prevalence of urban agriculture as well as assessing its role towards urban livelihood and food security in the city of Addis Ababa, Ethiopia.

1.2. Urban Agriculture

Urban agriculture is defined as ‘‘growing crops and raising small livestock or milk cows for own-consumption or sale in neighborhood markets within the city and peri-urban areas of the city.’’ (Poulsen et al., 2015, p. 132). It may help to reduce food related expenditures in one way and it is a tool to be income source for those who practice it (Mougeot, 2005; Redwood, 2009; Zezza and Tasciotti, 2010). Producing food domestically as a practice of urban agriculture has a capacity to minimize food import. Urban agriculture, in this regard, has a great impact on one of the four pillars of food security called availability. Physical and economic access to food also can be one of the features of urban agriculture towards food security as it deals with purchasing power, transport and infrastructure and income of population. Economic, political and weather factors of urban agriculture can also be considered as one of the pillars of food security called stability to check whether the population is secured to have access to adequate food all the time. Backyard harvesting, less transportation and fresh and sufficient quality of foods are features of urban agriculture that deal with the fourth pillar of food security, food utilization.

1.3. Statement of the Problem

Ethiopia’s urban population has more than doubled in the past 20 years, from 7.3 million in 1994 to an estimated 16.7 million in 2014 (CSA, 2013). Currently around 20% of Ethiopia’s population lives in urban areas and it is projected that this will be doubled by 2035 (United Nations, 2018). This growth of cities fueled by rural urban migration, coupled with unemployment, draught, and

volatile food cost makes practicing urban agriculture a must to meet the ever-increasing urban food demand (Mougeot, 2005). This is even more critical to ensure urban food security as the majority of those practicing urban agriculture are low to medium income earners who grow foods and rearing animals mainly for household consumption and to less extent for markets (Bakker et al., 2001). In fact, urban agriculture is associated with the urban poor who spend more than half of their income on food (UNDP 1996; Mougeot 2000; Amera 2010; FAO 2012). Yet it is not well developed for at least two reasons.

First, those who practice urban agriculture have a limited knowledge on how to develop and manage it in a productive way. Second, similar to several other countries in SSA (Davies et al., 2020), there is inadequate holistic support for urban agriculture in Ethiopia manifested by the lack of attention it receives from the government and development agents (Mougeot, 2000; UPAPS, 2011) in spite of its vital role in supplementing food for the urban poor particularly in Addis Ababa (Mougeot, 2006). This lack of official recognition of urban agriculture often leads to a feeling of insecurity among urban farmers; thereby it limits their commitment to invest in the sector. In general, the government, credit agencies, researchers, development agencies and market agents do not recognize urban agriculture as a significant industry (UNDP, 1996).

One of the reasons for the lack of policy framework and intervention towards urban agriculture in Ethiopia could be the lack of data and research related to the prevalence, scope, and potential of urban agriculture in the different urban areas in the country. Indeed, as argued by Egziabher, (1994), Yalew (2020), urban agriculture in Ethiopia remains largely under researched and received little attention from researchers alike. Thus, there is a need for more empirical research investigating the scale and impact of urban agriculture in Ethiopian cities to inform policy makers and urban planners as well as to stimulate further research (Yalew, 2020). Prior research has not quantified the area covered in urban agriculture and sought answer for the contribution of urban agriculture towards food security and livelihood from the perspective of the actors who use it as a means of survival. With the aim of filling this gap, this study investigates the practice of urban agriculture in Addis Ababa and provides an estimation of the area covered by urban agriculture in the city. Furthermore, it examines the role of urban agriculture towards food security and livelihood of the people practicing it in Addis Ababa. This study focuses on Addis Ababa for at least two reasons. First, as the capital of the country, several urban initiatives are first tested in this city and

later expand to other urban areas in the country. Thus, any imitative related to urban agriculture would follow the same path and studying urban agriculture in the city would give us a representative picture of the rest of the urban areas in the country. Second, urban agriculture is mostly practiced by low to medium income earners who grow foods and rearing animals mainly for household consumption and to less extent for markets (Bakker & et al., 2001). Although Ethiopia managed to reduce rural poverty over the last couple of decades, urban poverty has slightly increased, and according to Ethiopia's MDG Report (2012), more than 60 percent of Addis Ababa's households remain 'poor'. Thus, it is a good case to investigate the prevalence of urban agriculture as it is related to low to medium income earners.

1.4. Objective of the Study

This overall aim of this study is to assess the extent and characteristics of urban agriculture as well as its importance for food security and livelihood in Addis Ababa, Ethiopia. The specific objectives are, thus:

- ✓ To quantify the area used for crop and vegetable production within Addis Ababa.
- ✓ To examine the role of urban agriculture towards food security and livelihood for the urban dwellers practicing urban agriculture in Addis Ababa.

1.5. Scope and Limitation

The study focuses on croplands in different areas in Addis Ababa and two vegetable farms adjacent to Akaki river banks. A total data of 61 individual informants and four members of two farm cooperatives are involved in the data collection. The study has its own limitation. Due to lack of willing of informants, the data collection was challenging. In most cases, the farmers were skeptic of consequences and unwilling to participate in the study, which made the data collection time taking and frustrating. Another challenge during the data collection was that there was unavailability of transportation in some remote villages. The dearth of literatures in the field has also been seen as a limitation of the research that challenges the theoretical framework and the data analysis sections of the research.

1.6. Significance of the Study

Despite having a great role in maintaining the urban life, urban agriculture in Ethiopia has received a diminutive attention from policy makers and researchers alike. Even though there has been some research conducted based on urban agriculture, data, particularly from the people who are practicing urban agriculture in Addis Ababa regarding the status of their food security and livelihood has not been systematically gathered and analyzed. As its objective implies, this study will be of a great significant for scholars and urban development policy makers to considering urban agriculture for a holistic and inclusive urban planning by answering the two research questions. The study will also serve international development agencies as a tool to have a better understanding of the lives of the actors of urban agriculture as a means of food security and livelihood and to support their framings and change their lives for the better.

1.7. Outline

The study is structured in six chapters. The first chapter introduces the research topic as well as the objective of the study. It contains the background of the study, statement of the problem, objective of the study, as well as limitation and significance of the study. Chapter two follows with a literature review in which theoretical perspectives related to this study are discussed. Urban agriculture, food security and livelihood concepts will also be discussed in this chapter as part of guiding concepts. Chapter three describes the methods utilized to collect and analyze data. Results and findings of the study are systematically presented in chapter four followed by discussion and conclusions in the fifth chapter.

2 Literature review

This part of the study deals with presenting theoretical perspectives related to the study and illustrating guiding concepts through which the finding of the study will be discussed.

2.1. Guiding Concepts

In addition to the concept of urban agriculture, the findings of the research will be discussed based on two guiding concepts namely food security and livelihood. The guiding concepts are chosen as they are close to the topic of the research. It is also important to use the theories of food security and livelihood to determine whether the practice of urban agriculture in Addis Ababa is whether in favor of or against the concepts of food security and livelihood.

2.1.1. Food Security

For the last few decades, the policy concepts and definitions of food security has been revised and redefined. Food security, in 1950s and 1960, was determined by producing and being self-sufficient in staple foods. It was only focused on the sufficient production of one or more staple foods. Even though there was enough production of food but access was uneven, there was famine in some parts of the world. Following this, FAO considered that the availability of food by itself is not enough to ensure food security and redefined the concept of food security in FAO's World Food Conference in 1974 and the definition of food security's leverage point was changed from being self-sufficient in staple foods to access to sufficient food which stated that "ensuring that all people at all times have both physical and economic access to the basic food that they need" (FAO, 1983).

The widely accepted and currently used definition of food security was revised on World Food summit in 1996 by combining additional dimensions known as four pillars of food security that include *availability, access, utilization and stability*. Sufficient amount of food of appropriate quality from both local production and imports deals with the *availability* whereas *access* can be considered when the basic foodstuffs are available and affordable at both international and national level. *Utilization* of food can be seen through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are also met. This brings out the importance of non-food inputs in food security. *Stability* is when every household or individual

consumes foods of adequate nutrition regardless of any economic crises or climate variability or cyclical events like seasonal food insecurity.

Thus, in this definition food security is said to be achieved "when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO 1996). This concept of food security can be achieved through producing foods, involving in safety net programs or by diversifying livelihoods in order to have purchasing power for food utilities. According to Zezza and Tasciotti (2010), and Mougeot (2005), urban agriculture is one of the ways of producing food in order to provide fresh, cheap, nutritious and from-farm-to-table foods that may contribute to achieve food security for the urban agriculture producing households and the community level at large.

2.1.2. Livelihood

Nowadays, livelihood is one of the main concerns of the developmental discourse. Previously livelihood was seen merely as "a means of living" in a way that livelihood is barely defined as obtaining income to an individual or a household. The current definitions of livelihood are set incorporating the different components in it and its features. A definition by Chambers and Covey (1992) suggests that "a livelihood comprises capabilities, assets (stores, resources, claims and access) and activities required for a means of living". As the definition implies, livelihood, beyond its dictionary meaning, in the scholarly view, has multidimensional aspects in it. Recently, the renowned social scientist Frank Ellis (2000) modifies it in his book entitled "Rural Livelihoods and Diversity in Developing Countries" as "A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household."

Scoons (1998) identifies five categories of capital contributing to asset and the items refer to them; natural capital, physical capital, human capital, financial capital and social capital. Natural capital comprises biological and environmental resources like land, water and trees. Physical capital refers to assets gained by economic productivity like tools, machines, and land improvements like terraces or irrigation canals. This study will also use this concept to analyze the economic benefit of urban agriculture in relation to the capabilities to accumulate those physical capitals. Human capital refers to education and health status of the individual or population whereas financial capital adheres to

stock of cash and access to credit by which the contribution of urban agriculture towards financial capacity of the farmers can be discussed. The social capital refers to social networks and associations in which people participate, and from which they can drive support that contributes to their livelihood. The study uses the concept of all these capitals gained by involving in urban agriculture in the peripherals of Addis Ababa in relation to their assets and its contribution to their livelihood.

2.2. Theoretical Perspectives

2.2.1. Characteristics and Modes of Urban Agriculture

2.2.2. Relationship between Urban Agriculture and Food Security

Rapid urbanization increases the urban population and the number of insecure urban poor (Sawio, 1993; Maxwell 1995; Poulsen et al., 2015). This increasing growth of urbanization creates absolute and relative growth in urban poverty and food insecurity as the biggest challenges of the urban poor. According to Olawepo (2012), feeding the urban population becomes a major challenge especially for the developing countries in Asia and Africa in particular. To tackle the urban food demand, urban agriculture has a great potential in providing means to food security through providing fresh, nutritious and near-to-get-products. This satisfies the elements of food security defined by World Food Summit (1996) “food security exists when all people at all times have physical and economic access to enough safe nutritious food to meet their dietary needs and food preferences for an active and healthy life style. The UNDP (1996) report suggests that the contribution of urban agriculture to food security and healthy nutrition is probably its most important asset. Food production in the city is in many cases a response of the urban poor to inadequate, unreliable and irregular access to food, and the lack of purchasing power. There is now a general recognition of the importance of urban agriculture in most countries of the world and in the African continent in particular. Many argue that the principal reason that makes people engage in urban agriculture in urban centers is to meet their food demand as they cannot afford to purchase food as urban poor (Smith 1996: in Bryld 2003: 81, UNDP 1996). Ruaf (2007:2). Many researches show that over the past decade, Interest and activity in urban agriculture has increased in order to meet the food demand of the urban poor. (Urban Harvest, 2008; Mbiba, 1998, 1999; Lee-Smith, 1998) urban agriculture could therefore become an instrument that could tackle household food insecurity if intended towards increasing urban food production through productive participation in urban development.

Many literature sources depict that considerable number of low-income households as well as some higher income households are constantly turning to urban agriculture for the production of food for own consumption and income generation (Smith 1996: in Bryld 2003, UNDP 1996: Foeken et. al., 2006). This, in turn, reduces the share of the urban poor income spent on food items and allows the household to use the money for other household needs like education, health and other welfare expenses. Urban dwellers practice of crops and vegetables production and animal rearing in their backyards and farm lands in the fringes of the city supports their individual household with their food security.

2.2.3. Relationship between Urban Agriculture and Livelihood

The urban population that practices urban agriculture is believed to contribute to reducing unemployment in the city (Egziabher, 1994; Mougeot, 2005, UNDP 1996). UNDP's 1996 report reveals that urban farming improves social equity by improving the health and productivity of poorer populations and by providing them an opportunity to earn income. The actors of urban agriculture who live in the outskirts of the city take it as the main source of their income. They also use the income earned from urban agriculture to diversify their livelihoods. The diversified activities are urban agriculture related and non-urban agriculture related. The urban agriculture related activities could be on-farm, such as diversifying produces and crop rotation, or off farm activities, such as working in others' farmlands as laborer for plowing and harvesting times (Ellis, 2000). In the outskirts of Addis, the most usual non-farm activities done by the urban farmers are horse transportation, guarding and local food and drink selling. The activities like horse transportation and local drink selling are supported by the income generated through urban agriculture that make such activities pulled livelihood diversification (Ellis, 2000) while other off farm activities including working as a guard and daily laborer are pushed livelihood activities as urban agriculture doesn't contribute any capital for such an activity and the activity is done when the income gained by urban agriculture is not sufficient for the living of the household.

2.2.4. Urban Agriculture in Ethiopia

Ethiopia is home for 102.4 million people, out of which 85% resides in rural areas (World Bank, 2016). Ethiopia lands over 1,104,300 sq km with only 104,300 sq km of water (World Bank, 2016) and rain-fed agriculture is the main income source for more than 80 percent of the rural population and the backbone of the country's economy at large. Agriculture accounts for more than 41% of

Ethiopia's GDP that helps the country's GDP growth rate to reach double digits of 10.9% in average since 2004. Extreme poverty (US$ 1.90 earning per day in 2011 purchasing power parity (PPP)) rate has also fallen from 55.5 percent in 2000 (one of the highest levels recorded internationally) to 33.5 percent in 2011 (World Bank, 2016). The same report reveals that more than 70% of the area in Ethiopia is suitable for agriculture. It shows that agriculture can be considered instrumental for the country's economy next to the service sector which accounts 46% of the GDP. Despite being the backbone of Ethiopia's economy, agriculture cannot feed the whole population properly as a result of low productivity. Although it is mainly practiced in rural settings, agriculture is also practiced in urban areas as a complement in providing food for self-feeding and commercial basis (Mougeot, 2006; Van Veenhuizen, 2006). Urban agriculture is a source of fresh, cheap, nutritious food and a means of income earning or employment for the urban-based poor population (Redwood, 2009).

Part of the urban-based population are used to keep cattle, sheep and chickens, grow vegetables and crops mainly teff, wheat, barley and vegetables, at their backyards, public open spaces, river banks and on the plots adjacent to their houses mostly in traditional ways. This production is made mainly for household consumption, with a small proportion for sale. Although its overall contribution to the urban economy might be limited, urban agriculture makes a considerable contribution toward satisfying the food needs and employment gap of the urban population (Mougeot, 2006; Van Veenhuizen, 2006)..

There have been supports for urban agriculture practices in Addis Ababa by some NGOs, such as ENDA, PICDO, ACDI/VOCA, ISD working on food security and livelihood of the urban poor. These NGOs support the urban poor households in Addis Ababa by offering trainings on how to grow vegetables on a backyard level using wood terraces and drip irrigation and how to rear animals and produce animal products. The NGOs also offer inputs and credits to the urban agriculture farming households as a means of initial capital for buying seeds, farming tools and other purposes. Experts from the NGOs has followed up and checked whether the knowledge transfer from the training and the loan were properly implemented by the actors. In addition to all these supports are not considerable compared to the potential of urban agriculture in the city, the supports are operational for a short period of time and limited areas. The Addis Ababa City Administration has also framed policies and strategies towards urban agriculture having understood

the role of urban agriculture for the sustainable development of the city (Urban and Peri-urban Agriculture Policies and Strategies for Addis Ababa (UPAPS, 2011). According to the same paper the city administration's trade and industries bureau framed the policies and strategies based on the findings of a research on situational analysis of urban agriculture in Addis Ababa, series of discussion made by the Steering Committee of the Addis Ababa urban agriculture and Multi-Stakeholder Workshop held at Hawassa in 2010. Since the ratification of the new Urban Agriculture Policies and Strategies of Addis Ababa City, agricultural extension workers and experts of the city's urban agriculture core process have been supporting the sector through providing trainings, inputs and following up its progress though the support is mainly for the within-city-farmers. The peri-urban farming that is mainly for crop production is somehow neglected by the government and city development projects.

It is agreed by all the stakeholders that urban agriculture provides fresh, nutritious and cheap food for the urban poor and has a substantial contribution in proving job opportunities for the urban dwellers. However, the practice has many problems to function to the fullest of its potential. Lack of policies and strategies, infrastructure, insufficient warehouse storage capacity, poor support from the government and other development agencies and the land policy are among the bottlenecks of urban agriculture in the peripherals of Addis Ababa. Since the transition in 1991, the Ethiopian government introduced a housing development as a means of urban land expansion with the introduction of the urban land lease holding Proclamation 1993. The government defined leasehold as the tenure form of choice. Land to be used for social services and low-cost houses may be leased free of charge (Proclamation No. 80/1993). The Addis Ababa City Government's Urban Land Lease Holding Regulation No. 3/1994 declared that urban land should be used for business activities and residential construction (National Report on Housing and Sustainable Urban Development, 2010). Since then, crop land size of urban agriculture is decreasing and the attention to urban agriculture is less. Water is also as essential as land for the practice of agriculture. It is also one of challenging factors of urban agriculture as the rivers and ground waters in the city are being polluted and dried as a result of by-products and chemicals from factories, climate change, and other human activities reduce or dry the water sources (Edwards, 2010; AAUAP 2011).

2.2.5. Perceptions on Urban Agriculture by Addis Ababa Administration

Urban agriculture has been considered as a main source of food and income for the actors for long time now (Alemayehu, 2010; Mougeot, 2005; Egziabher, 1994; Edwards, 2010). For the majority of urban agriculture farmers, urban agriculture is an inherited livelihood and food source activity (Egziabher, 1994). In 2011, urban agriculture in Addis Ababa covers about 16,000 hectares of the city's land. Out of which 11,182 hectares land is intensively cultivated (AAUAP 2011). The sector involves 50,000 people who get their livelihoods from this work (Gete et al., 2007). Having this size and potential in the city, urban agriculture did not receive enough attention from both the federal government and city administration of Addis Ababa until recently. Mandefro (2010) argues that Ministry of Agriculture and Rural Development (MoARD) does not consider urban agriculture as its mandate area. Hence research and extension is not provided as effectively and intensively as in the rural areas. However, the Ethiopian government through the city's trade and industry office urban development policy recognizes urban agriculture as one of the pull factors to get urban poor out of poverty by creating job opportunity and providing food for unemployed youth and low-income households in the city.

2.2.6. Opportunities of Urban Agriculture in Addis Ababa

Urban agriculture has been practiced for a long time in Addis Ababa providing food and employment opportunities, especially for the urban poor. This long-time existence was backed by certain opportunities. Land is one of the main opportunities of urban agriculture however the size is shrinking over time. The available water source and open spaces around rivers are also other opportunities for the production of vegetables, crops and cattle rearing (Mandefro, 2010). Addis Ababa's weather and consumers' attitude towards buying urban agriculture produces are also other opportunities of urban agriculture.

Many research findings, conferences and workshops held on urban agriculture help the government of Ethiopia and other nongovernmental development agencies to realize the use of urban agriculture. In return, supports from Addis Ababa urban agriculture Core Process and NGO's have been playing an essential role in maintaining and enhancing the productivity of urban agriculture in Addis Ababa. However, the sector is mainly in a subsistence level even though there is little for market and the supports are partial on the basis of location and not enough. According to

Alemayehu (2010), the city administration provides training, shades for selling products with minimum amount of rent, seeds for selected vegetable types, and other extension services. The same study also states that the establishment and existence of input producing centers such as poultry multiplication center, seedlings multiplication urban agriculture demonstration center and mushroom seed (spawn) multiplication laboratory are additions to the expansion of the urban agriculture practices. The city government of Addis Ababa has created a responsible institution named urban agriculture Extension Service Core Process to strengthen urban agriculture practices. The structure extends from city down to Kebele level. This support of the city administration is coupled with non-governmental development agencies. USAID supports urban agriculture farmers in Addis Ababa through providing trainings and credit opportunities. There are also local non-governmental development agencies like ENDA and PICDO that support urban agriculture.

2.2.7. Challenges of Urban Agriculture in Addis Ababa

Addis Ababa's urban agriculture production is not giving what it has to offer due to many challenging factors. Mandefro (2010) and Alemayehu (2010) agree that before the ratification of urban agriculture policies and strategies for Addis Ababa, policies and strategies were the main bottlenecks of the sector. The concurrent challenges of urban agriculture agreed by many researches and scholars are many and common and specific to a certain urban agriculture system. The main challenges to the peri-urban agriculture are the gradual land fragmentation, land degradation, the city's expansion plan and irregular rainfall. In addition, Mandefro (2010) identifies in his research that limited access to improved crop technologies, discontinuation of the input credit granting system, lack of due attention for Addis Ababa peri urban farmers to maximize their productivity of crops and vegetables, lengthy fertilizer procurement procedures, shortage of animal feeds and limited knowledge on improved livestock management were considered as major factors that constrained agricultural development in the peri urban area. The Addis Ababa City Administration urban agriculture bureau has set policies for urban agriculture considering challenges including pollution of water sources, shortage of seed supply and warehouses are the main constraints of vegetable farmers whereas setback in relation to animal rearing are feed supply and quality, inefficient and expensive veterinary service coupled with high disease prevalence, shortage of dairy extension and training services, waste management problems, hostile attitudes from kebele

administrations and market related problems. However, UPAPS (2011) stated that the severity of these challenges reduces as one goes towards more intensive production system.

3 Research method

3.1. Research Design

Research design refers to framework of methods and techniques chosen by the researcher to meet the objectives of the study. “Research design relates to the criteria that are employed when evaluating social research. It provides a framework for the collection and analysis of data” (Bryman, 2008:31). With regard to data collection, it particularly stipulates the type of data to be collected and the method of data collection. It outlines what type of data (primary, secondary or both) and by what method (structured questionnaire, semi-structure questionnaire, key informant interview, Focus Group Discussion (FGD), document review etc.) The farmers in the outskirts of Addis Ababa are the major informants of the research. For this study, a mixed-methods approach is applied in which quantitative and qualitative data is collected and systematically analyzed to address the objectives of the study.

The mixed-methods approach is very appropriate in relation to this study which aims to quantify urban agriculture and its role for livelihood and food security. As all approaches of study, this method has its own strengths and weaknesses. A well designed and executed mixed-methods approach will enable combine the strengths of the different methods to enhance the quality of the data. For example, quantitative data is needed to estimate the magnitude and distribution of key indicators or variables on socio-economic characteristics of households who are engaged in urban agriculture (livelihoods, income, food security, etc.). On the other hand, qualitative and participatory methods are best suited to capture the perspectives, perceptions and experiences of households who practice urban agriculture as well as stakeholders that work on urban agriculture at various levels (community leaders, local authorities, implementing agencies, development partners). Likewise, qualitative methods are suitable to identify and assess the various contextual factors (political, socio-cultural, and psycho-attitudinal) which influence the socio-economic characteristics of households that practice urban agriculture. To sum up, a well-integrated mixed-methods approach can contribute to the quality of the data and enhance the reliability and validity of the findings and policy implications derived from the study.

3.2. Study Area

Addis Ababa is one of the biggest cities in Africa. It is the economic as well as political capital of Ethiopia. Furthermore, it is a hub for continental and international political, social, and economic

activities. It lies on 54000 hectares with an elevation of 2,300 meters with average daily temperature of 16ºC. It also has a mean annul precipitation of 1180 mms with a rainy season from June to September and a dry season from October to March (CSA, 2005). It is expected to expand at a higher rate and its population is also expected to increase at a higher pace with average annual growth rate of 4% and reaching 9 million people in 2035 (United Nations, 2018).

The city is made up of urban and peri-urban areas, and is divided into eleven sub-cities:Addis Ketema, Akaki-Kality, Arada, Bole, Gulele, Kirkos, Kolfe-Keranio, Lideta, Nifasilk-Lafto, Yeka and Lemi Kura. Among others, the city's land is used for various purposes including urban agricultural practices and green areas. It is predicted that there will be an increase in the rate of urban land in which Africa is projected to be the front until 2030 (Seto et al., 2012). Addis Ababa is among the top five places in which higher expansion of urban area is projected (Seto et al., 2012). The rapid expansion of the city coupled with lack of appropriate policy and strategy to use vacant areas of the city lead to the loss of highly fertile agricultural and green areas (Pauleit et al., 2019). As a result, it is estimated that almost a quarter of Addis Ababa's farm land was lost in a relatively short period between 2006 and 2011 (Woldegerima et al., 2017). According to Urban agriculture manual report (2016), the area cultivated land is reduced from 11000 hectares in 2011 to 3000 hectares in 2015 due to formal and informal settlement of dwellers, large and medium scale manufacturing, industrial parks etc. The study selects Addis Ababa because it is a home of more than a quarter of urban population of Ethiopia. More specifically, the research uses five major sites in Addis Ababa (Akaki, Burayu, Bole Arabsa and surrounding, Sebeta and Semit Area) in which urban and peri-urban agriculture is highly practiced. In all the selected research sites, crop production, vegetable production and animal raring are practiced however the magnitude of produces vary. Moreover, in one of the study sites, Akaki, there are rivers such as Akaki River and Tengego River. Hence, in the selected areas urban agriculture is practiced almost all the year as water for agriculture is available throughout the year though with a varying magnitude. In addition, urban agriculture is a major source of food security and livelihood for the households who practiced urban agriculture. The selected areas perfectly match with the core aspect of this study, means for food security and livelihood. As Zezza and Tasciotti (2010) pointed out that urban agriculture is a one of a significant means of livelihood for urban households in Africa.

3.3. Urban Agriculture in Addis Ababa

Urban agriculture is practiced in Addis Ababa in backyards, on river banks and on small farm lands at the outskirts of the city. In this study, following prior studies (Mougeot, 2000; Mandefro, 2010), I used location as a single criterion of classification and classify urban farming system in Addis Ababa in two sub systems: within the city and peri-urban. Within the city farming is practiced on back yard, open spaces around houses, and along river sides in the city whereas the peri-urban sub system agriculture is practiced in the outskirts of the city. The most common within the city urban agriculture produces in Addis Ababa are dairy products, poultry, milk products, cattle rearing, beekeeping, vegetable production and mushroom whereas crops, vegetables, and horticulture farms are largely practiced in peri-urban contexts.

3.4. Area Estimation Methodology

A proper area selection makes the scope of the study very clear. In line with this, the research used the sampling grid points which were created using ArcMap and projected in Google Earth to quantify the area of Addis used for urban agriculture. A clearly defined scope is a prerequisite to a representativeness of the sample and thereby validity of the findings.

3.5. Selection of Households for Questionnaire Interviews

The selection of the sampled respondents involves two steps: (i) sampling grid points of the study area is prepared; and (ii) respondents are selected from the study sites. The first step is that sampling grid points that is prepared using ArcMap and projected using the Google Earth. In the second step, sample respondents are selected in proportion to the number of sampling grid points. As a result, Akaki sites take the highest share of sample respondents as the highest number of sampling grid points found in this site while the lowest number of sample respondents were from Sebeta sites as the area is with the lowest amount of sampling grid points that is used for urban agriculture.

In the Akaki site various types of urban agriculture activities are practiced. Yet, the sampling considers the reasonable number of respondents from all selected sub-cities in Addis Ababa to keep the validity and reliability of the data collected. Moreover, the study covers all practiced types of urban agriculture; i.e. crop production, vegetable production and animal rearing are found in the

sample population. In the end, the total sample size comprises of 50 individual households involved in urban farming from all the study sites and 2 vegetable farming cooperatives at the Akaki River bank are selected for the data collection.

3.6. Sampling Method

A proper sample population selection makes the data reliable and the findings of the research credible. In line with this, the research used the sampling grid points which were created using ArcMap and projected in Google Earth. This will answer one of the research questions of this study 'how much area of Addis is used to urban agriculture'. Sample population households were thereafter selected using the sampling grid points on the Google Earth map considering the number of sampling grid points. Then random sampling technique is employed to select households by considering the number of sampling grid points. Hence, a total of 50 households are selected from all the study sites randomly from the sampling frame. As the sampling considers proportion of urban agriculture practice and uses random sampling to select households, the sampling procedure followed a representative sample of households engaged in urban agriculture for the selected study sites. The sampling frame for this study is urban households in Addis Ababa, not the whole urban population. A sampling frame is a list of the target population from which the sample is selected. Layrakas, (2008) pointed out that the quality of the sampling frame determines the representativeness of the sample Data Collection

Data collection method should be selected by considering the nature of the research objectives. For this study, both quantitative and qualitative data collection methods are chosen. Quantitative data focuses on patterns, relationships and effects among other variables while qualitative data focus on understanding of the social world (Bryman 2004).How much land is being used for urban agriculture in Addis Ababa is answered by collecting a quantitative data using ArcMap and Google Earth However, to answer the second research question of this study, the roles of urban agriculture in the peripherals of Addis Ababa towards food security and livelihood, both qualitative and quantitative data are used. Consequently, quantitative data were collected including but not limited to urban agricultural income (farm income), total household income, asset holdings by urban farmers etc. Similarly, quantitative data were collected to find out the role of urban agriculture for food security and livelihood and household's opinion with regard to urban farming. In other words, the quantitative data will serve to measure the role of urban agriculture towards livelihood and food

security status of the actors whereas the qualitative data will serve to find out the attitudes, opinions and perceptions of the actors towards urban agriculture. Quantitative data is very crucial to capture issues that quantitative data collection cannot capture adequately and easily.

A total of 50 households selected randomly were interviewed using structured questionnaire. More specifically, the sample includes 34 male-headed, 3 female-headed, 10 male-female, and 2 sons households. In addition to this, 4 committee members of 2 farmers' cooperatives were also included in the data collection using the structured questionnaire. The questionnaire has eight parts consisting of questions on the demographic backgrounds of respondents, the status and ways of practicing urban agriculture in the sites and its contribution to the livelihood and food security of the actors etc. It also sought to provide evidences on the positive aspect, areas to improve and opportunities and challenges of urban agriculture in the research sites and the city at large.

The questionnaire was prepared in English but it was also translated into Amharic, a commonly spoken language in the research sites. In addition, one focused group discussion was made with three extension experts of Addis Ababa Urban Agriculture Core Process. FGD is an important qualitative data collection tool that allows respondents to unfold a lot of information by using a semi-structured FGD questions and checklists. This method allows collecting qualitative information relevant to the study. The researcher's personal observation of the research sites was also used as a vital means of primary data collection method. To complement and supplement the primary data, secondary sources such as reports, policy and strategy documents of Addis Ababa city Urban Agriculture Core Process and other city's administrations authorities' reports, previous literatures and books were utilized.

Figure 1: Mode of transportation for data collection.

3.7. Data Presentation and Analysis

The study employs a combination of qualitative and quantitative data analysis techniques. The data collected is subject to descriptive and inferential analysis to answer the research questions of the study. Appropriate descriptive statistics will be employed in the analysis of the data. In addition, different kinds of charts are used to present the descriptive results. The data presentation and analysis use computer software, theories and guiding concepts of the research. Google Earth, GIS and Ms-Excel are used for quantitative data presentation and analysis. Reports of different organizations were also used for both quantitative and qualitative data presentation and analysis. Two guiding concepts of the research (Food Security and Livelihood) coupled with the concept of urban agriculture are also used in analyzing the data collected. SWOT analysis is also used to analyze the data from all means of data collection tools to define the status of urban agriculture and to measure its role in the food security and livelihood of the actors in relation to its strength, weakness, opportunity, and threat.

3.8. Validity

Validity is the most important criteria of data collection. In order to keep the validity of the data collected, the research uses different data collection methods including questionnaire, informal interviews, personal observation and GIS together with Google earth. In other words, special emphasis is given to the triangulation of qualitative and quantitative data. The key insights from the qualitative data will be cross-checked and combined with the key findings from the primary and secondary quantitative data to answer the research questions of the study in its entirety. The research also uses other secondary sources to cross check the findings of this research to other previous research findings.

3.9. Ethical Consideration

As it is suggested by Kvale (2009), it is important to inform the respondents about the aim of the study. In line with this, as an introduction to the interview the researcher described the aim and usage of the study for the respondents. Furthermore, they were informed that the research was conducted for educational purpose and that would have neither direct benefits nor harmful consequences for the them. The respondents were also confirmed by the interviewer that all the information they provide would be kept and used anonymously. In order to make the data collection transparent and safer, a letter from one of the supervisors had been provided for all concerned bodies that stated that the research was done for an academic purpose. Before starting interviewing, respondents were told that their participation in the survey is voluntary and they can withdraw from the survey at any time they want and asked to give their consent to participate in the survey. Moreover, the respondents were assured that the respondent that their identity is protected through anonymity, i.e. people reviewing the data in the research will not know exactly who took part in and gave particular responses.

4 Results

This chapter deals with presenting all the results collected in all means of data collection. The first part will present the data that deals with the first research question, how much area is used for urban agriculture in Addis Ababa. Next, the demographic statistics of the sample population of the research will be presented. The third part of the data presentation focuses on the second question of the research that deals with urban agriculture's contribution towards livelihood and food security in the area.

4.1. Urban Agriculture Land Coverage in the Peripherals of Addis Ababa

Based on the new Addis Ababa's master plan, the area planned for cultivation land will be 1000 hectares. This fact is also attested based on the researcher's personal observation and the sampling grid points' result specifically made to the research. The research classifies the area coverage of Addis Ababa using sampling grid points, GIS and Google earth applications based on nine categories; cultivated land, grassland, forest, woods and bushes, house compounds, tree lines, roads and buildings. Of all categories, the area covered with farming purpose (cultivated land) takes the highest share with 22 % of the city while the lowest 1 % area is covered with water. The following figure (Figure 2) reveals land coverage in Addis Ababa.

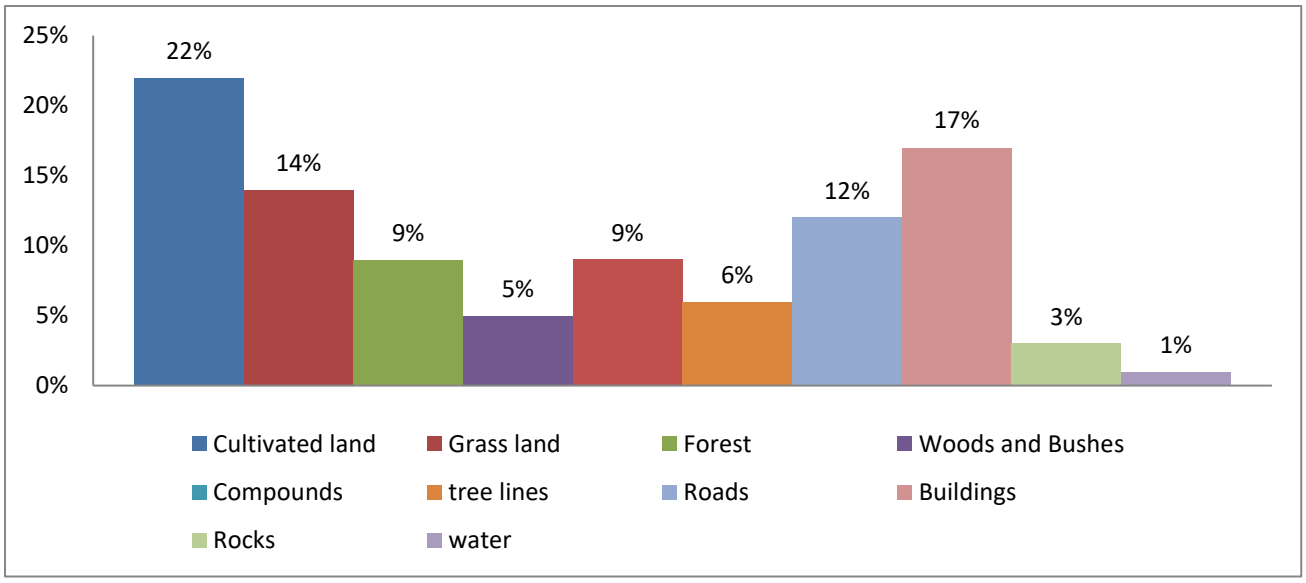


Figure 2: Land coverage in Addis Ababa for different purposes

4.2. Demographic statistic of the sample population

4.2.1. Household Heads

The questionnaire data survey is based on 50 households and 61 respondents. Out of the total number of respondents, only 13 (21%) of the respondents are female while 48 (79%) of them are male. Out of the 50 households 35 (70%) of the sample households are male headed. Only 6% of the sample households are female headed whereas both couples are found to be equally responsible for 10 (20%) of the sample households. Two (4%) of the households are male headed (sons). According to all the informants, son headed households happen when the father is deceased or the couples are divorced. Figure 3 depicts household heads distribution for the sampled respondents.

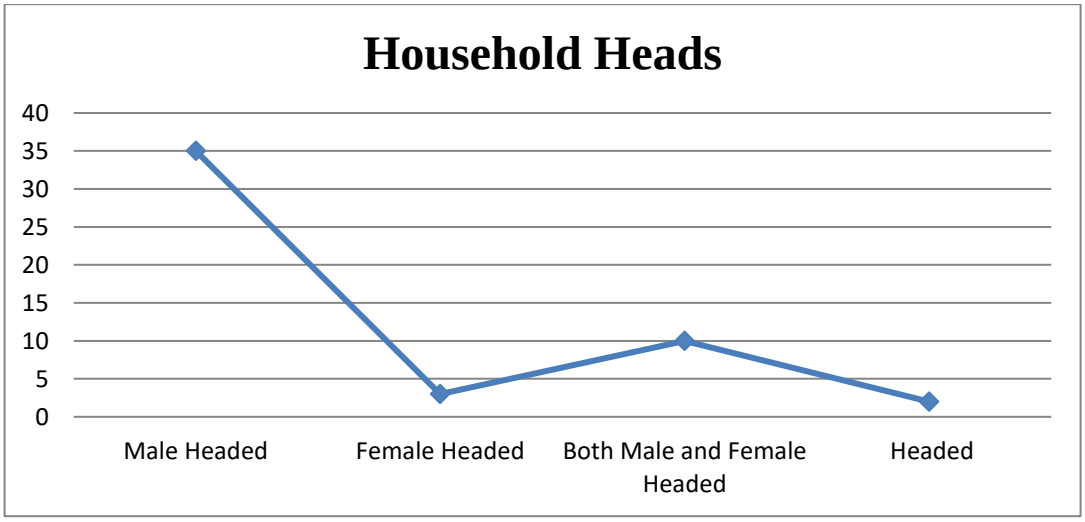


Figure 3: Number of household heads based on family role

4.2.2. Family Size

The sample population constitutes 50 households with 261 household members. The average household size is 5.2. Half of the sampled households accommodate 3-5 children. Only 1 of the respondents is single while 2 households are led by sons and 2 households found to be childless. Seven (14%) of the sample households accommodate more than 5 children each whereas households with 1-2 children constitute 30% of the sample respondents with frequency of 15. Figure 4 shows family size and number of children of sampled respondents.

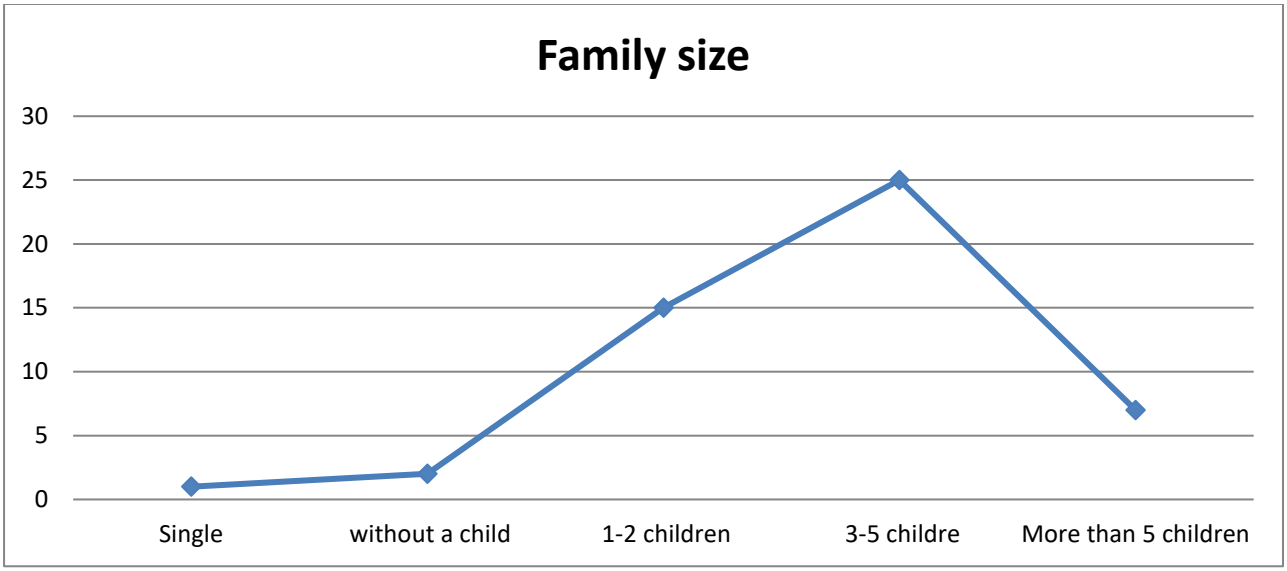


Figure 4: Family size of households in number of children

4.2.3. Age and Educational Background of the Household Heads

The age of the respondents ranges from 18-65 of which 33 (54%) of the respondents are in the age of 31-50 whereas older than 50 years old and 18-30 years are 25% and 21% of the sampled respondents respectively. Thirty-one (51%) of the total number of the respondents are illiterate while sampled respondents with primary and secondary education levels make up 20 (33%) and 10 (16%). The age group 31-50 takes the highest share of both illiterate and primary education levels with 15 respondents each. According to the respondents, all the primary education level holders agreed that they stuck on the primary level because of several reasons. One is there were no nearby secondary schools by the time of they finish their primary school. The other reason is that their parents didn't encourage them to continue their schooling as the parents want them to engage more on their family farm. The third reason is that they also think that further education is not important for their agricultural career. In addition to these, they had to travel long distances to the far-found secondary schools. However, most of the sampled respondents who didn't pursue further their education regretted for not continuing their education. On the other hand, the youngest age group,18-30, are the once who completed secondary school with highest frequency of 7 (70%) of the total number of secondary school graduates of 10. The rest 3(30%) are in the age group of 31-50 whereas none of the respondents who are older than 50 years has completed secondary school. All the informants stated that the youngest age group takes the highest number of secondary education level because the society's attitude towards education is changed for the better since the last couple

of decades. Figure 5 and 6 depict the age group and education level of sampled respondents respectively.

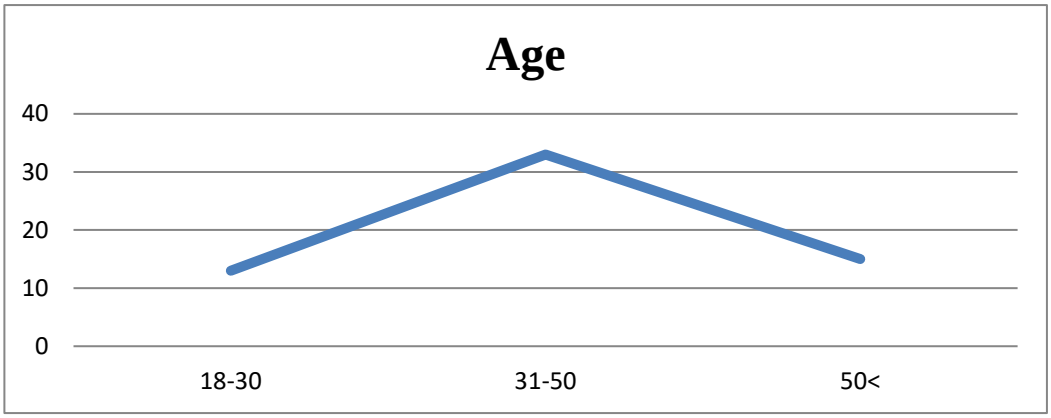


Figure 5: Age groups of informants

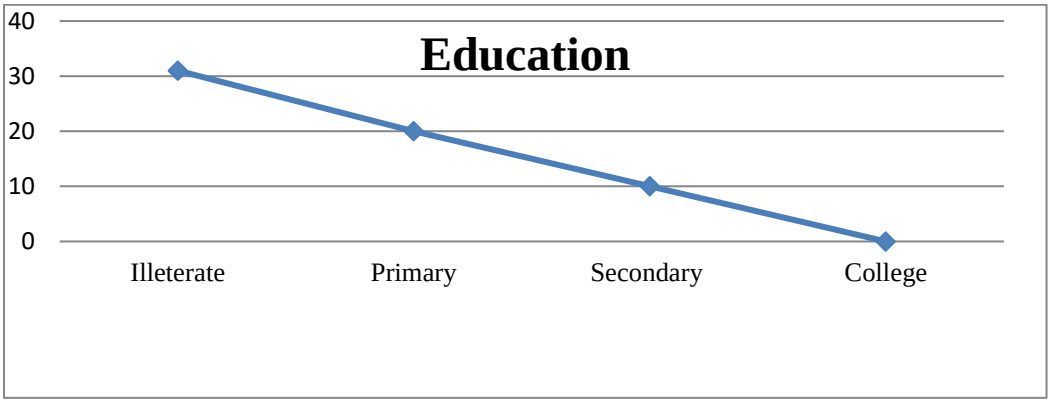
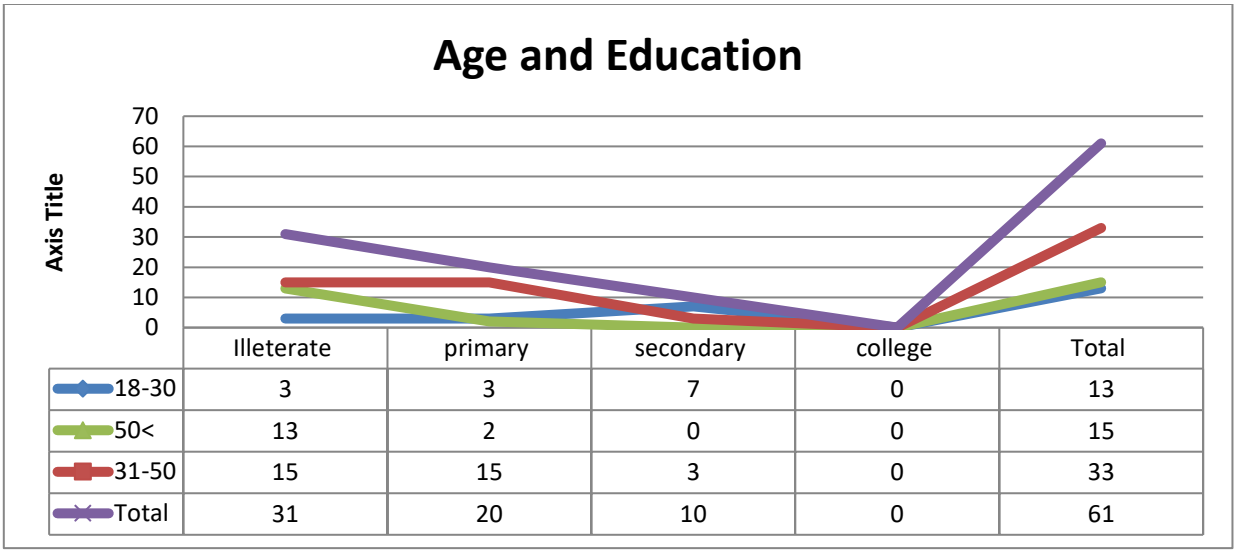


Figure 6: Education levels of informants



	Illeterate	primary	secondary	college	Total
18-30	3	3	7	0	13
50<	13	2	0	0	15
31-50	15	15	3	0	33
Total	31	20	10	0	61

Figure 7: Age and education level of informants

4.3. Urban Agriculture towards Livelihood and Food Security

This section presents the data collected in relation to urban agriculture and its link towards livelihood and food security status of the actors practicing it.

4.3.1. Land and Productivity

According to the data collected, the land holdings of the sampled respondents are own, rented or own and rented land. All the sampled respondents have own lands however the land size varies from household to household. The average land size of the sample population is 1.5 hectares. Fifteen (30%) of the respondents rent farm land in addition to they owned. The ranges of the rented land size and land fees are 1- 8 hectares and 1400-2500 ETB per hectare respectively. According to the respondents the land fees vary based on the fertility, nature of the soil and location of the farm sites. The land rents around Akaki ranges from 200-2500 ETB per hectare. One of the farmers around the area explains the reason that it is because the lands in Akaki area are fertile and adjacent to Akaki and Tengego rivers that is advantageous to produce vegetables all the year around. The two main reasons identified by the informants to rent the land are having small land size and seeking to have more amount of production. The survey shows that 11 out of 15 farmers who rent lands are in the age range of 31-50. A farmer who rents 6 hectares of land from different owners explains why he rents the lands as follows:

We usually rent lands whenever our land is not enough to produce large amount of yields and when we believe that we have the potential and energy to work on a large amount of land. In addition to that, there are some people who want to rent out their lands as they are retired and have no offspring to take over their farming.

4.3.2. Urban Agriculture Practices in Addis Ababa

Urban agriculture is practiced in Addis Ababa, especially in the outskirts of the city. People practice it at their backyards and farm lands. The common practices of urban agriculture in Addis Ababa are crop production, vegetable cultivation, dairy and poultry rearing. Out of the five research sites (Akaki, Burayu, Bole Arabsa and surrounding, Sebeta and Semit Area), the farmers in Akaki sites are the most producers of vegetables the whole year as they live at the nearby Akaki and Tengego rivers. All of the farmers in Akaki sites have water pumps to their irrigation. However, they reported that cost of water pumps is quite expensive to them. According to the survey, 36 out of 50 households produce crop together with animal rearing that accounts the highest percentage of the informants. The least number of respondents is 3 that produce all of crop, vegetable and animal rearing. The ones who produce only crop and crop with vegetable account for 6 and 5 respectively. Table 1 shows produces from each agricultural practices of urban agriculture in the peripherals of Addis and percentage of each produce from each type. The first group includes highly produced items while the second and the third groups consist of less produced items. The ranking of the produces has its own reason. According to the respondents, the items in the first group are preferred for their high amount of yields, high prices and/or have byproducts like animal feed, fertilizer, and raw materials for housing while the items in the second and third groups are averagely and less rewarding produces compared to the items in that of group one.

Table 1: Groups of produces based on households' preference

	Crop Production	**Vegetable Production**	**Animal Production**
1st group	Tef, wheat, Barley, Barley, Lentils, Khat	Tomato, potato, Onion, Garlic, Beetroot, Carrot	Cattle and products (meat, milk, butter, cheese)
2nd group	Faba bean, pea, chickpea,	Cabbage, Kale, Bok choy	Sheep(meat)
3rd group			Poultry (meat & egg)

4.3.3. Urban Agriculture and Urban Development Strategies

According to the sampling grid points made for this research, urban agriculture accounts for 22 % of 54, 000 hectares of Addis Ababa whereas the land coverage for buildings and compounds are 17% and 9% respectively. Based on the respondents' view, the land size of urban agriculture is expected to decrease in the near future. Similarly, 22 (43%) of the respondents said that they are not certain enough whether they continue holding their lands or not. Twenty-four (48%) of the respondents also said their lands are delineated to be leased out for housing and industrial purposes while 4(8%) said they are on "threat" to lose their lands as their neighbors already lost their land holdings. Figure 8 shows the tenure status of sampled households. The agricultural extension experts on the focused group discussion also supported this view using the fact that the cultivated land size in Addis Ababa decreased drastically in the last five years from 11000 hectares to 3000 hectares and hence the trajectory may continue. According to the data collected using FGD, one of the challenges of peri- urban agriculture practices is the transformation of the cultivation land for housing and industry parks.

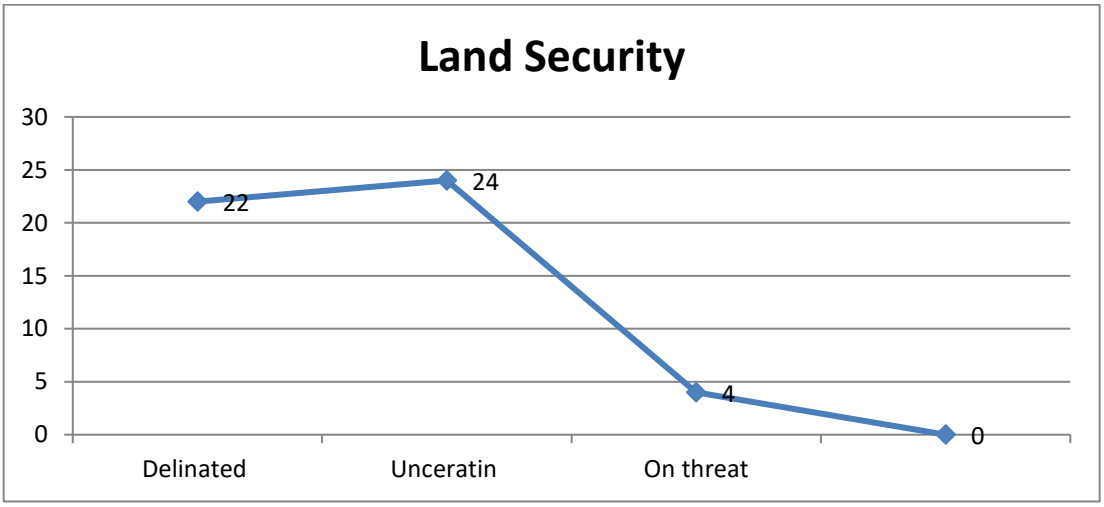


Figure 8: Households' land tenure status

In line with its development plan, the Government of Addis Ababa compensates those who displaced from their farm lands. However, all the informants are not happy with the amount of the compensation. One of the informants in Sebeta area said that:

I had had six hectares of land for crop and khat cultivation before 4.5 hectar of it was taken by the government. Now, as you can see (pointing at a big Garment Factory in the area) my land is given to foreigners. The government gave me 22 ETB (less than 1$) per each square meter for my land. This is quite unfair compared to how much I had been making with my land. I had been producing khat, quite profitable product, the whole year long in a large amount of land and staple crops once a year for both household consumption and for selling. But Now, I have only small area of khat and crop production. I don't produce crops for sale as I have to keep the produces for the whole year of household consumption.

The participants on the FGD said that the compensation process has its own procedure and criteria. According to the FGD, the compensation is decided considering the value of the produces on the land, the fertility of the land, the site of the land and the size of the land. The discussants on FGD believed that the money is not the problem rather the farmers did not know what to do with the money they have as they grow up with agriculture, the only means of survival they grew up with. They also said that in order to deal with such kind of problems and rehabilitate the displaced farmers, an agency called "Land Development and City Rehabilitation Agency" is established under the initiative of the city administration.

4.3.4. Urban Agriculture as a Means of Livelihood

Urban farmers in Addis Ababa generate their income using agricultural and non-agricultural activities. All the respondents replied that they take urban agriculture as a full time and permanent job and other income activities as a supplementary. They have several reasons why they work on urban agriculture permanently. The reasons for practicing urban agriculture as the main and permanent income source stated by sampled respondents are: no any other educational background or skills; to keeping the land and agricultural practices they inherited from their forefathers; to eating fresh and cheap/free food in the household throughout the year; convenient living area and land size to cultivate; and living in the outskirts of the city and not exposed and close to other job opportunities. In addition, urban agriculture is not only considered as a means of income but it is also a tradition in all the research areas: the life style of people engaged in urban agriculture is all around activities of farming. It is seen in their food, transportation, social gathering and other life aspects. One of the informants who completed secondary school said that:

I graduated from high school. But I am not interested to study further as I grow up farming with my father since I was a child. As long as I am skillful of farming and I am making money out of it, why should I spend another four or five years in the University? And I like spending my time working on the farm and support my family. Form me, urban agriculture is not only a means of money generating; it is also a life style as well.

In addition to be a source of income, urban agriculture is used for entertainment and socialization. One of the farmers explained why he loves being a farmer is that:

Farming is not only a job for me; it is also a tool for me to socialize myself with neighbors and people around. We strengthen our social bond when we do "Debo" (group harvesting) where we show solidarity and cooperativeness each other. Urban agriculture has also a sense of entertainment for me. Once when I am with my cattle, I don't want to get away from them. They are lifelong and life-longing friends. when I am with them, they bring peace, love and belongingness to my mind.

4.3.5. Urban Agriculture and Livelihood Diversification.

In this study, both types of livelihood diversifications and all types are seen. The study also finds out that all on-farm, off- farm and non-farm activities of income sources are practiced in all the research sites. The informants mentioned that reduced land size due to rapid urbanization, rainfall irregularities, bad weather and low productivity are the major push factors for the livelihood diversifications. The notable off-farm activities sampled respondents practiced are weeding, harvesting, daily labor, security guard. On the other hand, having a high productivity and strong financial capacity with additional skills other than farming drive the farmers are among the pull factors that led urban farmers to diversify their livelihood. Out of the 50 sampled households, 46 of them engaged in income generating activities other than agriculture. Of which 24 of them responded that they are forced to diversify their livelihood whereas 22 households diversify their livelihood by choice. The pull factored livelihood diversifications include horse cart transportation, vehicle transportation, and foods and drinks selling. In general, 19 of the respondents who engaged in transportation service using horse carts as a means of livelihood diversification whereas only 1(one) respondent says she sells local drinks to support the income she gets from the farming. Figure 9 shows the income diversification activities with their respective numbers of the respondents.

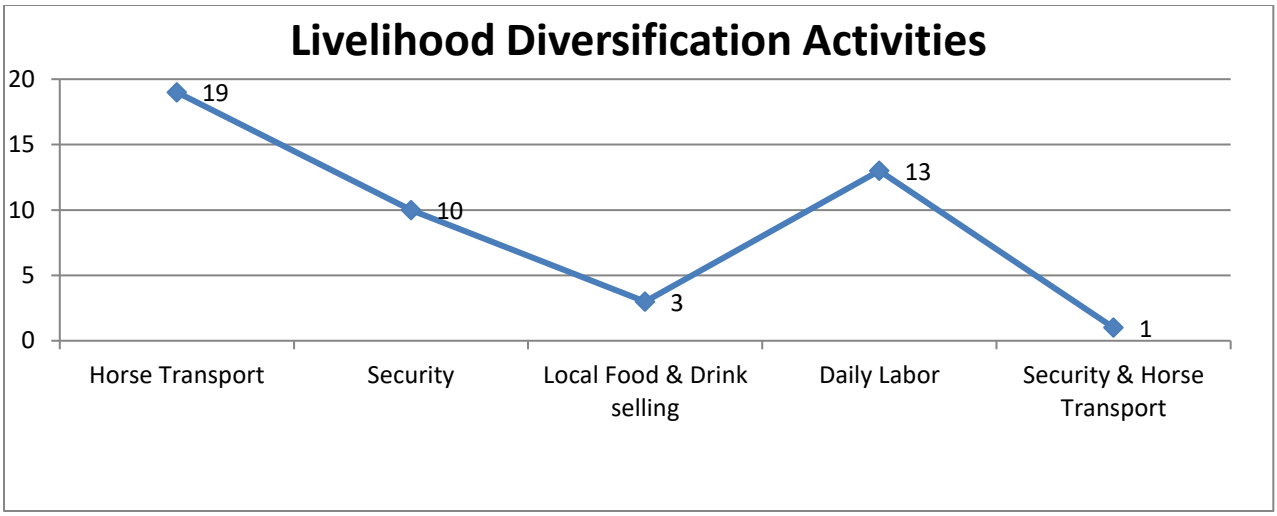


Figure 9: Households' Livelihood diversification activities

4.3.6. Urban Agriculture as a Means of Food Security

To measure the importance of urban agriculture for the households' food security, data was collected from farmer households, members of the two vegetable producer cooperatives and the agricultural experts and the FGD based on production, utilization, benefits and verities of food intakes from urban agriculture outputs.

All of 50 sampled respondents grow crops out of which 36 households produce crop together with animal rearing that accounts the highest percentage of the sampled respondents. The least number of respondents is 3 that produce all crop, vegetable and animal rearing. Those who produce only crop and crop with vegetable account for 6 and 5 respectively. All of crop and vegetable producers use their products for their household consumptions whereas 25 of the 36 households rearing animals use their products only for household consumptions due to limited number of animals and products, 11 of them use their products for both household consumption and selling. Milk is found to be the most important animal produce for selling purpose as the farmers' rare cattle more than the rest of the other animals as they use cattle for farming purposes in addition to their dairy products. The committee members of the two vegetable producing cooperatives said that they sell 100 per cent of their produces as the farms are commercial and no one is allowed to take produces home.

Thirty four out of 50 households answered *"Enough"* when they are asked whether the amount of food they consume is enough for their annual consumption while 14 and 2 of them say *"more than*

enough" and *"not enough"* respectively. Those who do not produce enough food are seen food insecure and are subject to food related expenses.

The following Likert scale was also developed in the questionnaire survey to find out the correlation between urban agriculture produce and food security status of the urban agriculture practicing households. CP refers crop producers only; CAP refers crop and animal producers and CVP and CVAP are for crop and vegetable producers and all crop vegetable and animal producers respectively. The Likert scale helps to gage the households' food security status by using different questions in relation to the elements of food security (availability, access, utilization and stability). As can be seen in Table 2, CP households are the one with the lowest food security status while CVAP's respondents have no any food insecurity related issues. The main reason provided by the sampled households and based on the field observation is that crop producers are facing major problems like displacement and rainfall irregularities that challenge their already subsistence way of farming. On the other hand, CVAP households benefit from their diversified farming systems by which they maintain the food security status of their households through consuming varieties of own products and purchasing food items they don't produce using the money from selling their produces. Table 2 shows results of the Likert scale.

Table 2: Importance of urban agriculture for Household Food Security

Variable Questions	CP				CAP				CVP				CVAP			
	0	1	2	3	0	1	2	3	0	1	2	3	0	1	2	3
Did you or any household member eat just a few kinds of food day after day due to a lack of resources?	-	-	3	3	15	17	4	-	1	3	1	-	3	-	-	-
Did you or any household member eat a smaller meal than you felt you needed because there was not enough food?	-	-	4	2	10	20	6	-	5	-	-	-	3	-	-	-
Was there ever no food at all in your household because there were no resources to get more?	-	6	-	-	25	11	-	-	5	-	-	-	3	-	-	-
Did you or any household member go a whole day with only one meal because there was not enough food?	-	-	2	4	25	11	-	-	5	-	-	-	3	-	-	-
0=Never; 1=Rarely; 2= Sometimes; 3=Frequently																

4.3.7. SWOT Analysis

Using the data from all data collection methods, the Strengths, Weaknesses, Opportunities and Threats of urban agriculture in the peripherals of Addis Ababa are analyzed as follows.

4.3.7.1. Strengths of Urban Agriculture in the Research Areas

The practice of urban agriculture in the peripherals of Addis Ababa has many benefits that can be taken as its strengths. The study has found out that urban agriculture is the major income source to all of the informants in all of the research sites. The farmers use the income they get from urban agriculture to diversify their income sources. One of the respondents at Akaki site who produces crops and vegetables said that:

> *I use the income I get from farming for so many purposes. I provide food and cloth to my kids. I also send them to school fulfilling all their educational needs. The income I get from my farm helps me to diversify my income sources. I have two horses working horse transportation and my wife also runs a small shop at our compound.*

It also provides fresh, cheap and nutritious foods in order for the farmers to keep their daily food intakes constant. In addition, both individual informants and the participant in the focused group discussion affirmed that urban agriculture plays a great role to the environment through plantations that could be interpreted as it has direct effect to environmental conservation, climate change mitigation and bio-diversity. The individual informants also said that urban agriculture is used as a means of socialization as there are gatherings and group work during harvesting times. As one of the urban agriculture policies of Addis Ababa, unlike to unbalanced property right in a household level, urban agriculture plays a great role in empowering women and people living with HIV/Aids (PLWHs) through NGOs and government offices support. This was proved to be true while interviewing members of the two vegetable producing cooperatives at Akaki site. All members of the cooperatives are PLWHs and most of the members are women.

4.3.7.2. Weaknesses of Urban Agriculture in the Research Areas

The study found out backward/traditional farming practices, poor organizational skill of farmers, and poor financial management of the farmers and the unavailability of unions or farmers associations weaknesses of urban agriculture in Addis Ababa. In addition, the improper task

division among male and female household members in most households that forces women to get engaged only by domestic activities has its own negative impact not to utilize the potential resources of urban agriculture as it leaves half task force.

4.3.7.3. Opportunities of Urban Agriculture in the Research Areas

Consumers' preference for buying urban agriculture produces at the market places is one of the main opportunities for urban agriculture. All the sampled households and experts in the FGD stated that Addis Ababa's climate is suitable for growing crops and vegetables. The small rivers and public areas are also raised by the sampled households as opportunities to all year long vegetation and animal grazing. According to one of the committee members of one of the PLWHAs cooperatives, the organizational, technical and financial supports from the city's urban agriculture office as part of enhancing within the city urban agriculture and the NGOs working on the field can be considered as the most vital contribution to the development of urban agriculture in the city. The two cooperatives reaffirm that they have loans for their farming to have pump irrigations as they practice vegetable farming at the fringes of Akaki River.

4.3.7.4. Threats/Challenges of Urban Agriculture in the Research Areas

The participants in the FGD pointed out that urban agriculture in Addis Ababa is not functioning as its best. The reasons mentioned for this are the city's expansion plan and constructions, high cost of fertilizer and seeds, irregularity of rainfall, fragmented land inheritances are found to be the major threats of urban agriculture.

Figure 10: Housing Projects Adjacent to Urban Agriculture in Akaki

There are also some treats mentioned as bottlenecks of urban agriculture including inadequate and unsustainable support from the government and non-governmental bodies, lack of collaboration and networks among the stakeholders of the sector by which they work closely and collaborate to support the field, lack of favorable policies, strategies and extension systems, lack of water sources, water pollution as a result of nearby factories byproducts and chemicals. Most of the sampled farmers raise lack of access for financial organizations as a challenge for their farming capacity. All of the individual informants and committee members of the two cooperatives also raised the issue of warehouses storage as one of the biggest challenges of their profitability. It is noted that as there are no enough capacities of warehouses to storing produces and as most of the vegetables are perishables, the farmers cannot decide on the prices of their produces and they are forced to sell their products based on the price set by middlemen and traders.

5 Discussion and Conclusion

5.1. Discussion

5.1.1. Why Urban Agriculture

According to the survey, most informants mentioned that urban agriculture is their main income source. It is revealed in the previous chapter that all the informants practice urban agriculture for several reasons. One of the reasons is because they have enough land to produce agricultural productions. In addition to that, as the farming is inherited the farmers would not do any other livelihood activities than farming. This shows that the capitals we have determines our livelihood status. As discussed in the early chapters, the actors of urban agriculture in Addis Ababa like other cities in developing countries are poor who do not have enough education and skill (human) and savings (financial) capitals as well as social capital to create networks for credits and business ideas. More than half of sample population (31of the informants) have only primary level education while none of the informants went to college. It shows that the farmers cannot use their human capital to do other livelihood activities other than what they grow up with. Human capital is highly substantiated as a key to successful livelihood diversification (Ellis, 1999). The farmers who are displaced of their land holdings get very minimal amount of compensation to their taken land, most of them end up spending the money to their daily household expenditures and work as a daily laborer and security guards with low wages as they are not able to create new business firms due to lack of entrepreneurial skills and law financial capacity and support.

5.1.2. Support toward Urban Agriculture and the Effect

Agricultural practices cannot meet their objectives unless the farmers are supported by favorable policies and strategies of respective governmental and none governmental organizations (Mandefro 2010). In the case of this study, the Addis Ababa City administration provides more support for the farmers within the city than the peri-urban ones. Based on the discussion in FGD, the Addis Ababa Urban Agriculture Office offers no enough support for farmers of peri-urban agriculture as it gives much support for within the city urban agriculture actors. As a result, most of peri-urban farm households are fragile. They are vulnerable to seasonality and displacement consequences as they don't accumulate money as a coping means to draughts and unemployment seasons. On the other hand, the farmers' within-city farmers are seen productive using supports regarding input provision, trainings, and finance. The Addis Ababa city urban agriculture offices allow with-in-city farmers to

be much more productive than the peri-urban ones by providing them technical trainings on how to be more productive and manage physical human and financial resources, offering loans and creating market links. Design strategies for the production and supply of quality agricultural products and for the expansion of investment that enhances agricultural development in the city and implement same upon approval and provide improved products of agricultural inputs like selected seed, fertilizer, and credit services. In addition, the office evaluates the outcome to give more training and professional support to farmers. If the same support could be applied for the peri-urban farming, it has a potential to supply more foods of cheaper price and higher nutritious contents.

5.1.3. Urbanization as a Threat to Urban Agriculture

The Addis Ababa City Government urban development plan has given much attention for having larger housing and industrial areas. Urban Land Lease Holding Regulation No. 3/1994 declared that urban land should be used for business activities and residential construction (National Report on Housing and Sustainable Urban Development, 2010). This new strategy for its urban development plan affects the land holding of urban agriculture as land is the focal component of urban agriculture in relation to productivity and agriculture's contribution to the livelihood and food security of the inhabitants on the study area. The majority of the respondents said either the land is delineated or they are insecure of their land tenor. A study by Adam (2010), stated that about 94% of the local peri-urban landholders in one way or the other feel insecure for their land right that leads them not to have courage to work fully on increasing productivity, intensifying their farming or plan for the future. This directly affects both their livelihood and food security levels. Other researches also show the positive correlation between land tenure and urban agriculture. Adam (2010) and Edward (2010), state that usufruct land right and expropriation left farmers in peri-urban settings unsecured and less productive in their farming.

5.1.4. Urban Agriculture Produces as a means of Livelihood

Livelihood diversification can happen for two reasons. One is when the farming is not subsistent which Ellis (2000) terms livelihood diversification as push factors (pressure) and the other one is when the farming is more than subsistent and the household wants to secure more income. Ellis (2000) calls this livelihood diversification as pull factors (opportunity). In the first scenario, less income from the agriculture or losing agricultural entitlement are the push factors while in the latter case, the high income generated from the agriculture is used as a pull factor for the livelihood. In

other words, higher productivity and diverse farming system lead to the higher probability to engage in diversified livelihood portfolio (Ellis, 2001) which is proved to be true in the study. Farmers who practice all crop and vegetable production and animal rearing are better off in having diversified livelihood practices. Most of farmers at Akaki site practice all the three farming systems and they are able to have diversified livelihood including horse and vehicle transportation, retailing stores and selling local foods and drinks.

5.1.5. Urban Agriculture Produces as a means of Food Security

Farmers who practice all types of urban agriculture are found to be better off in terms of food security. Diversifying livelihood practices would create resilient households that can cope up with food related shocks. Based on the responses to the questions in the likert scale, the farmers who are producing only crops have been seen challenged with food related problems. For example, out of 6 households that produce only crops, 3 households replied that there were frequent times they had two eat fewer amount of food because of there was no enough amount of food at stake. In addition, there are 4 households of the same group that face absence of food to eat in the household in frequently bases. This shows that practicing a single farming system causes farmers to be vulnerable to financial and food related shocks.

5.1.6. Water as a Vital Means of Urban Agriculture Practices

Water is one the fundamental elements of agricultural activities. It has as equal significance as land. According to the study farmers that practice urban agriculture close to Akaki River are found to be more productive, resilience and have diversified livelihood and food security status compared to the ones who cultivate based on rainfall. Based on the finding of the likert scale, vegetable farmers have better food security status. They never have scarcity of food sources at their household. It is also seen that cultivating throughout the year allows them to eat enough amount and varieties of food every day. In addition, these vegetables farmers can diverse their livelihood using the income they get from both their crop and vegetable farms. Farmers around Akaki River are found to have more diversified livelihood than farmers in other areas of the study.

5.1.7. Gender and Urban Agriculture in Addis Ababa

Based on the findings in the study, it can be concluded that there is unbalanced gender involvement in urban agriculture practices in the peripherals of Addis. According to the study population, 70

percent of the household heads who have full responsibility to urban agriculture are male-headed households whereas only 6 percent are female headed. Not only the number, but also the productivity level of female headed households is very low compared to the male headed households found to be more productive that helps them to engage in off-farm and non-farm livelihood activities. Based on the researcher's observation, male farmers harvest their own and other yields and save labor wage while the female ones have to hire and pay considerable amount of money to their farming that reduces their profitability. The other problem that makes female farmers low producers is that they have to spend much of their times for household chores while their male counterparts can be on their urban agriculture activities as long as they want. This is the big challenge female-headed households' face which hinders them not to be productive and competent enough. This challenge is not only for individual farmers, female members of the two vegetable producing cooperatives also reaffirm that they do not get equal amount of money with male members of the cooperatives. However, they admit that it is due to they have to spend several hours engaging in household activities. A female committee member of one of the cooperatives who is a single mother lost her husband by HIV AIDS explained that engaging in household activities hinders not to effectively work on urban agriculture in full time basis that make the farmers less producers and ineffective.

5.2. Conclusion

The study has quantified the size of land used for urban agriculture in the outskirts of Addis and identified the major contribution of urban agriculture in livelihood and food security status of the farmers. The major findings of the study are stated as follows:

- The study used the sampling grid points which were created using ArcMap and projected in Google Earth to quantify the area of Addis Ababa covered with cultivation land as a practice of urban agriculture. Using the sampling grid points, the study revealed that twenty two percent (22%) of Addis Ababa's land is used for cultivating crops and vegetables that is found to have the highest share of the city land followed by seventeen percent (17%) covered with buildings. Water is found to have the lowest share of the city with one percent (1%) area coverage.

- Urban agriculture is found to be the main income source of the sample households. It has been identified as an inherited livelihood activity for many generations now. The farmers in the study areas also reaffirmed that urban agriculture is the livelihood they can rely on and comfortable to work as they do not have other skills acquired either educationally or traditionally. None of the informants have higher educational background that is mentioned as a main reason not to have other livelihood skills. Livelihood diversification is also seen in the study driven by push and pulls factors. Horse and vehicle transportation, retailing stores and selling local foods and drinks are of diversified livelihoods based on pull factors such as high productivity and income whereas weeding, harvesting, daily labor, guarding are diversified livelihood activities created by pus factors such as low productivity, land disposition and small land ownership.

- Urban agriculture is also seen as a main source of food security in the study's sample households. The study identified those Farmers with high and diversified cultivation live food secured life eating enough and nutritious foods three times a day.

- Land and water are identified as the main drivers of urban agriculture while the city's urbanization plan is seen as the main factor of low productivity and land disposition. Farmers who have high productivity, diversified livelihoods, and high food security level are those who have either large amount of land or have farms close to water sources or both whereas urban farmers who have small land holdings and farm far from water sources or farmers who are evicted of their lands as a means of urban land development are found to have destitute life engaging in income activities with low wages like weeding, harvesting, daily labor, and guarding.

- The SWOT analysis also identified that urban agriculture is a main income source of the farmers in Addis Ababa. It is also a source of food security as the farmers grow foods for household consumption in addition to selling. It is also served as a tool for women empowerment, socialization. Taking the case of the two cooperatives in the study, urban agriculture has also life changing opportunity to people who are affected by HIV AIDS. Backward/traditional farming practices, poor organizational skill of farmers, poor financial management of the farmers, the unavailability of unions or farmers associations, and lack of proper task division among the household members as main weaknesses of urban

agriculture. According to the SWOT analysis of this particular study, consumers' preference to buying urban agriculture produces, the city's conducive climate, Akaki River's streaming in some parts of the study areas, technical and financial supports by the city administration and some NGOs are opportunities to the city's urban agriculture whereas the city's expansion plan and constructions, high cost of fertilizer and seeds, irregularity of rainfall, fragmented land inheritances are found to be the major threats of urban agriculture.

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Appendix:

Questionnaire Survey
Swedish university of Agricultural Sciences (SLU)

Department of Urban and Rural Development

Rural Development and Natural Resource Management

A Questionnaire survey for a master's thesis: *"The Role of Urban Agriculture Towards Livelihood and Food security in Addis Ababa, Ethiopia"*

I. Basic profile

1. Name of respondent
2. Location
3. Do you or one of your family practice any form of agriculture?

	Please tick
Crop	
Vegetable	
Fruit	
Animal husbandry	

4. Who is the main responsible for the agricultural activities?
5. Which crops do you produce?

Crop	Area cultivated	Amount produced/year	Amount consumed/year	Amount sold/year

6. Which animals/animal products do you raise and/or produce?

Animals	Number of animals	Amount/number of products	Number of consumed/year	Number of sold/year

7. Is the land owned or rented (owned/rented/both)?
8. Area of owned and rented?
9. If the answer for #8 is rented, how much do you pay per month/year?
10. How much area of your land do you consume for the farming and how much for the residence?
11. Do you feel that your right to use the land for agriculture is secure?

II. Household Structure

Household Member	Relationship to Head of household	Gender	Age	Education	Employment status	Main occupation
List from oldest to youngest	1, Head of household 2, Spouse 3, Son 4, Daughter 5, Brother 6, Sister 7, Nephew 8, Niece 9, Uncle 10, Aunt 11, Grand mother 12, Grand father 13, Grand Kids	1, Male 2,Femal		1,Primary 2,Secondary 3, undergrad durban agricult 4, Post Gradurban agri	1, Employed 2,Unemployed 3, Self-employed	1, Agriculture 2, Civil-Servant 4, Clerical 5, Artesian 6, Trader 7, student 8, Retired

III. Household Activities

Household members	Nature of contribution	Non agricultural Duties	Domestic duties	Agricultural duties	Time spent on Agriculture
List contributing members from oldest to youngest	1, Agricultural Duties 2,Domestic duties 3, Non agricultural duties More than one answer is acceptable	1, Work 2,study 3,physical Exercise	1, cooking 2,fetching water, 3,raising Children 3, cleaning 4,Others	1, Land preparation 2, planting 3, Weeding 4,Watering 5, Harvesting 6, Transport 7, Marketing 8, others	

IV. Food and Security

1. Please indicate whether one of the following happened Never, Rarely (once in a while), Sometimes, or Frequently.

Never	Rarely	Sometimes	Frequently
0	1	2	3

					Remark
Do you worry that your household could not have food?, Why?	0	1	2	3	
Were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0	1	2	3	
Did you or any household member eat just a few kinds of food day after day due to a lack of resources?	0	1	2	3	

Did you or any household member eat a smaller meal than you felt you needed because there was not enough food?	0	1	2	3	
Did you or any other household member eat fewer meals in a day because there was not enough food?	0	1	2	3	
Was there ever no food at all in your household because there were no resources to get more?	0	1	2	3	
Did you or any household member go to sleep at night hungry because there was not enough food?	0	1	2	3	
Did you or any household member go a whole day without eating anything because there was not enough food?	0	1	2	3	

V. Livelihood

2. How much is the average total income of your household per year?

3. How much money does your household earn in average every year from agriculture? (Estimation)

4. How much do you spend in average for the following household needs every month?

Needs	Indicate in Birr (Br)
Food	
School fees and related costs	
clothing	
Fertilizer and feed	
Rent/Land, house or others	
Services (Electric,water,telephone, TV)	
Remittances	
Entertainment	
Others(specify)	
Total	

5. Does your household face shortage of money to spend on household needs (yearly basis)?

Never	Rarely(1-3 times)	Sometimes(3-5times)	Frequently(5< times)
0	1	2	3

6. For which of the above needs do you face the shortage most? Why?

7. How do you cope with the shortage challenge?

VI. Consumption and Sale

1. As a percentage, how much of the total food produced do you use for household consumption and how much for sale?

Produce	Own consumption	Sale
Grains		
Vegetables		
Fruit		
Animal Products		
Total		

2. What do you think consuming food from your agriculture benefits your family?

Produce	Benefits			
	Fresh test	Nutrition	Money saving	others
Crop				
Vegetables				
Fruit				
Animal products				

3. Selling

a. Where do you sell your produce?

b. Whom do you sell your produce? Trader, consumer, both? Why?

c. How do you decide on the price of what you sell?

d. Which of the things you sell do you think is most profitable? Why?

e, When is the good time to sell your produce?

	Seasons/holidays	Remark
Crops		
Vegetables		
Fruit		
Animal products		

f. Have you experienced any challenges or constraints (marketing, legal issues, competition, transport etc.) in terms of selling your produce? Why?

VII. Inputs

	Usage		Own grazing	Own manure	Distance traveled	payment		How much do you spend?	Credit repayment time		
	yes	No				Cash	Credit		week	month	year
Seed											
Fertilizer											
Animal feed											

VIII. ATTITUDES AND EXPERIENCES OF URBAN AGRICULTURE

1. Why do you prefer agriculture than any other occupations?

2. Would you practice the agriculture for a temporary or permanent basis? Why?

3. Where does your agricultural knowledge come from?

4. Can you tell me about any challenges, opportunities, which you have experienced in terms of the agriculture?

IX. SUPPORT AND INTERACTION

1. Have you ever sought out support for your agriculture endeavors?
   A. If so, what was your experience of this? Was it positive or negative?
2. Has support (training, loan) ever been offered or received from an NGO, a government agency or any other source for your agriculture?
   A. What benefit do you get out of the support?
   B. For how long does it exist?

3. Are you part of any cooperatives or groups related to your agricultural activities? If so, how does your involvement benefit you?

Amharic Version of the Questionnaire Survey

የአጥኚው ስም፡- አለማየሁ ጌታቸው

የጥናቱ አላማ፡- ለሁለተኛ ዲግሪ ማሙያ ለሚሆን ጥናት ግብዓት የሚሆን መረጃ ለመሰብሰብ

የጥናቱ ርዕስ፡- የከተማ ግብርና እና ከምግብ ደህንነትና ከገቢ ማስገኛ ጋር ያለው ተዛምዶ በአዲስ አበባ፣ ኢትዮጵያ

ውድ ተሳታፊዎች፣ ይህ ጥናት ያለእናንተ መልካም ትብብርና ተሳትፎ የታሰበለትን ዓላማ ግብ አይመታምና፤ እዚህ መጠይቅ ውስጥ ላሉት ጥያቄዎች ሁሉ በፍቃደኝነትና በሃቀኝነት ለምትሰጡት ምላሽ በቅድሚያ ላቅ ያለ ምስጋናዬን አቀርባለሁ፡፡

አለማየሁ ጌታቸዉ

I. መሰረታዊ ጥያቄዎች

1. ሥም
2. የመኖሪያ አድራሻ
3. ከቤታችሁ ውስጥ በማንኛውም እርሻ ላይ የተሰማራ ሰው አለ ካለ ከሚከተሉት በየትኛው

	✓ ምልክት ያድርጉ
እህል ምርት	
አትክልት	
ፍራፍሬ	
እንስሳት እርባታ	

4. በእርሻ ሥራው ላይ ዋናው ሃላፊነት የማን ነው?
5. አመታዊ የእህል እና/ወይም የአትክልት ምርት ?

የእህል አይነት	የመሬት መጠን	የምርት መጠን	ለቤት ፍጆታ	ለሽያጭ የሚውል	ለዘር የሚቀር

6. አመታዊ የእንስሳትና የእንስሳት ተዋፅኦ ምርት?

እንስሳትና የእንስሳት ተዋፅኦ	የትኞቹን	ለቤት ፍጆታ	ለሽያጭ የሚውል	ለእርሻ ሥራ
በሬ				
ላም				
በግ				
ፍየል				
አህያ				
ፈረስ				
በቅሎ				
ዶሮ				
ወተትና ተዋፅኦው				
እንቁላል				
ሌላም				

7. ይዞታው የግል ነው ወይስ ኪራይ?
8. ምን ያህል የግል ምን ያህል ኪራይ?
9. ለኪራዩ ምን ያህል ትከፍላላችሁ በወር/በአመት?
10. አሁን ያላችሁበት ይዞታ የተደላደለ ነው ብላችሁ ታስባላችሁ?

II. የቤተሰብ መዋቅር

የቤተሰብ አባላት	ከአባወራ/እማወራ ተዛምዶ	ፆታ	እድሜ	የትምህርት ደረጃ	የሥራ ሁኔታ	ዋና ሥራ

ከታላቅ እስከ ታናሽ	1, ባል 2, ሚስት 3, ልጅ 4, ወንድም 5, እህት 6, እናት 7, አባት 8, አክስት 9, አጎት 10, አያት 11, የልጅ ልጅ 12, ሌላ ዝምድና	1,ወ 2,ሴ		1, ህፃናት መዋያ 2, አንደኛ ደረጃ 3, ሁለተኛ ደረጃ 4, ዲፕሎማ 5, ዲግሪ 6, ሁለተኛ ዲግሪ 7, ዶክትሬት	1,የመንግሥት ተቀጣሪ 2,የግል ተቀጣሪ 3, የግል 4, ስራ አጥ	1, እርሻ 2, አገልግሎት ሰጪ 3,የቢሮ ሥራ 4, ነጋዴ 5, ተማሪ 6, ጡረተኛ 7, ሌላም

III. የስራ ድርሻ

የቤተሰብ አባላት	እርሻ ነክ ያልሆነ	እርሻ ነክ የሆነ	የቤት ውስጥ ተግባራት	ለእርሻ የሚውል ሰዓት (በቀን)

IV. የምግብ ደህንነትና የገቢ ሁኔታ

የምግብ ደህንነት

1. የቤተሰብዎን የአመጋገብ ሁኔታ በተመለከተ፣ ለሚከተሉት ጥያቄዎች ይሆናሉ የሚሉትን አማራጭ በመጠቀም ሰንጠረዡን ይሙሉ

በፍፁም	ከስንት አንዴ	አንዳንድ ጊዜ	በተደጋጋሚ
0	1	2	3

	0	1	2	3	አስተያየት
ከቤተሰብዎ ውስጥ የምግብ እጥረት ገጥሞ ሙሉ ቀን ምግብ ሳይበላ የሚዋልበት ጊዜ አለ?					
ከቤተሰብዎ ውስጥ በአቅም ያለመሮር ምክንያት የሚፈልጉትን የምግብ አይነት ሳይበሉ የቀሩበት ጊዜ አለ?					
ከቀን ወደ ቀን ተመሳሳይ ምግብ ብቻ የበላቹበት ጊዜ አለ?					
ከቤተሰብዎ ውስጥ በምግብ እጥረት ምክንያት ከሚፈልጉት የምግብ መጠን በታች የበሉበት ጊዜ አለ?					
ከቤተሰብዎ ውስጥ የምግብ እጥረት ገጥሞ ወይ ቁርስ፣ ምሳ፣ራት የተዘለለበት ጊዜ አለ ካለ ማን ነው የሚዘለው?					

1. የራሳችሁ ምርት የአመት ቀለባችሁን ምን ያህሉን ይሸፍናል?

	ምንም	ከግማሽ በታች	ግማሹን	ከግማሽ በላይ	ሙሉ በሙሉ	ከሚፈለገው በላይ
የእህል ምርት						
ፍራፍሬ						
አትክልት						
የእንስሳት ተዋፅኦ						

2. ከራሳችሁ ምርት ውስጥ ለምግብነት መጠቀም ምን ጥቅም ይሰጣል?

ምርት	ጠቀሜታ			
	ንፁህ/ትኩስ ምርት	ንጥረ ነገር	ወጪ ይቀንሳል	ሌላም
የእህል ምርቶች				
አትክልት				
ፍራፍሬ				
እንስሳትና ተዋፅዖ				

V. የገቢ ሁኔታ

1. ቤተሰብዎ እርሻ ነክ ካልሆኑ ስራዎች የሚያገኘው ገቢ አለ? ካለ ምን ያህል? በምን ያህል ጊዜ?
3. ቤተሰብዎ ከታች ከተዘረዘሩት የቤት ዉስጥ ፍላጎቶች ለየትኛው ከፍተኛ ለየትኛው ደግሞ ዝቅተኛ ወጪ ያወጣል?

ፍላጎቶች	ከፍተኛ ወጪ	ዝቅተኛ ወጪ
ምግብ		
ለትምህርትና ተያያዥ ፍላጎቶች		
አልባሳት		
ለማዳበሪያና ለእንስሳት መኖ		
ለመሬት፣ ለቤት፣ ለእ ለእርሻሌሎች		
የአገልግሎት ክፍያዎች (መብራት፣ ዉሃ፣ስልክ፣ ቴሌቪዥን)		
ቤተሰብ መደጎሚያ		
መዝናኛ		
ሌሎች ወጪዎች		

4. በአመት ለቤተሰብ ወጪ ገንዘብ ጎድላችሁ የምትቸገሩበት ግዜ አለ?

በፍፁም	ከስንት አንዴ(1-3 ግዜያት)	አንዳንድ ግዜ(3-5ግዜያት)	በተደጋጋሚ (5<ግዜያት)

5. በአብዛኛው ለየትኛው ፍላጎት ነው ገንዘብ የሚያጎሳችሁ? ለምን?
6. የገንዘብ ማነስ ችግሩን በምን መልኩ ትፈቱታላችሁ?

VI. ግብይት

1. የገበያ ሁኔታ

ሀ. ምርታችሁን የምትሸጡት የት ነዉ?

ለ. ምርታችሁን የምትሸጡት ለየትኛዉ የህብረተሰብ ክፍል ነዉ ነጋዴ፣ ተጠቃሚ፣ ለሁለቱም? ለምን?

መ. የትኛው ግዜ ወይም ወቅት ነው ለመሸጥ ተመራጭ ነዉ የምትሉት? ለምን?

ምርት	ወቅት / በዓላት	አስተያየት

የእህል ምርቶች		
አትክልት		
ፍራፍሬ		
እንስሳትና ተዋፅዖ		

ሠ. ምርት ለመሸጥ በምትወጡበት ጊዜ የደረሰባችሁ ችግር አለ? ለምሳሌ የህግ ነክ፣ የመጉዋጉዋጥ፣ የገበያ ዉድድር፣ የመሳሰሉት፣ ለምን?

2. ግብዓት

ግብዓት	የትኛዉን	ከቤት	በግዢ	ምን ያህል መጠን (በኪሎ/በሊትር/ በቁጥር)	ዋጋ	
					ያንዱ ዋጋ	ጠቅላላ ዋጋ
ዘር						
ማዳበሪያ						
የእንስሳት መኖ						
ሌላም						

VII. የከተማ ግብርና ዝንባሌና ልምድ

1. የግብርና እውቀቱን እንዴት አገኙት?
2. ግብርናውን ከሌሎች ስራዎች ይልቅ ሊሰሩበት የቻሉበት ምክንያት ምንድን ነው?
3. ግብርናውን ለማስፋፋት የሚችሉበት አጋጣሚ ኑሮ ያውቃል?
4. በእርሻዎት ላይ የገጠሞት መልካም አጋጣሚ ወይም ችግር/እንቅፋት ካለ ቢነግሩን?

VIII. ድጋፍና መስተጋብር

1. ለእርሻ ስራዎ ድጋፍ የፈለጉበት ግዜ ነበር? ካለ ምን ነበር ምላሹ? መልካም ወይስ መጥፎ?
2. እርስዎ ሳይጠይቁ ከመንግስት ወይም መንግስታዊ ካልሆነ ድርጅት የቀረበልዎት ወይም የተቀበሉት ድጋፍ አለ?

   ሀ. ምን ጥቅም ተገኘ?

   ለ. ለምን ያህል ጊዜ ቆየ?
3. ከእርሻ ስራዎ ጋር በተያያዘ የሚሳተፉበት ማህበር ወይም ቡድን አለ? ካለ ጠቀሜታውን ይንገሩኝ?

አመሰግናለሁ፡፡

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