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THE ROLE OF URBAN AGRICULTURE IN IMPROVING THE LIVELIHOOD OF URBAN COMMUNITY IN ADDISABABA

BY

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ADDISABABA, ETHIOPIA

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THESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES OF Addis Ababa UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN GEOGRAPHY AND ENVIRONMENTAL STUDIES

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APPROVED BY THE BOARD OF EXAMINER

This certifies that the thesis, prepared by Bayelign Birku Fentie and titled "The Role of Urban Agriculture in Improving the Livelihood of Urban Community in Addis Ababa," is in compliance with university regulations and meets accepted standards for originality and quality. It was submitted as a partial fulfillment of requirements for a Master of Arts degree in Geography and Environmental Studies.

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Declaration

I, the undersigned, hereby declare to the Addis Ababa University School of Graduate Studies that the thesis is entirely original with no presentations at other universities, and that all references utilized in its preparation have been properly cited.

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LIST OF ABBREVIATIONS AND ACRONYMS

AA	Addis Ababa
AACA	Addis Ababa City Administration
APA	American Psychological Association
AU	African Union
EC	Ethiopian Calendar
FUAO	Farmers and Urban Agriculture Office
GBG	Gulele Botanic Garden
GIS	Geographic Information System
IDPR	Institute of Development and Policy Research
PUA	Peri-Urban Agriculture
UA	Urban Agriculture
UASNCW	Urban Agriculture Stakeholders Network Creation Workshop
UN-HABITAT	United Nations Human Settlement Program

ABSTRACT

The primary goal of this thesis, which was conducted in Addis Ababa, was to assessing the role of urban agriculture in improving the livelihood of urban community. It incorporated livestock rearing, horticulture and poultry farming. The study area was chosen using the purposeful sampling technique. A sample of 192 respondents were drawn from a total of 3266 populations using a systematic random sampling procedure. The researcher used descriptive mixed research method supported by both quantitative and qualitative data. The spatial-temporal trends of UA in the study area was decreased157 (81.8%) dramatically. The major reason as reported by 152(79.2%) respondents were urban expansion. It can be understood from the findings of the study that UA has spatial, vulnerability reduction, increase livelihood asset and livelihood improvement implications. According to research results UA improved the economic, physical, human, social and natural capitals of community in Addis Ababa. It implied that UA reduce vulnerability and improves the livelihood of urban community by increasing their livelihood assets. Although urban agriculture is playing a significant role by increasing the income of urban farmers, improving nourishment supply and improving livelihoods, it can be understood from the findings that it is a sector that has a combination of complex problems and good opportunities. Shortage of fodder and inputs particularly farmers who raise poultry and milk cows, constructing fences, shortage of water particularly for crop production, access to credit service, shortage of land, disease and pests, problems of affording initial capital were the major constraints to practice urban agriculture.

According to the results, it is necessary to strengthen the favorable conditions for urban farmers to upgrade their quality of life. High availability of market and transport, skill training and assistance, access to special seed and fertilizers, treatment of crops and animals, appreciation and reward from the community and government body, government policy and input delivery were the major opportunities while practicing urban agriculture in the study area. Finally the researcher suggests micro finance institutions should work with urban agriculture farmers to provide special credit service.

***Key words**: urban, urban agriculture, livelihood improvement*

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Since the beginning of cities, people have grown food in urban areas for two reasons: first, most of the ancient towns were built on cultivated agricultural grounds, and second, people pooled their knowledge and skills to meet the needs of their families (Steel, 2013).The influx of people into cities and the resulting economic inequality create a good chance for urban citizens to practice agriculture in their homes. Currently the practice of urban agriculture gets greater attention in cite because of population growth and food insecurity in urban areas (McClintock, 2017).

Urban agriculture also gets focus in Addis Ababa and all other cities across the world. It has, societal effects in the urban residents including the creating clean area, recreation, social interaction through friendship, education and research. It has also health effect on the society like availability of fresh food, health therapy and minimize depressions. Urban farming has economic impacts on urban population such as creating job opportunity, minimize food expense and increase saving of individuals and governments (Golden, 2013).

In Addis Ababa, agriculture contributes a considerable amount of jobs opportunity and revenue for the city's citizens. It helps the city residents to rear animals and cultivate vegetables and crops on the plots next to their homes (Gentleman, 2009).The study is focus on assessing the role of urban agriculture in improving the livelihood of urban community in Addis Ababa.

1.2. Statement of the Problem

According to Ghaleh (2019), urban agriculture generates employment, revenue, and attracts tourists and businesses in addition to fostering economic development and tourism. Some of the social effects of urban farming are garden therapy, minimize crime, providing fresh food, providing aesthetic values, and restoring biodiversity.

Conserving biodiversity, air purification, flood management, and organic waste recycling are some of the vital ecosystem services that urban agriculture may offer (Chandra, 2019).

The majority of Ethiopia's urban population depends on rural farmers to meet their fundamental food needs, but women's ,elders and marginalized societies focus on urban farming to fulfill their foods consumptions (Tewodros, 2007).

High market value vegetables, fruits and crop production accounts for the majority of Ethiopian urban agriculture, with the aim of increasing profit and minimize poverty including Addis Ababa (Ashebir et al., 2007).

Agriculture considerably improves the quality of life for the poor in urban areas (Akalewold and Mahteme 2020).It is important generating income, creating employment prospects, providing food, upgrading environmental improvement, and recycling solid waste (Ashenafi, 2021).

According to research finding urban farming greatly (70–75%) contributes to the household income and food security of urban farmers, with livestock and vegetable production accounting for 51% and 25% of these factors, respectively. Urban farmers raise cattle and a range of crops for both domestic consumption and commercial markets. Many urban farmers engage in mixed farming, which suggests that there are opportunities for diversification for these farmers (Henok, 2014).

In accordance with food availability, urban agriculture is used to increase income and enhance household well-being. It is essential to prevent food shortages and satisfy the nutritional demands of the household (Ashenafi, 2021).

In Addis Ababa, urban agriculture has long been practiced, providing food and job opportunities, particularly to the urban poor. Good things for the producers of vegetables, crops, and livestock rising in Addis Ababa include the availability of land, a water, and open space near rivers, weather, and the attitudes of consumers toward purchasing items from urban agriculture (Mandefro, 2010).

Farmers engage in urban agriculture for a variety of reasons, including direct food consumption, economic security, and environmental protection (Daniel, 2021).

Urban agriculture was adopted as a survival strategy in the city to meet daily food needs and other necessities, in addition to food insecurity and inadequate incomes from non-farm sectors (Henok, 2014).

Involving in urban farming has been undervalued, despite the fact that it is a workable strategy to compensate food supply from rural areas to cities and a means of subsistence for many urban people, especially the poor (Mougeut,2000).

Urban farmers face several challenges, including limited access to land, credit, basic agricultural inputs, extension services, and insufficient attention from relevant stakeholders. As a result, farmers are not holding the anticipated benefits of UA (Daniel, 2021).

Urban agriculture in Ethiopia has great potential but it is challenged by policy and other supports. Ethiopian urban farming including Addis Ababa city is still primarily unstudied and has not gotten much attention from scholars. In order to inform policy makers and urban planners and to encourage additional researchers, there is a need for further empirical research examining the extent and effects of urban agriculture in Ethiopian including Addis Ababa city (Amsalu, 2020).Therefore the aim of the research is to assess the role of urban agriculture in improving the livelihood of urban community in Addis Ababa.

1.3. Objective of the Study

1.3.1. General Objective

The general objective of the study was to assess the role of urban agriculture in improving the livelihood of urban community in Addis Ababa.

1.3.2. Specific Objectives

The specific objectives were:

1. Exploring spatial and temporal trends of urban agriculture.
2. Investigating role of urban agriculture in improving the livelihood of urban community and
3. Examining constraints and opportunities of urban agriculture.

1.4. Research Questions

1. What temporal and spatial urban agriculture trends are evident?

2. What are the roles of urban agriculture in improving the livelihood of urban community?

3. What are the opportunities and constraints of urban agriculture?

1.5. Significance of the Study

Conducting a research on "the role of urban agriculture in improving the livelihood of urban community "would be timely and necessary. The relevant articles included in this research paper and research results will fill the gaps in the knowledge, skills and attitudes of readers, researchers, policy makers, farmers, experts and executives around the role of urban agriculture in improving the wellbeing's of urban community and mainstream it into urban livelihood policy strategies. The researcher used mixed research approach. It used to address complex or multifaceted research questions, to enhance the credibility of the research, and to expand the scope of the research.it can generate new perspectives that can emerge from results from both approaches, helps to extending the knowledge or contribution of the research.

1.6. Scope of the Study

This study had territorial, theoretical, temporal and methodological scopes. Spatially the extent of the research was restricted to Addis Ababa city administration particularly in Kolfe- Keraniyo sub-city of

Wereda3, 4and 7.Conceptually, it includes contributions of UA in improving the livelihood of urban community selected woredas of three form of urban agriculture beneficiaries of horticulture, livestock and poultry production. Methodologically this thesis used descriptive research design and mixed approach. Primary data were collected from field observation, questionnaires for urban agriculture beneficiaries, key informants and secondary data from published and unpublished sources, books, magazines and articles.

1.7. Limitation of the Study

To conduct this study different problem were faced. Firstly the research finding were challenged by different problems from the initial to the end of the study. Some of the drawbacks of this research were the selected sample area small compare with the total areas.as well as from the total population the selected sample respondents were small because of different reasons. This were bring a problem in representativeness of the sample to the entire area and populations. Second most of the respondents were not voluntary to fill questionnaires during data collection because of different reasons. Since the research conducted on the new field of study the researcher was challenging by getting relevant literatures on the issue. Lastly the repeatedly interruptions of the teaching learning program at university level because of different reasons affects the attentions of the researcher to conduct the research on time.

1.8. The Research's Organizations

There are five chapters in this study. The first chapter covers the introductory section, which includes the background, problem statement, objectives, significance, scope, organization, and limitations of the study. The review of related literature, including conceptual and empirical literature reviews, is covered in the second chapter. The spatial area and methodology of the research, including the research approach, research method, data sources, sampling strategies, and data analysis method, are mostly described in Chapter 3. The study's results are presented in Chapter 4.Conclusions and recommendations are included in Chapter 5.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. Introduction

Urban agriculture is the art and science of cultivating crops and rearing of animals with in the city boundaries for personal use or market purpose. In this chapter the definition, scope, characteristics, role and challenges of urban agriculture were presented properly.

2. 2.Urban Agriculture Definitions

Urban agriculture is the cultivation of plants and livestock rearing for sale or domestic use, as well as the processing and promotion of agricultural goods in and near urban areas. Urban agriculture encompasses a variety of production methods, from household-level subsistence cultivation and processing to fully marketed agriculture, and is located both inside and outside of cities (Veenhuizen, 2006).

According to Dresher (2001), urban agriculture is the practice of cultivating small to medium-sized plots of land within cities for the purpose of growing crops and trees, as well as rearing fish and small livestock for personal use or sale. Urban agriculture, according to Mougeot (2000), is an industry that grows and raises, processes, and distributes a variety of food and non-food products to the urban region within or on the periphery (peri-urban) of a town, city, or metropolis.

According to FAO (1999), products from crop production, livestock raising, fisheries, forestry, and non-wood forest products, as well as ecological services offered by agriculture, fishery, and forestry, are all part of the global urban agriculture practiced in urban and preurban areas.UA is explained by UNDP (1996) as an economic activity that uses intensive production methods, repurposes natural resources and urban waste, to produce food and nonfood items and provide to the market for consumer demand within the city. In addition, there are farms that supply urban farmers markets , family farms situated in metropolitan greenbelts, innovative ways of producing food that maximize output in a small space, such as school, backyard, and rooftop gardens with goals that go beyond home consumption and education (A P A, 2011).

2.3. Urban and peri-urban agriculture's characteristics and scopes

Urban agriculture differs in that it makes use of urban solid and liquid water, has limited acreage, and is able to access markets. Urban agriculture enhances the effectiveness of national food security by supplying diverse livestock and horticultural products, hence compensating rural agriculture (Veenhuizen, 2006).Pre-urban agriculture differs from urban agriculture in a few ways: peri-urban agriculture depends more economically on the city; it has a lower population density than urban agriculture; it has more land available; it is more natural resource-based; it requires a full-time job; it is larger in plot sizes and more commercialized; it is situated in land that is threatened by urbanization; it has fewer services (banks, schools, and medical facilities); it has less access to markets; it has better air quality; it is less expensive to land and labor; and it primarily focuses on market-oriented production and management strategies (Drescher, 2001).

Urban agriculture is defined by UNDP (1996) as "an activity uses intensive production methods, uses and recycles natural resources and urban waste, and generates a variety of crops to produce, process, and market food and fuel on land and water spread in urban and peri-urban areas, primarily in response to the daily demand of customers in a city, town, or metropolis." Because of its production role, urban agriculture may supply fresh and healthful vegetables to individual households, community groups, and urban marketplaces. Around the world, crop cultivation, livestock rearing, and aquaculture are all part of UPA which takes place inside and outside of city limits. It also included ecotourism, healthful therapy, and ecosystem services and urban greening. Peri-urban agriculture, according to Drescher (2001), occurs on farm units near towns that run intensive, semi-or completely commercial farms to raise animals, make milk and eggs, and cultivate vegetables and other horticulture. Within or outside of cities, UA practices included crop-growing and raising animals, such as cows for milk and hens for eggs, on empty lots, schools, gardens, parks, riversides, balconies, rooftops, containers, and road strips (Tinker, 1994).UPA found in and around towns of cities all over the world including crop production , animal rearing and aquaculture. It also incorporated urban greening and ecosystem services, ecotourism and healthy therapy. According to Drescher (2001) peri-urban agriculture happens on farm units close to town that operate intensive semi-or fully commercial farms to grow vegetables and other horticulture ,raise chickens and other livestock’s, and produce milk and egg.

2.4. Urban and pre-urban agriculture's Production sites and relevant technology

Urban agriculture is primarily carried out in urban edges and unoccupied areas, as well as on ground that is unsuitable for building construction along rivers (Bryld, 2003).According to Drescher (2001), urban agriculture can be carried out in a variety of locations, including vacant lots, home gardens, verges, containers, balconies, open spaces, road strips, alongside railroads, beneath power lines, river banks, roof tops, rivers, fish ponds, communal lands for community-based gardening, and school gardens.

UPA are using horticulture development to address the food and employment needs of poor people. Utilizing the limited resources available, horticulture reducing post-harvest losses is possible through horticulture's effective utilization of the few land and water resources near consumption centers (Drencher, 2001).

Urban agriculture is defined by the UNDP (1996) as "an industry that uses intensive production methods, uses and recycles natural resources and urban waste, and generates a variety of crops to produce, process, and market food and fuel on land and water spread in urban and peri-urban areas, primarily in response to the daily demand of customers in a city, town, or metropolis." Because of its production role, urban agriculture may supply fresh and healthful vegetables to individual households, community groups, and urban market places. Drescher (2001) defined three major groups of horticultural producers in city environments. i. Micro garden a low-tech, low-maintenance method for safely and healthily growing vegetables on patios, terraces, or roof tops without the need for soil. It is appropriate for urban landless people. ii) Hydroponics: Multiple cropping, or growing multiple crops in one tank iii, Substrate culture: Beginners can construct their own grower by using the wood and plastic materials that are given.

Olawepo (2012) asserts that feeding the urban population becomes a significant concern, particularly for developing nations in Asia and Africa. Urban agriculture has a lot of promise to address the need for food in cities by supplying fresh, wholesome, and easily accessible crops. UA is mostly practiced by poor and middle class farmers as a means of subsistence and as a means of achieving a range of socioeconomic and nutritional benefits, primarily in the form of additional revenue and food. Food production, income generation, and recreational opportunities are some of the needs satisfied by urban agriculture. It also helps prevent micronutrient deficiencies, can improve access to consumer markets, suggests less need for food packaging, storage, and transportation, creates potential agricultural jobs and income, increases the availability of fresh food, improves proximity to services, including waste

treatment facilities, and creates opportunities for waste recycling and repurposing. All of these benefits contribute to the preservation and enhancement of biological diversity by integrating it into the ecosystem source (Drescher, 2001).

2.5. The role of urban and pre urban agriculture

2.5.1. Food security and poverty alleviation

As per Firehiwot and Degefa (2015), urban agriculture plays a crucial role in achieving food security and proper nutrition, making it a viable option for accomplishing the Millennium Development Goals. When it comes to inadequate, irregular, and unexpected access to food, coupled with limited purchasing power, the urban poor usually respond by producing food in cities. The producer of the crops and animals is either directly consumed or sold to buy other consumables. The products are less expensive than those imported from far-off rural farms since they require little to no transportation. Producing food according to cultural preferences gives households an advantage and increases city resilience by lowering susceptibility to shocks related to food supply (Battersby and Watson, 2019).

2.5.2. Socio-Economic role of urban agriculture

In a report published in 2013, Thomas claimed that urban farmers in Addis Ababa could meet more than 42 percent of the city's vegetable needs with the right assistance. Urban farmers can increase their income and create jobs for their family and the community by selling their produce at local markets (Battersby and Watson, 2019).Urban agriculture boosts business growth and tourism, draws in residents and businesses, acts as a catalyst for city life promotion and company development, and generates revenue and jobs locally (Ghaleh, 2019).Urban agriculture has a number of positive economic effects, including higher property values, job development, training, and company incubation; farmers' markets are expanded; farmers save money on food; and municipal agencies save money (Golden, 2013).

Money from urban gardening is mostly used to pay for non-food expenses like rent, utilities, cosmetics, clothing, medical bills, and dues to community based organizations like Equib and Edir (Firehiwot & Degefa, 2015).The following factors are some of the social dimensions of urban agriculture:i. Increasing physical activity: Urban agricultural gardens give locals a chance to enhance their physical activity levels by gardening in a society where obesity is a concern. ii. Health (garden therapy) fragrances, and plant colors. iii. Communities with urban gardens have been shown to have lower rates of crime.

Additionally, urban gardens offer a secure atmosphere for locals, particularly kids. Iv. Green space contributes to the aesthetic qualities of the community; urban agriculture can enhance these values and give those living there and visiting greater outdoor space (Ghaleh, 2019).Building social capital, providing chances for youth development and education, and promoting intergenerational and cross-cultural integration are some of the social benefits of urban agriculture (Golden, 2013).

2.5.3. The ecological role of urban agriculture

According to (Mohammed, 2002), vegetation can help improve humidity, lower temperatures, absorb dangerous air particles and chemicals, act as a wind barrier, and intercept solar radiation. Furthermore, fruits, vegetables, flowers, shrubs, and endangered or rare species were preserved through urban agriculture. It can give the populace a comfortable area. Increases moisture, lowers temperature, and gives the city a nice scent. It also breaks wind speed, absorbs dust and pollutants from contaminated air through the leaves of trees and plants, blocks sun radiation, and produces shade. By eliminating airborne contaminants like chemicals and allergens like pollen, it enhances the quality of the air (Ghaleh, 2019).

Urban agriculture has positive effects on people's health in the following areas: improved fruit and vegetable consumption, mental and physical activity, food and health literacy, and access and security of food (Golden, 2013). Urban agriculture, according to Chandra (2019), can offer vital ecosystem services like enhancing biodiversity, air purification, energy savings, and the recycling of organic waste. Urban agriculture was practiced in green spaces all year round in Addis-Ababa and other Ethiopian cities (Bahirdar, Jimma, Mekele, Adama, etc.) because of their suitable climates. This enhanced the visual value of the city and helped create a microclimate in some areas of the metropolis (Henok, 2014).

Many solid wastes are recycled into fresh food by urban agriculture, preventing contamination and contributing to environmental sanitation (Brock, 1999).In Ethiopia, urban agriculture provides many opportunities for urban dwellers to diversify employment, income, and dietary options(Yalew, 2020). Because there is no system in place to handle garbage, it frequently burns in the streets. Serious issues with pollution and air quality result from this. Urban agriculture is currently absorbing a much more significant quantity of animal waste than vegetative waste, whether crop residues or food wastes (Gordon, 2010).

2.6. Benefits and risks of urban agriculture

Urban agriculture in Addis Ababa produces around one-third of all household income, according to Firehiwot and Degefa (2015). Although this is a substantial improvement in household food security, it is not enough to meet all of the household's needs. For example, urban agriculture provides 8% of the protein and 40% of the calcium that urban consumers need. It is a significant source of minerals. For low-income consumers, it provides a vital supply of traditional green vegetables throughout the dry season. Despite its advantage urban agriculture could be a source of biological and chemical contaminants, negatively affecting the health of the urban ecosystem, including human health (Gordon, 2010).

2.7. Urban agriculture and livelihoods

2.7.1. Livelihoods

Of the primary issues in the discourse on development these days is subsistence. A livelihood was formerly only considered "a means of living" in any sense; it was hardly ever described as any source of revenue for a person or household. The various elements that make up a livelihood are taken into account while defining it nowadays." A livelihood comprises capability, asset (stores, resource claims, and access) and activities required for means of living," according to a definition by Chambers and Convey (1992).

According to recent modifications made by renowned social scientist Frank Ellis (2000), livelihood is now defined as the combination of an individual's or household's activity, asset (natural, physical, human, financial, and social capital), and access to these (mediated by an institution or social relationship).Natural capital, physical capital, human capital, financial capital, and social capital are the five sorts of capitals that Scoons (1998) cites as contributing to an asset. Water, land, and trees are examples of biological and environmental resources that make up natural capital. Assets obtained via economic productivity, such as machinery and tools, as well as improvements to land like terracing or irrigation canals, are referred to as physical capital. Individual or population health and education levels are referred to as human capital. Financial capital is related to cash on hand and credit availability. The term "social capital" describes the networks and associations that people join, develop, and can use to drive supports that are essential to their livelihoods.

2.7.2. Livelihood framework and Sustainability

The framework aims to comprehend several aspects of an individual's livelihood, including the tactics and goals they pursue in relation to opportunities and limitations. It consists of the following five components: context for vulnerability, assets, policies, institutions, and process, tactics, and results.

The skills, resources (material and social), and activities necessary for survival make up a livelihood (Carney, 1998).A livelihood is a way to sustain oneself, particularly in terms of money or employment. The livelihood is an open system that interacts with other systems to diversify its assets and produce revenue (Niehof, 2004).

It alludes to unforeseen circumstances that have the potential to ruin lives and thrust households into poverty. Drought, earthquakes, floods, pest and disease epidemics, economic shocks such as changes in prices, markets, employment, and purchasing power, civil unrest such as war, armed conflict, displacement, and the destruction of lives and property, seasonal stresses such as hunger and food insecurity, environmental stresses such as land degradation, soil erosion, bush fire, and idiosyncratic shocks such as family members becoming ill or dying, losing one's job, or having personal property stolen are examples of contexts of vulnerability (Ellis, 2000).

2.7.3. Livelihood Strategies, Assets and improvement

It alludes to the various home types and the resource basis of the communities (Inostroza, 2016).Five assets of livelihood were recognized by DFID (2000) and are interconnected within the framework of sustainable livelihood. Natural, economic, social, human, and physical capitals are all included.

Livelihood strategies is the methods of diversifying household income to increase their livelihood assets and meet their livelihood goals (Carney, 1998).Livelihood improvement is described as the way to improve the livelihood assets to reduce vulnerability of house hold by increase their food supply, generating income and improving quality of life (Ellis, 2000).

2.8. The connection between urban agriculture and livelihoods

In accordance with a UNDP report from 1996, urban farming promotes social fairness by enhancing the productivity and health of the less fortunate and giving people a means of earning a living. For those involved in urban agriculture who reside outside of cities, urban agriculture serves as their primary source of income. They diversify their sources of income by doing so by using the money they receive

from urban agriculture. Both urban and non-urban agriculture are connected to the diverse activity. Urban agriculture related activities can take place off-farm, such working as laborers on other people's farms during harvest and plowing seasons, or they can take place on farms, like rotating crops and diversifying produce. The most common non-farm activities carried out by urban farmers in the outskirts of Addis Ababa are horse transportation and selling locally produced drinks. These activities are supported by the income generated through urban agriculture, which pulls livelihood diversification. Other off-farm activities, such as working as a guard or daily laborer, are pushed livelihood activities because urban agriculture doesn't contribute any capital to them and they are carried out when the income from agriculture is sufficient to support the household (Ellis, 2000).

2.9. The Addis Ababa administration's perspective on urban agriculture and challenges

In Addis Ababa, UA has long been practiced, offering food and job opportunities, particularly to the city poor. This lengthy existence was supported by certain chances. Additional chances for the production of vegetables, crops, and cattle ranching include land, an accessible water source, open space near rivers, the weather, and the attitudes of consumers toward purchasing items from urban agriculture. Nonetheless, despite the limited market and inadequate assistance based on geography, the sector primarily operates at a subsistence level (Mandefro, 2010).

Alemayehu (2010) states that the city administration offers seed for particular vegetable varieties, other extension services, and training for selling goods with a little amount of rent. To strengthen urban agriculture practices, the Addis Ababa city administration established the fundamental procedure of the Urban Agriculture Extension Service.

Roughly 44% of farmers in Addis Ababa did not receive any technical assistance from staff members who worked in agricultural extension, according to Thomas (2013).Urban production in Addis Ababa is underperforming because of numerous difficult factors. Prior to the Addis Ababa urban agriculture policy and strategy being ratified, policies and strategies served as the sector's primary bottlenecks. Numerous academics and researchers concur that there are numerous, widespread, and system-specific issues with urban agriculture today. According to Mandefro (2010) and Alemayehu (2010), the primary obstacles to preurban agriculture are the plan for city expansion, the progressive degradation and fragmentation of land, and the erratic rainfall. Furthermore, Mandefro (2010) found in his research that

the main obstacles facing vegetable farmers in Addis Ababa are limited access to improved crop technology, inadequate attention paid to maximizing crop and vegetable productivity, pollution of water sources, shortage of seed supply, and warehouse space.

2.10. Conceptual Framework of the study

The general concepts of the research are attempted to be depicted on the following framework (figure 2.1).It specifically shows how certain impact indicator variables such as the amount of household livelihood asset, reduction in vulnerability, and improvement in livelihood are impacted by urban agriculture practices, either directly or indirectly. Urban agriculture is household livelihood strategy that significantly contributes to the enhancement of the standard of living in urban communities. Livelihood is any activity that households engage in to grow their assets for subsistence.

Household livelihood assets, including financial, human, social, physical, and environmental capital, is beneficial to urban communities. These are known as household livelihood assets. Financial capital is the potential advantages of UA that gives to a chance for people to own strength physical capitals.

Human capital is the state of an individuals or population's health and education. Social capital describes the networks and associations that people join, develop, and can use to drive supports that are essential to their livelihoods. Physical capital is assets obtained via economic productivity, such as machinery and tools, as well as improvements to land like terracing or irrigation canals. Water, land, and trees are examples of biological and environmental resources that make up natural capital.

Urban agriculture brings livelihood improvements for urban community through income generation, food security, poverty alleviation and reducing vulnerability by wisely exploited the opportunities and challenging the constraints. Opportunities those blessing things that has a positive contributions for urban agriculture development.

Constraints are those hindering factors that are negatively affect urban farmers to produce more products. Urban agriculture has direct and indirect relationship with livelihood improvement of urban community. The more engaged in urban agriculture results increase livelihood assets. Improved livelihood assets brought poverty alleviation through food security, more income generation and this led to livelihood improvements.

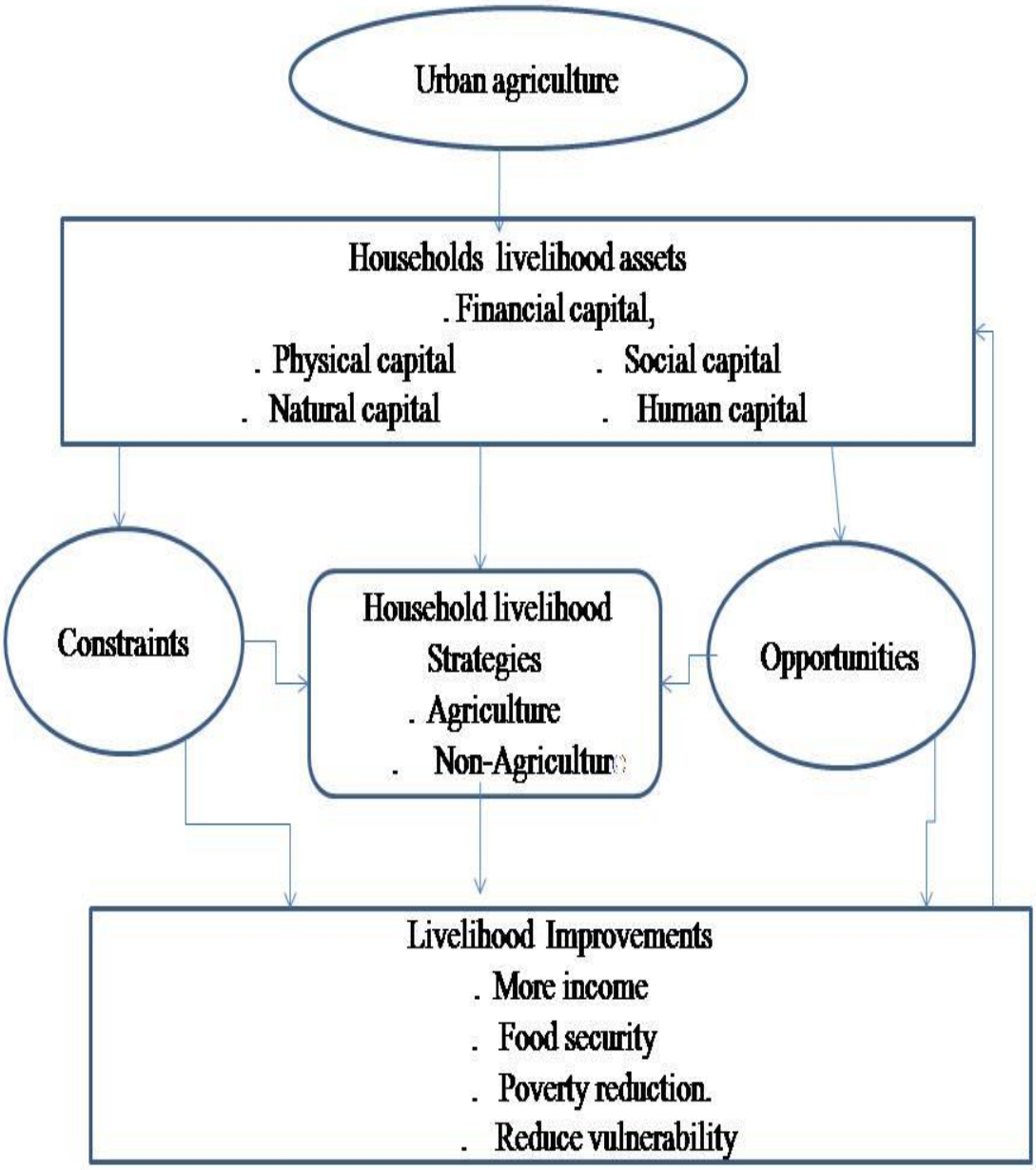

Figure 2.1: Conceptual frame work of the study

Source: (Own survey, 2024)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. DISCRIBTIONS OF THE STUDY AREA

Addis Ababa (Berera) served as the main seat of the kings of Ethiopia from Emperor David I (1380-1413) to Emperor Labne Dingle (1508-1540). It was a very rich district with churches and palaces. Aba Daniel, an Ethiopian monk who visited many foreign countries in the 16th century, wrote about Wereb as being in Jerusalem. At the same time, the Arab scholar who saw Wereb along with his army, who reported the war of Gurni Ahmad, called Wereb the earthly paradise of the Abyssinians (amba, 2018).

Emperor Menelik II of Ethiopia established Addis Ababa as the country's capital in 1886.Entoto was the seat of Emperor Menelik II before Addis Ababa was established in 1884.The foundation for Addis Ababa's establishment was laid by this occasion (Giorghis and Gerard, 2007).On the other hand, Emperor Menelik II's movement to Addis Ababa was to reestablishing the old empire because of the existence of historic legacy and buildings in Entoto that are anticipated to be constructed by Showan rulers. Situated in the heart of Ethiopia, Addis Ababa is the cultural melting pot & emblem of small Ethiopia. It serves as Ethiopia's capital city and it is the headquarters of the Africa Union, with 140 years old. According to Erena et al. (2017), Addis Ababa is a self-administrative city whose council is accountable to both the federal government and the city's voters. It has 11 sub cities.

Kolfe Keraniyo sub city has 11woredas in new sub city structure. It found in the western parts of Addis Ababa. Urban agriculture is practiced in all woredas of the sub city. Among the 11woredasof Kolfe Kereniyo sub city woreda3, 4, and 7 were selected purposively as sampling population. The reason to select woreda3, 4 and 7 was the researcher assumed that significant urban agriculture practice are observed in these woredas.

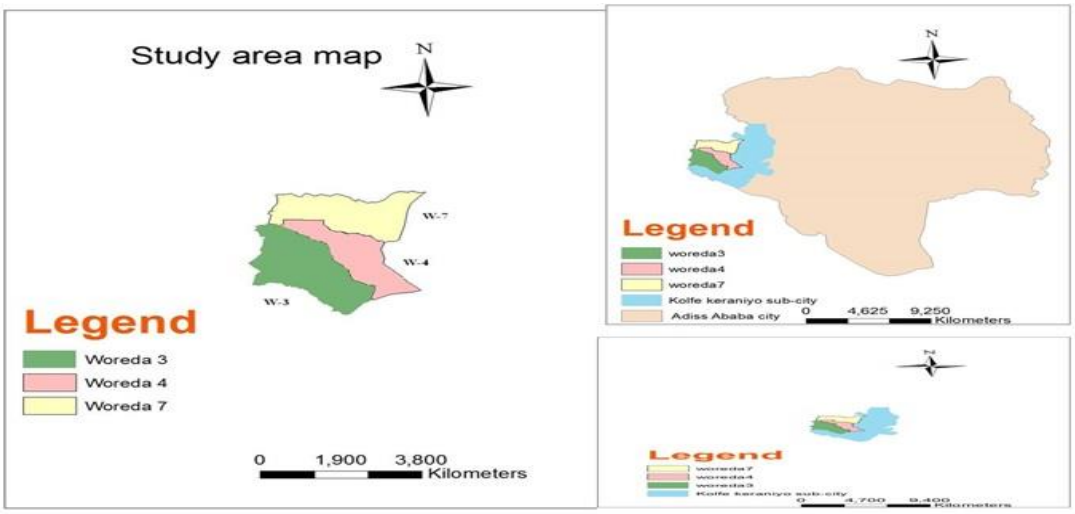

Figure 3.1.A map of the research area

Source: (Arc GIs version 10.5)

3.1.1. Location

Geographically situated at 9o2'N latitude and 38o45'E longitude, Addis Ababa is Ethiopia's governmental capital as well as the country's most significant business and cultural hub (Erena D, 2017).The study area is in Addis Ababa, more precisely in the Kolfe Kereniyo sub city, which is part of woreda 03, 04, and 7.It shares boundaries with Addis Ketema sub city in the north, Lideta sub city in the east, Nifas Silk Lafto sub city in the south, and Sheger city in the west. It is situated in the western regions of Addis Ababa.One of Addis Ababa's eleven recently created subcities is Kolfe Keranyo. The Kolfe Keraniyo sub city urban agricultural office (2023) explained that Kolfe Kereniyo sub city contains 11woredas, a total estimated size of 6400 hectares, and a total population of 546,219 people. The sub city is located 10 kilometers from the city center.

3.1.2. Demographic characteristics

Addis Ababa, the capital and primate city of Ethiopia, is thought to have a population of approximately 4 million, making it one of the fastest growing cities in Africa. At more than ten times the size of Gondar, the country's second largest urban city, Addis Ababa accounts for approximately 25% of Ethiopia's total urban population (MoUDHC, 2015).In Addis Ababa, the average life expectancy at birth is 65.7 years

(CSA 2013).As Africa's diplomatic hub, Addis Ababa is home to several international institutions, including the United Nations Economic Commission for Africa (UNECA) and the headquarters of the African Union (Erena et al, 2017).

Table3.1: The demographic data of Kolfe Keranyo sub-city

Category	Level	Frequency	Percent
Sex	Male	260,859	47.75
	Female	285,368	52.25
	Total	546,219	100
Age	0-14 years	140,432	25.70
	15-30 years	133,864	24.50
	31-40 years	149,543	27.37
	41-50 years	58,987	10.79
	51-60 years	52,987	9.75
	>60 years	10,408	1.90
	Total	546,219	100

Source :(CSA, 2007)

3.1.3. Social characteristics and Settlement pattern

According to CSA (2015), 24% of Addis Ababa's population lives below the poverty level. According to AABOFED (2015), 26.1% of people in Addis Ababa were food insecure. In 2015, 48.7% of Addis Abeba's population was considered susceptible to poverty, according to OPHI. The estimated value of the Gini coefficient of real consumption per capita for the year 2015, as reported by IDPR (2015), indicates that income inequality for that year was 0.32.

According to Ephrem (2008), settlement is defined as any place where people live close together like house hamlet, village, town, and city. Settlement could be rural or urban and settlements can be differing from one another due to their shape they do have. There are four major settlement patterns in Ethiopia namely dispersed, nucleated, linear and homestead.

3.1.4. Drainage, Topography and Climate

Addis Ababa occupies 540 square kilometers of territory, all of which are surrounded by mountain ranges. At 3,200 meters above sea level, Entoto is the highest point in Addis Ababa. According to Erena et al. (2017), Addis Ababa is now considered one of the world's high altitude capital cities.

The climate of Addis Ababa is highland subtropical. The average yearly temperature is 23 oC for the maximum and 11 oC for the minimum. June to early October is when the primary rainy season occurs. During the main rainy season, it receives an average of 1200 mm (80%) of the annual rainfall (NMA, 2017).

3.1.5. Distributions of soil and plants

Life is supported by soil that is made up of air, water, organic, and inorganic materials. The earth's soil, or geosphere, serves four vital purposes: it modifies the atmosphere of the planet, provides water for plant growth, and serves as a habitat for many organisms. The lithosphere, hydrosphere, atmosphere, and biosphere are all in contact with the exosphere. Ethiopia's soils are mostly composed of sedimentary, metamorphic, and volcanic rocks. However, erosion and other processes may cause them to be transferred and deposited somewhere other than their original location. Nitsols, vertisols, cambisols, desert soil, and alluvial soils are the main soil types found in Ethiopia including Addis Ababa (Ephrem, 2008).

Ethiopia's first botanic garden opened its doors recently in the Gulele sub city with the goal of becoming a global hub for research, teaching, and conservation. This is situated on 705 hectares of land in the Addis Ababa metropolitan area of Ethiopia. The Gulele Botanic Garden (GBG), the first of its sort in the Horn of Africa, especially in Ethiopia, was formally founded on July 7, 2010, by Addis Ababa city decree 18/2005, according to Carl M. Reeder (2013).It is anticipated that the conservation area will attract tourists and be a financially viable substitute for urban growth.

3.2. METHODS AND DESIGN OF THE RESEARCH

3.2.1 Research Design

Since research design makes numerous research procedures easier, it is regarded as the cornerstone of any study. In terms of choosing a research design, Kothari (2006) pointed out that that to describe appropriately and accurately the situations descriptive research design were appropriate.

3.2.2. Research Approach

This study used a mixed strategy, combining qualitative and quantitative methods. Using a mixed method as a quality control criterion allows the study to compare the outcomes and gather varying perspectives on the research subject (Kothari, 2006).By cross-checking the data, the approach increases the validity and dependability of the findings and helps the researcher connect disparate ideas.

3.3. Sampling methods and target population

Addis Ababa has 11 sub cities. Kolfe Keraniyo sub city has been purposefully chosen as a study area out of all of these. Kolfe Keraniyo sub city has 11woredas in new sub city structure. Urban agriculture is practiced in all woredas of the sub city. Among the 11woredasof Kolfe Kereniyo sub city woreda3, 4, and 7 were selected purposively as sampling population. The reason for using purposive sampling is to include participants who have direct understanding about the topic under the study. The reason to select woreda3, 4 and 7 was the researcher assumed that significant urban agriculture practice are observed in these woredas. The target populations are the total numbers of urban agriculture beneficiaries of 3266in the three woredas of Kolfe Keranyo sub city.

3.3.1. Sample Size Determination

To randomly select respondents from the list of all urban agricultural recipients of poultry, livestock, and horticulture production, the researcher used a systematic random sample technique. Using Yamane's sampling formula (1967), the total sample size for sample actors was calculated. Because of the homogeneous nature of society and the luck of resources, the researcher utilized a 93% confidence level and 0.07 degrees of precision to estimate the sample size of the study area.

$$n = \frac{N}{1 + N(e)2}$$

Is the formula used to determine sample size with a 93% confidence level and 0.07 degrees of precision.

Where:

n - The required number of samples

N: Total population (the study's sample frame)

e-A sampling error with a confidence level of 7% (0.07).

The following calculation was used to get the total sample urban agriculture beneficiaries:

$$n(\text{urban agriculture beneficiaries }) = \frac{3266}{1 + 3266 * (0.07)2} = 192$$

192urban agriculture beneficiaries were taken as questionnaire respondents based on the above formula. The sample intervals of respondents were determined by the following formula:

Sample interval (n) = population size/sample size

$$sampleinterval(n) = \frac{3266}{192} = 17th$$

Therefore, the researcher randomly picked every17thpersons from the list. Therefore, probability proportional sampling was applied as follows:

$$ni = \frac{n(Ni)}{N}$$

Where ni-is required to collect a sample from every woreda

n -is required to take a total sample size

Ni -is the number of people in each woreda

N-is the entire population

The sample sizes for each woreda and form of urban agriculture activity were as follows.

Table 3.2: Distribution of the population and sample across the three woredas

types of UA	Woreda 3	Woreda 4	Woreda 7	Sum	Woreda3	Woreda 4	Woreda 7	Sum
Livestock	60	66	65	193	3	4	4	11
Poultry	444	741	419	1604	26	44	25	95
Crop production	854	69	546	1469	50	4	32	86
Total	1358	876	1030	3266	79	52	61	192

Source :(Woreda 3,4,&7 FUAO, 2023)

3.4. Data sources and Data Collecting Techniques

3.4.1. Data Sources

Both primary and secondary data sources were employed by the researcher. Through direct field observations, survey questionnaires, and interviews with the chosen urban agriculture beneficiaries and office expert's firsthand information were collected. Published & unpublished literature, articles, reports from cities, sub-cities, and woredas, journals, books, and the internet were the sources of secondary data.

3.4.2. Methods of Data Collections

The spatial and non-spatial data were collected through GIS and Google earth application, direct observation, key informant interview, and survey questionnaires.

3.4.2.1. Survey Questionnaires

In order to gather quantitative and qualitative data directly relevant to the research aims and topics, the researcher designed both open-ended and closed-ended questionnaires. Depending on the respondents' first language, questionnaire were translated into Amharic

3.4.2.2. Key informants Interview

Key informants were subjected to in-depth interviews utilizing semi-structured questions.

3.4.2.3. Observations

Field and office-based physical observations of the research region were carried out since direct observation offers the real picture of the ground and the workplace layout. Using audio-visual and other tools, the observation was centered on gathering first-hand knowledge about the contribution of urban agriculture to the study area's urban community's improved standard of living. It was carried out three times.

3.5. Methods of Data Analysis and Interpretation

Once the data collection process was the researcher corrected, coded, organized, and tallied the information. The researcher carefully examined the completed questionnaires upon collecting them from each respondent, as the goal of editing is to identify errors and omissions (Kothari, 2006).Following the completion of the questionnaire coding process, the researcher utilized the statistical package for social scientists (SPSS) software to enter the data and create a variety of tables, graphs, pie charts, and percentages that were used to highlight the diverse findings of the study. Urban agriculture's temporal and spatial trends were examined using a GIS and the Google Earth program. With the use of pertinent Microsoft Excel tools, graphs and charts were created. Using graphs and percentages as well as other descriptive statistics, the data were examined both statistically and qualitatively. This approach was chosen because it made it possible to describe, summarize, and present both quantitative and qualitative data.

CHAPTER FOUR

RESULTS ANALYSIS AND INTERPRETATION

4.1. Introduction

The research results were provided in this chapter. There were five sections to it. The respondents' general demographic information was provided in the first section. The research area's urban agriculture patterns, both spatial and temporal, were examined. In the third part investigated the physical, natural, social, economic and human role of UA in improving the livelihood of community. The fourth portion looked at the study area's urban agriculture's constraints. The study area's opportunities for urban agriculture was explored in the fifth section

4.2. The respondents' demographic attributes

The respondent's age, housing status, education level, religion, marital status, and status as the head of the family were among the demographic details. Descriptive statistics were used, mainly frequency analysis, to examine the respondents' demographic features.

Table 4.1 shows that of the 192 respondents, 101 (52.6%)were age group 41 to 60 years , 81 (42.2%) were age group 21 to 40 years , and 10 (5.2%) were age group above 61 years .This indicates that most of the farmers in the research area belonged to the older age group and had solid farming experience in urban settings.

Table 4.1: Age of the respondents

Age		
Age group	Frequency	%
21-40	81	42.2
41-60	101	52.6
>61	10	5.2
Total	192	100.0

Source: Own survey, 2024

Table 4.2 displays the distribution of marital status for the 192 respondents in the study area. Of these, 120 were married (62.5%), 44 were single (22.9%), 15 were divorced (7.8%), and 13 were windowed (6.8%).As a result, married people made up the bulk of study participants.

Table 4.2: Marital status of the respondents

Marital Status		
	Frequency	%
Married	120	62.5
Un Married	44	22.9
Divorced	15	7.8
Widowed	13	6.8
Total	192	100.0

Source: Own survey, 2024

Table 4.3 shows from the 192 sample families that were interviewed, 115 (59.9%) had a male head of family and 77 (40.1%) had a female head of household. This finding suggests that while male-headed households were the predominant household type in the research area, women's participation in urban agriculture was moderate.

Table: 4.3: Household head type

Household type		
Frequency		%
Male Headed	115	59.9
Female Headed	77	40.1
Total	192	100.0

Source: Own survey, 2024

According to study results shown in Table 4.4, many urban farmer household heads in all selected study areas had only completed elementary school, or Grades 1 to 8, accounting for 87 (45.3%), and 40 (20.8%), farmers attended secondary school. Farmers who could read and write made up 34 (17.7%), while those with degrees and above accounted for 24 (12.5%) and those with diplomas, for 7(3.6%).This suggests that the vast majority of the respondents to the interviews have very little formal education.

Table 4.4: Education level of respondents

Level of education		
	Frequency	%
Read and Write	34	17.7
Elementary education	87	45.3
Secondary education	40	20.8
Diploma	7	3.6
Degree and above	24	12.5
Total	192	100.0

Source: Own survey, 2024

Table 4.5, discussed the majority of respondents in all research areas were followers of the orthodox Christian religion, accounting for 138 (71.9%), Muslims for 44 (22.9%), and protestants for 10 (5.2%).This indicates that orthodox Christians made up the majority of the research area's interview respondents.

Table 4.5: Religion status of respondents

Religion status of respondents		
	Frequency	%
Orthodox	138	71.9
Muslim	44	22.9
Protestant	10	5.2
Total	192	100.0

Source: Own survey, 2024

Table 4.6, revealed that the majority of the households, 93 (48.4%), reported that their income is derived from a combination of sources or mixed. 53 (27.6%) of respondents said that their income is derived solely from urban agriculture, and 46 (24%) of them said that they practiced UA as refreshment and that their income is derived from non-agricultural activities. According to this survey, urban farmers in Addis Ababa were taking on extra jobs to supplement their income and pay for their living expenses.

Table 4.6: Distribution of respondent's source of income in the study area

Source of incomes of respondents		
	Frequency	%
From agricultural activity	53	27.6
From non-agricultural activity	46	24.0
Mixed	93	48.4
Total	192	100.0

Source: Own survey, 2024

Table 4.7 displays 119 (62%) had private house, 46(24%) were live in rent and 27(14.1%) were live in condominium. This shows that most of the respondents who are practiced urban agriculture in the study area lived in their own house and this opportunity helps them to practice urban agriculture confidently.

Table 4.7: Distribution of respondent's housing status in the study area

Housing Status		
	Frequency	%
Rent	46	24.0
Private	119	62.0
Condominium	27	14.1
Total	192	100.0

Source: Own survey, 2024

4.3. Examining urban agriculture's temporal and spatial tendencies

The researcher employed two methods to analyze the temporal and spatial patterns of urban agriculture. The first method involved using a GIS program, and the second involved interviewing respondents through the use of structured questionnaires in order to analyze the spatial and temporal tendency of urban agriculture in the research region.

4.3.1. Use of GIS technologies to analyze the temporal and spatial patterns of urban agriculture

Figure 4.1 shows that the map was prepared by GIs expert by taking information from Google image of the study area in 2004 and 2023separately. From the figure the green color represented urban agriculture land and the rest indicates that other practice. Based on research findings in 2004G.C, 216.25 hectares of the study region's total land area were utilized for agricultural purposes. Where as in 2023 from the total area of study only84.4hectars of land was used for urban agriculture. This indicates that throughout the previous 20 years, 132.15 hectares (61%) of the study area's land was utilized for purposes other than agriculture. As a result, the researcher came to the conclusion that there had been a significant decline in the spatial-temporal tendency of urban agriculture and land had been converted to non-agricultural land or used for other purposes.

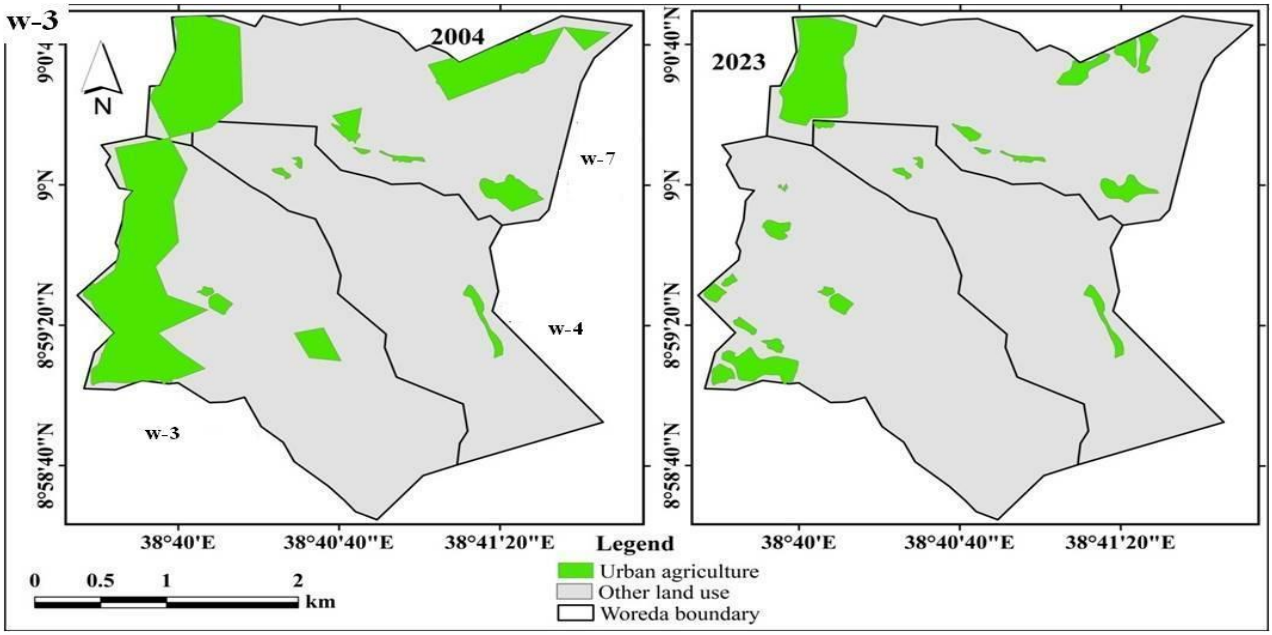

Figure 4.1 Urban agriculture's temporal and spatial changes from 2004 to 2023.

Source: Own survey, 2024

4.3.2. Respondent distributions regarding the temporal and spatial trends of urban agriculture

4.3.2.1. Urban agricultural producers' experiences

Table 4.8 demonstrates that of the overall 192 sample respondents 71(37%) of were engaged in urban agriculture from 6 to 10years, 63(32.8%) were practiced urban agriculture above 16years, 50(26%) had 11 to 15 years' experience in urban agriculture and 8(4.2%) had less than 5years experience in the field. This suggested most of the urban farmers engaged in urban agriculture for an extended duration of time.

Table 4.8: Farmers' experiences with urban agriculture

How long have you been engaged in urban agriculture?		
Year	Frequency	%
<5years	8	4.2
6-10years	71	37.0
11-15years	50	26.0
≥16years	63	32.8
Total	192	100.0

Source: Own survey, 2024

4.3.2.2. Land holding size of respondents during the started times of urban agriculture

As elaborated in Table 4.9 half of 108(56.3%) respondents had less than 1hetars of land, 37(19.3%) of them had 1.1 to 2hectares of land, 34(17.7%) of them had 2.1 to 3hectars of land and 13(6.8%) of them had 3.1 to 4 hectares of lands while they were started urban agriculture . This demonstrates that when they began urban agriculture in the research area, the majority of respondents possessed less than one hectare of land.

Table 4.9: Respondents' land holding size at the beginning of urban agriculture

How many hector of land did you have while you were started urban agriculture?		
Land in hectare	Frequency	%
<1hectare	108	56.3
1.1 to 2 hectare	37	19.3
2.1 to 3 hectare	34	17.7
3.1 to 4 hectare	13	6.8
Total	192	100.0

Source: Own survey, 2024

4.3.2.3. Land possessed by respondents at the time the data were collected

Table 4.10 indicated that among the total respondents 52(27.1%) were respond the land holding size of farmers who engaged in urban agriculture had 0.0501 to 0.1hactars of land,42(21.9%) of them had 0.10001 to 0.5 hectares of land,32(16.7%)of them had ,0.5001to0.9999hactars of land ,32(16.7%) of them had less than 0.05hactars of land,28(14.6%) of them had 1to1.99hectars of land and 6(3.1%)them had above 2hactars of land . It also indicates that the majority of the urban farmers in the research area cultivated between 0.0501 and 0.1 hectares. According to researcher field observations, as a result, the majority of urban farmers particularly those who raise chickens and produce dairy perform urban agriculture in homestead areas on incredibly small parcels of land. In general, the study's urban agricultural land reveals diminishing spatial and temporal trends, posing challenges for urban farmers seeking to achieve large-scale production.

Table 4.10: Land holding size of respondents during the study times

How many hectors of land do you have right now?		
Land in hectare	Frequency	%
<0.05 hectare	32	16.7
0.0501 to 0.1 hectare	52	27.1
0.10001 to 0.5hetare	42	21.9
0.5001 to 0.9999hectar	32	16.7
1 to 1.99 hectare	28	14.6
>2hectare	6	3.1
Total	192	100.0

Source: Own survey, 2024

4.3.2.4: Land held by urban farmers during the last 20 years

Table 4.11 showed that 157 respondents (81.8%) reported that the size of land holding had fallen during the previous 20 years, while 35 respondents (18.2%) indicated that it had remained steady. It indicate that the landholding size drastically decreased as a result of urban expansion, and that it stayed the same or decreased because of poor transportation, and remote location from the city center.The study area's urban farmers' current and future lives are severely hampered by this significant change in land usage. Consequently, the researcher came to the conclusion that there had been a significant decline in the study area's urban agriculture's temporal and spatial trends.

Table 4.11. Land owned by urban farmers during the last twenty years

What happened to the size of land holding over the last decades?		
Changes	Frequency	%
Decrease	157	81.8
No change	35	18.2
Total	192	100.0

Source: Own survey, 2024

4.3.2.5: The reason decreasing land holding size over the last two decade

As indicated from Table 4.12 the major 152(79.2%) respondents were reported the reason decreasing urban farmers land holding size in the study area were urban expansion,25(13%) of them were responded large household size and 15(7.8%)of them responded decline quality of land. The researcher concluded that the major reason urban farmers land holding size decreased in the last two decade were urban expansions.

Table 4.12. The reason decreasing land holding size over the last two decade

What are the reason decreasing land holding size over the last two decade		Frequency	%
Reasons	Large house hold size	25	13.0
	Urban expansion	152	79.2
	Decline quality of land	15	7.8
	Total	192	100

Source: Own survey, 2024

4.4. Human, Scio- economic, physical and Natural role of urban agriculture in improving the livelihood of urban community

4.4.1. Human capital

As discussed in Table4.13 reported from 120(62.5%) respondents were get knowledge at a high level, and 72 (37.5%) moderate level, while practicing urban agriculture. The researcher concluded that urban agriculture could highly improve the knowledge of urban community. The second outcome of practicing urban agriculture is that urban agriculture helps to get skill training. As illustrated from table 4.13 half of 101(52.6%) respondents get at training at medium 61 (31.8%) get training at high and 30 (15.6%) get training at low level while practicing urban agriculture. This shows that practicing urban agriculture helps to get skill training at moderate level. The third benefits of practicing urban agriculture is improving education. The result revealed that 88(45.8%), 80(41.7%) and 24(12.5%) of the respondents improved their education at high, medium, low level respectively. The researcher concluded that engaging in urban agriculture improved the education status of urban farmers at higher level. As identified from the results 143(74.5%) and 49(25.5%) of the respondents were reported urban agriculture improved their health at, high and, medium level respectively. It indicates that practicing urban agriculture helps to improve the health of urban farmers at higher level.

Table 4.13: Role of Urban agriculture's to improve human capitals of urban communities'

Human capital	Respondents		Percent
Does your urban agriculture helps to get Knowledge?	High	120	62.5
	Medium	72	37.5
	Total	192	100
Does your urban agriculture help to get skill training?	High	61	31.8
	Medium	101	52.6
	Low	30	15.6
	Total	192	100
Does your urban agriculture improve your education?	High	88	45.8
	Medium	80	41.7
	Low	24	12.5
	Total	192	100
Does your urban agriculture improve your health?	High	143	74.5
	Medium	49	25.5
	Total	192	100

Source: Own survey, 2024

4.4. 2. Socio-Economic capital

As discussed in Table4.14 among the total respondents half of them 99(51.6%) were responded urban agriculture improved the participations of Mehaber and Edire at medium level, 66(34.4%) of them at higher level, and 27 (14.1%) of them were at a low level. This indicated that urban agriculture could improve Edire and Mehaber participation at moderate level. The second social benefits of engaged in urban agriculture is improved Ekube participations. In this study, 86(44.8%) of the respondents improved at high level, 60(31.3%) of respondents improved at medium level, and 46 (24%) at low (insignificant) level. This suggested that urban agriculture might improve Ekube cultures in the research region. Increasing friendship is the third social benefit of urban agriculture. 120 respondents (62.5%), 38 respondents (19.8%), and 34 respondents (17.7%) in this survey reported improving their friendship at a high, medium, and low level, respectively. This suggested that urban agriculture could increase the degree of friendships among urban communities.

Table 4.14 demonstrated that, out of each respondent, the inquiry regarding urban agriculture's effect on income generation were 83(43.2%), 81 (42.2%) and 28 (14.6%) of respondents answered at a high, moderate level, and low level respectively. The researcher concluded that farmers who participated in urban agriculture could able to generate more income from their urban agriculture. The second outcome of practicing urban agriculture was creating job opportunity for their households. In this study, as reported by 25(13%), 117 (60.9%), 50 (26%) of respondents urban agriculture created job opportunity, at high, medium and low level respectively. This implied that urban agriculture had a potential to create job opportunity at moderate level .The third benefits of practicing urban agriculture was improving saving culture. In this study, 128(66.7%), 44(22.9%) and 20(10.4%) of the respondents improved their saving culture at medium, low and high level respectively. this implied that urban agriculture improved the saving cultures of urban farmers at moderate level. Improving credit service was the fourth economic benefit of urban farms activities. 125 respondents (65.1%), 61 respondents (31.8%), and 6 respondents (3.1%) in this survey obtained credit service at a low, medium, and high level, respectively. This implied that there was sever problem to provided credit service for urban farmers. Therefore practicing urban agriculture was challenged by luck of credit service in the study area. Therefore urban agriculture could improve the economic capitals of the urban community specifically income generation at higher level, job creation and saving culture at moderate level.

Table 4.14: Role of Urban agriculture's to enhancing socio-economic capitals of urban communities'

Economic capital		Respondents	Percent
Does your urban agriculture generate more income?	High	83	43.2
	Medium	81	42.2
	Low	28	14.6
	Total	192	100
Does your urban agriculture create job opportunity?	High	25	13
	Medium	117	60.9
	Low	50	26
	Total	192	100
Does your urban agriculture improve your saving culture?	High	20	10.4
	Medium	128	66.7
	Low	44	22.9
	Total	192	100
Does your urban agriculture improve your credit service?	High	6	3.1
	Medium	61	31.8
	Low	125	65.1
	Total	192	100
Social capital		Respondents	Percent
	High	66	34.4
	Medium	99	51.6
Does your urban agriculture improve Edire and Mehaber participation?	Low	27	14.1
	Total	192	100
	High	86	44.8
Does your urban agriculture improve Ekube participation?	Medium	60	31.3
	Low	46	24
	Total	192	100
	High	120	62.5
Does your urban agriculture improve your friendship?	Medium	38	19.8
	Low	34	17.7
	Total	192	100

Source: Own survey, 2024

4.4. 3.Physical and natural capital

Table 4.15 reveals that of the 192 respondents in total, 110 (57.3%) reported high levels of food consumption from urban agriculture, 60 (31.25%) reported moderate levels, and 22 (11.45%) reported

low levels. This suggested that urban agriculture has a significant impact on the improved degree of food security and coverage for the urban people. Gaining hen, cow, oxen, crop, or animal products are the second benefit of urban agriculture. Out of those who practiced urban agriculture, 103 (53.64%) responded at the high level, 70 (36.5%) at the moderate level, and 19 (9.89%) at the low level. This indicates that urban farming highly improved the life of urban community by helping them to generate their own property. The third benefits of engaged urban agriculture helps to build store, home, school and buying car. In this study, 77(40.17%), 69(35.9%) and 46(24%) of the respondents answered medium, low and high level respectively. this implied that practicing urban agriculture gives moderate opportunity to buy luxurious properties. Table 4.15 explained that the majority of respondents 89(46.35%) reported that urban agriculture has a potential to get natural capital at high level, 72(37.51%) of respondents get at moderate level, and 31 (14.1%) of them were at a low level. The researcher concluded that urban agriculture could improve the ownership of natural capitals of urban community at higher level.

Table 4.15: Role of Urban agriculture's to enhancing physical and natural capitals

Physical capital		Respondents	Percent
Does your UA cover yearly food consumption of your household?	High	110	57.3
	Medium	60	31.25
	Low	22	11.45
	Total	192	100
Does your UA help to get hen/cow/oxen/ crop or animal products?	High	103	53.64
	Medium	70	36.5
	Low	19	9.89
	Total	192	100
Does your urban agriculture help to build store, home, and cars?	High	46	24
	Medium	77	40.1
	Low	69	35.9
	Total	192	100
Natural capital	Respondents		Percent
	High	89	46.35
Does your urban agriculture help to get Land and water?	Medium	72	37.51
	Low	31	16.14
	Total	192	100

Source: Own survey, 2024

Figure 4.2: Outstanding beneficiaries of urban agriculture in the research district

Source: Own field observation, 2024

4.4. 4.Urban agriculture reduce vulnerability

The study's findings indicate that urban farming offers a variety of advantage to the studied areas. It is essential to the generation of money, the creation of jobs, the enhancement of natural and physical capital, the provision of food, and the development of social and human capital. Figure 4.3.revealed that the majority of respondent 113(58.9%) answered urban agriculture reduced vulnerability at higher level, 42(21.9%) at medium level and 37(19.3%) of them responded at lower level. This concluded that via earning money, supplying food, enhancing health, and enhancing education, urban agriculture contributes positively to household well-being and lowers the vulnerability of urban populations.

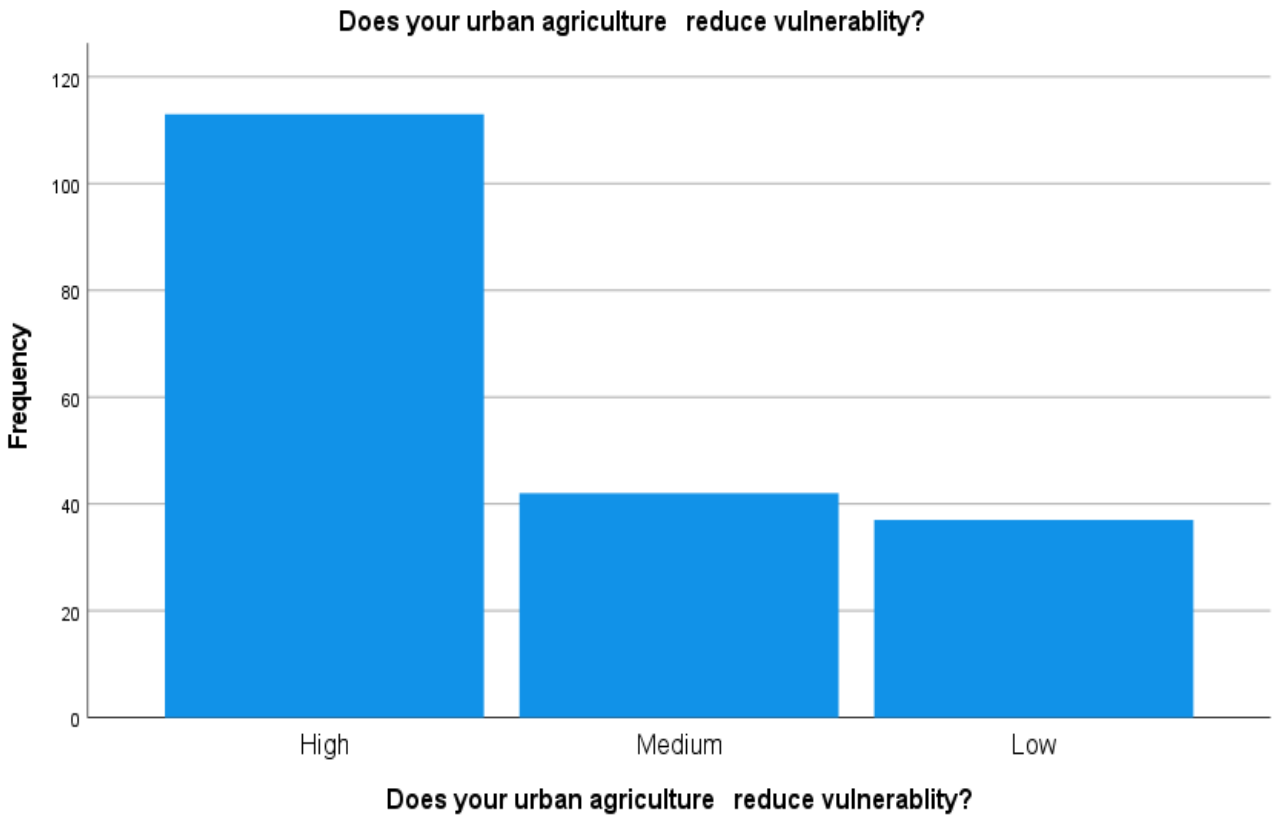

Figure 4.3: Urban agriculture and vulnerability of urban community

Source: Own survey, 2024

4.4. 5.Urban agriculture improved the livelihood of urban community

According to the research findings, urban agriculture mostly improves quality of life in urban communities by lowering the community's exposure to various causes. The majority of respondents, as illustrated in Table 4.16, 90 (46.9%) said that urban agriculture improved their livelihood at a higher level, 71 (37%) reported it improved at a medium level, and 31 (16.1%) said it improved at a lower level. This result demonstrated that urban agriculture has a significant role in enhancing the standard of living for urban communities in addition to providing food and income.

Table 4.16.the livelihood improvements of urban community

Does your urban agriculture improved your livelihood?		
Level	Frequency	Percent
High	90	46.9
Medium	71	37.0
Low	31	16.1
Total	192	100.0

Source: Own survey, 2024

4.4. 6. Comparison of household income in pre- and post-urban agriculture practice

Table 4.17 shows that the enhancements to urban farmers' standard of living were assessed by a comparison of their monthly income both before and after in their participation in urban agriculture. The majority of households have rising income levels. Before engaging in urban agriculture, 42 (22%) of the interviewees stated that they had received less money than ETB 2000. However, this quantity has since greatly improved.

As of this results 13 (7%) of the respondents had incomes below ETB 2000. The proportion of respondents who earned between 2001 and ETB3000 prior to engaging in urban agriculture was 69 (36%), but this number dropped to 25 (13%) after engaging in urban agriculture. This indicates that a greater number of households with lower incomes moved into the middle income range and that their standard of living improved as a result of engaging in urban agriculture. Out of the 192 respondents, 33

(17%) had monthly income between ETB 3001 and 4000 before practicing urban agriculture; this number decreased to 21 (11%) after engaging in urban agriculture. This indicates that the respondents' monthly income levels increased from middle to higher level after engaging in urban agriculture.

Before engaging in urban agriculture, 25 (13%) reported monthly incomes between 4001 and 5000; after engaging in urban agriculture, that figure increased to 44 respondents (23%). After participating in urban agriculture, respondents in the ETB 5001-6000 income range saw a remarkable shift, going from 17% before practicing urban agriculture to 30% post-urban agriculture. Comparably, as Table 4.17 makes abundantly evident, the revenue categories above ETB 6001 were 9 (5%), rising to 31 (16%) when urban agriculture was involved. Therefore the researcher concluded that urban agriculture could improve the livelihoods of urban community by improve their monthly income. Increments in income allows the urban farmers to improve their physical and economic capitals.

Table 17. Household income in prior and after urban agriculture practice compared.

Range of household income				
Monthly income	Prior to doing urban agriculture		After engaging UA	
	Frequency	%	Frequency	%
≤2000	42	22	13	7
2001-3000	69	36	25	13
3001-4000	33	17	21	11
4001-5000	25	13	44	23
5001-6000	14	7	58	30
≥6001	9	5	31	16
Total	192	100	192	100

Source: Own survey, 2024

4.5. Examining the constraints in urban agriculture

4.5.1. Shortage of fodder and input, land and water

The majority of respondents 122 (63.54%) in Table 4.18 stated that they faced difficulties due to a lack of inputs and fodder for their hens and cows. Of the total respondents, 53 (27.61%) reported that they faced difficulties with middle level. The remaining 17 (8.85%) did not experience these issues. Therefore, the main obstacles faced by urban farmers, especially those who produce dairy cows and chickens in the research place, were a lack of fodder and other inputs. Table 4.18 explained 137 (71.35%) reported they faced water shortages. The lack of water did not affect the remaining 55 respondents, or 28.65% of the total. Thus, we might conclude that the main obstacle to practicing urban farming in study district is the shortage of water.

Table 4.18 expressed 108(56.25%), 65(33.86%) and 19(9.94%) of the respondents were affected by shortage of land to practiced urban agriculture at high, medium and lower level respectively. This implied that shortage of land was the major problems to practice urban agriculture in Addis Ababa.

Table 18. Shortage of fodder, input, water and land

Do you have shortage of input and fodder for your urban agriculture?	High	122	63.54
	Medium	53	27.61
	Low	17	8.85
	Total	192	100
Do you have shortage of water for your urban agriculture?	Yes	137	71.35
	No	55	28.65
Did you face shortage of land for your urban agriculture?	Medium	65	33.86
	Low	19	9.94
	Total	192	100

Source: Own survey, 2024

4.5.2. Lack of treatment, seeds, soil fertility, waste disposal site, disease and pests

Table 4.19 revealed106 (55.21%) of were responded that were not affected by shortage of treatment and specialized seeds. The remaining 86(44.79%) of the respondents were mentioned their farming

activates were affected by Lack of treatment and specialized seeds. The finding identifies Lack of treatment and specialized seeds were not problem for urban farmers in the research place. Table4.19 elaborated that from the total 192respondents 137(71.35%) of the respondents were responded there was no problems of soil fertility. The remaining 55(28.65%) respondents reported that luck of soil fertility were the major problems .This indicates that luck of soil fertility was not the major problems in the study area. Table 4.19 explained that from the total 192 respondents 118(61.46%) of the respondents were responded there were not faced by the problems. The remaining 74(38.54%) of the respondents were answered insufficient place to dispose waste were major problem for their urban agriculture. This problems were mostly mentioned by urban farmer those who practiced poultry and livestock farming. As we understand from the finding shortage of waste disposal place were not the major problems all respondents particularly it was the major problems of poultry and livestock farmers.

As discussed in Table 4.19 among the total respondents 105(54.69%), 71(36.98%) and 16(8.33%) of the respondents were answered their urban agriculture affected by disease and pests at high, lower and medium level respectively. This problem were mostly mentioned by horticulture and poultry farmers. Therefore disease and pests were the major problems of urban farmers.

Table 19: Lack of treatment, seeds, soil fertility, waste disposal site, disease and pests

Did you face challenges of disease and pests for your urban agriculture?	High	105	54.69
	Medium	16	8.33
	Low	71	36.98
	Total	192	100
Lack of treatment and provisions of specialized seeds for your urban agriculture?	Yes	86	44.79
	No	106	55.21
	Total	192	100
Are you facing Problem of soil fertility for your urban agriculture?	Yes	55	28.65
	No	137	71.35
	Total	192	100
Do you have Shortage of waste disposal site for your urban agriculture?	Yes	74	38.54
	No	118	61.46
	Total	192	100
Did you face challenges of disease and pests for your urban agriculture?	High	105	54.69
	Medium	16	8.33
	Low	71	36.98
	Total	192	100

Source: Own survey, 2024

4.5.3. Lack of credit and initial capital

Table 4.20 explained that among the total 192 respondents 101(52.60%) of respondents affected by luck of credit at high level, 62(32.30%) of respondents were not affected by credit service, and 29 (15.1%) of them were challenged at medium level. This implied that practicing urban agriculture were challenged by access to credit service at higher level. As explained in Table4.20 reported by 117(60.94%) respondents getting initial capital to start urban agriculture is much challenged problems in study place. The remaining 75(39.06%) of the respondents were mentioned there were not challenged by the problems to start agriculture. The result indicates that affording initial capital were the obstacles for beginners to join the sectors.

Table 20: Lack of credit and initial capital

Did you challenged by luck of credit service for your urban agriculture?	High	101	52.60
	Medium	29	15.10
	Low	62	32.30
	Total	192	100
Did you face a challenge by initial capital to start urban agriculture?	Yes	117	60.94
	No	75	39.06
	Total	192	100

Source: Own survey, 2024

Box 4.5.3. Lack of credit and initial capital

KII Woreda 7

An in-depth interview with KII revealed that he now does not need a credit to augment his farm because he has sufficient finances to oversee his poultry project. Although he says he would eventually want credit services, he is wary of the bureaucracy of credit institutions. He brought up the remarks made by our Prime Minister Abiy Ahmed in a speech to the legislature: "Loan services can be accessed by farmers

and livestock owners using their property as collateral." Nevertheless, this speech remained in the parliament building and was never put into practice.

She submitted a business plan outlining her idea to use credit services for high-volume milk production, but she was not able to obtain the 400,000 ETB loan that she had requested because of collateral problems and the need for an 80,000 ETB down payment. If I have 80,000 ETB, why do I still need credit? Why don't I use my birr to run my business? During the in-depth interview, she exhibits emotional volatility. This demonstrates how inconvenient the lending institution's credit requirements and bureaucratic processes are for urban farmers.

4.5.4. Difficulty to make fence and Theft

As reveled from Table 4.16 the finding identifying that 124(64.58%) of the respondents were responded there was no problems of theft in study area. The remaining 68(35.42%) of the respondents most of them from horticulture farmers were mentioned their farming activates were affected by theft. Therefore theft were not the major problem for urban farmer.

Table 4.16 explained that among the total 192 respondents 116(60.42%) of respondents were challenged by constricting fence for their crop and animal shelters in the study area. The remaining 76(39.58%) of respondents were not affected by this problems. This implied that farmers who practiced urban agriculture were challenged by woreda security personnel's to construct fences to protect their crops and herds from wild animals and thefts.

Table 21: Difficulty to make fence and Theft

Does your urban agriculture exposed for theft?	Yes	68	35.42
	No	124	64.58
	Total	192	100
Does your urban agriculture faced difficulty to make fence?	Yes	116	60.42
	No	76	39.58

Source: Own survey, 2024

Figure 4.4.Some practice of livestock rearing that were affected by shortage of fodder

Source: Own field observation, 2024

4.6. Examining prospects for agriculture in urban area.

4.6.1. Market and transport availability

Table 4.22 shows that as reported by 157 (81.77 %) respondents availability of market and transport were sufficient in the study area. Only 35 (18.23%) of responses were affected by the challenges of market availability and transport accessibility. The result indicates that high availability of market and transport encourages urban farmers to produce more products and provided their product to the market on time in the study area.

4.6.2. Availability show room and storage area

Table 4.22 shows that from the total 192 respondents, about 108(56.25%) of respondents responded the availability of show room and storage area were sufficient in the study area. Only 84 (43.75%) of responses were affected by the challenges of show room and storage area. The finding identifies enough show room, storage area and market availabilities are good prospects for new comers to join the sectors.

4.6.3. Skill training and assistance

As explained in table 4.22 reported by 153(79.69%) respondents they were got skill training and assistance and 39(20.31%) of the respondents were reported didn't get skill training and assistance. As shown in the result accessibility of training and assistance were the best possibilities for participants to join the sector.

4.6.4. Provisions of fertilizer and special seeds

As indicated in table4.22 reported by 96(50%), 73(38.02%) and 23(11.98%) respondents were answered they were afforded provisions of fertilizer and special seeds for their urban agriculture from their words at high, medium and lower level respectively. This shows that most of urban agriculture practitioners got fertilizer and special seed at higher and medium level in the study area without any difficulty. Therefore the researcher concluded that accessing important seed and fertilizers were another prospects for urban farmer.

4.6.5. Government assistant in material and policies

Table 4.22 shows that 127(66.15%), 36(18.75%) and 29(15.10%) of the respondents were responded government support for their urban agriculture from their woredas at high, medium and lower level

respectively. In addition to the result most of urban agriculture practitioners mentioned that currently urban agriculture get a higher recognition and greater support from government policy. As identified in the research results Government support in input and policy were the basic possibilities for the sector.

4.6.6. Treatment for animal and crops

As discussed in table 4. 22 among the total 192 respondents 82(42.71%), 59(30.73%) and 51(26.56%) of the respondents were answered they were got treatment for their animals and crops from their woredas at high, medium and lower level respectively. This indicates that most of urban agriculture practitioners got treatment for their crops and animals at higher and medium level without any difficulty.

Box 4.6.6: Treatment for animal and crops

KII Woreda 3

In addition to the survey results the respondents mentioned that "government assigned plant and animal science experts at woreda level to delivered free treatment service for urban farmers those who are practiced horticulture and livestock rearing. They added "when our animals got healthy problems and our horticultures affected by different disease we immediately call to the woreda animal and plant experts and they quickly came and give treatment freely for our animals and crop .But sometimes the woreda experts didn't give quick response because of luck of input and other factors. In this regard we would like to thanks our government who arranged this free service".

Therefore the researcher concluded that getting free treatments for animals and crops the other good possibilities of the sectors.

4.6.7. Provisions of land

As discussed in table 4.22 of the total 121(63.02%) of the respondents responded government provided land which was located along road side, riverside's and open space for the purpose of urban agriculture .the remaining 71(36.98%)of respondents answered they didn't get land from government This implied that the government provided land for most of urban.

Box 4.6.7 Provisions of land

KII Woreda 7

To support results the respondents mentioned that "one government officials told for horticulture farmers we don't want to see any bar land in our sub city's let you plough and covered with different horticulture, and let us produce more crops and secured our food consumptions by ourselves. The official add "Let me tell you one fact currently Addis Ababa covered her egg and milk demand from urban agriculture that produced within the city so We are successful at poultry and cow for milk at city level. Let us do it again in horticulture and other urban agriculture sector. '

Therefore the researcher concluded that government gives attention for urban agriculture and provided land for urban farmers were good things for farmers while practicing urban farming in the study area.

4.6.8. Appreciation and reward from stakeholders

Table4.22 indicates that 148(77.08%) of the respondents were responded were got appreciation and reward from stakeholder. The remaining 44(22.92%) were not get appreciation and reward from the stakeholders.

Box 4.6.8: Appreciation and reward from stakeholders

KII Woreda 4

To support the survey result "they got appreciation from the community and government body's staring from woreda to city level in different sectors. for example environmental protection office, farmers and urban agriculture office, micro and small enterprise office, different woreda, sub city and city higher officials' supervise our urban agriculture at least once amount. The other farmer said that "I got certificate from my woreda and sub city. I am a model farmer. My primary reward is securing our household consumption and generating income from our urban agricultures .To be frank I can't sleep a healthy night without observing my horticulture. Urban agriculture for me is not only a means of getting income rather it is our hospital who refresh and treat our sick mind while we are busy with extra duties.

"Therefore the researcher concluded that urban farmers got a huge appreciation and reward from the community and government body .Appreciation and reword were one of the major opportunities and encouragement for farmers.

Table 4. 22 Opportunities of practicing urban agriculture

Analyze the prospects of the sector			
Questionnaires	Respondents		Percent
Do you have Availability of market and transport for your urban agriculture?	Yes	157	81.77
	No	35	18.23
	Total	192	100
Do you have Availability of show room and storage area for your urban agriculture products	Yes	108	56.25
	No	84	43.75
	Total	192	100
Did you get Skill training and assistance for your urban agriculture?	Yes	153	79.69
	No	39	20.31
	Total	192	100
Have you got fertilizer and special seeds for your urban agriculture?	High	96	50
	Medium	73	38.02
	Low	23	11.98
	Total	192	100
Dose government supports in policy and inputs for your urban agriculture?	High	127	66.15
	Medium	36	18.75
	Low	29	15.10
	Total	192	100
Did you get Treatment for animal and crops from your woreda?	High	82	42.71
	Medium	59	30.73
	Low	51	26.56
	Total	192	100
Did you get landfor your urban agriculture from your woreda?	Yes	121	63.02
	No	71	36.98
	Total	192	100
Do you get credit service for your urban agriculture?	Yes	65	33.85
	No	127	66.15
	Total	192	100
Did you get appreciation or reward from stakeholders while you are practicing urban agriculture?	Yes	148	77.08
	No	44	22.92
	Total	192	100

Source: Own survey, 2024

Figure 4.5.Urban agricultural best practices

Source: Own field observation, 2024

Chapter Five

Conclusion and Recommendations

5.1. Conclusion

The aim of the research was to assess the role of urban agriculture in improving the livelihood of urban community in Addis Ababa. This thesis explores the spatial and temporal trends, constraint and opportunities of urban agriculture in the research area. According to the research finding urban farmers had long period of experience and involving in extra jobs to generate more income and to afford their family expense. The finding identifies most of the urban farmers had 0.0501to 0.10 hectares of farmland. Due to scarcity of land in the research districts most urban farmers especially diary and chicken farming takes place in small area around their backyards.

In the research area, there was a significant decline in the spatial-temporal trends of urban agriculture, and the land was converted from agricultural to non-agricultural use. According to the finding of the research urban expansions have been the main cause of the decline in the land holding size of urban farmers over the past 20 years. The study area's urban farmers' current and future lives are severely hampered by this significant change in land usage.

The study findings clarify that there is an increase in monthly income when comparing prior to and post-urban agriculture periods. By increasing their monthly income, urban farmers are able to better their means of subsistence and meet their fundamental necessities.

According to the results urban farmers who strengthen their livelihood assets such as their economic, physical, social, natural, and human capitals reduce vulnerability and enhance their standard of living.

This study identifies the main constraints faced by urban farmers, including a lack of inputs and fodder, especially for those who raise dairy cows and poultry, building fences to keep wild animals and thieves away from crops and herds, a lack of water, especially for crop production, challenges obtaining credit, a lack of land, disease and pests, poor soil fertility, a lack of means of disposal for waste, difficulties with treatment and specialized seeds, challenges affording initial capital, and theft.

Whereas high availability of market and transport, availability of show room and storage area, skill training and assistance, access to special seed and fertilizers, treatment of crops and animals ,appreciation and reward from the community and government ,government policy and skill training programs, provisions of land and show room, credit service were opportunities for urban farmers while practicing urban agriculture.

5.2. Recommendations

City dwellers are forced to participate in urban agriculture in their homestead areas in order to meet their food demands, generate income, and generally enhance their standard of living due to the existing state of urbanization and market inflation. The researcher makes the following recommendations in light of the study's findings.

- ✓ Spatiotemporal trends of urban agriculture in the study area were dramatically shrinking. Therefore the government should be showed and provide other options like vertical farming and more economically viable and productive plant and animal species for urban farmers.
- ✓ The researchers advise microfinance institutions to collaborate with urban agriculture beneficiaries to offer unique credit services that are backed by policy in order to overcome the challenge of providing credit services to urban farmers and their initial capital problems.
- ✓ It would be preferable if the government established a link between urban farmers and the business sector, non-governmental organizations, and national and international markets.
- ✓ Additionally, the sector will function more effectively if innovative urban agricultural technologies, such as roof and vertical farming, are fostered.
- ✓ To solve shortage of water problems the researcher recommended the government should be introduce the methods of reuse of waste water for urban agriculture
- ✓ The sector will also perform better if the farmers use ground water and deep irrigations by supporting them in skill training to produce more economically productive animal and water efficient crop species.
- ✓ To solve the problems of fodder for hen and cows link them with other urban farmers and subsidized them to provide animal fodders at lower cost.
- ✓ In addition to this creating awareness for the farmers to produce more alternative forage crops for their livestock in their farm lands and open spaces.
- ✓ The government ought to minimize interrupted and seasonal supports while establishing a well-structured and organized system to help urban farmers in a sustainable manner in order to improve their standard of living.

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Appendix: I

Research Questionnaires

Addis Ababa University

Collage of Social Sciences

Department of Geography and Enviromental Studies

Code1: horticulture code2: livestock code3: poultry code4: mixed code of the respondent_____date_____

Purpose: Questionnaires prepared to collect information for the research that will be completed for the second degree (MA) .The thesis will conducted "role of urban agriculture in improving the livelihood of urban communityAddis Ababa."

Dear participants, without your good cooperation and participation, this study will not achieve its intended purpose and goal. The questionnaire is only for the purpose of education.

I: General information

1. Household Region ____sub-city___ __woreda_____

2. Age: 1. < 20 2.21-40 3.41-60 4.>61

3. Sexual orientation:1.Male 2.Female

4. Status of marriage:1. Married 2. Single 3. Divorced 4. Widowed 5. Other

5. Household type: 1.Male headed 2.Female headed

6. Belief :1.Orthodox 2.Muslim 3.Protestant 4.Catholic 5.others

7. Education: 1.Read and write 2.Elementary 3. Secondary 4.Diploma 5.above degree

8. Primary source of income for the household:1. From farming activities 2. From non-farming activities 3. Workers 4. Light manual labor 5. Other sources

10. Housing status: 1.Rent 2.Private 3.Condominum 4.Others

II: Spatial and temporal trends of urban agriculture practice

11. Do you practice urban farming?1. Absolutely 2. No

12. What motivates you to practice urban agriculture?1. for personal use 2. For promotional purposes; 3. A combination of the two

13. Do you have land resource ? 1. Yes 2.No

14. If the answer to question 13. Is "yes," how do you obtain land for urban agriculture?

1. Inherited from parent 2.purchesd 3.through land distribution 4.share cropping 5.others

15. Which urban agriculture practices are the most prevalent on your farm?1. Plant cultivation 2. Poultry 3. Livestock 4. Bee 5. Mixed

16. Could you tell us what kind of horticulture you are involved in?1. Trees 2. Roots and tubers; 3. Cereal crops; 4. Fruit trees

17. Could you tell us the kind of livestock you raise?1. Cows for the production of milk2. Fattening oxen; 3. Goats and sheep; 4. Beekeeping; 5. A combination of all

18. If you are raising chickens, could you tell us which kind they are?1. Egg from chickens 2. Meat from chickens3. Both

19. Where do you engage in urban farming?1. by a river 2. Backyarder other open space; 3. Home garden area 4. Roadside 5. Urban periphery regions6. Other

20. For what duration have you been involved in urban farming?

1<5 year 2.6–10 years 3.11–15 years 4.>16 years

21. How many hector of land did you have when you started urban agriculture? Please specify_____

22. How many hectors of land do you have right now? Please specify_____

23. Do you have sufficient access to land for your urban farming?1. Yes 2. No

24. Over the past few decades, what has changed to the amount of land held?1. Diminish2. Same 3. Growth If your response decrease what are the reason 1.large HH size 2.urban expansion 3.decline quality of soil 4 othersWhat are the reasons if your reaction has diminished?1. A sizable household2. Urban expansions 3. Deteriorating land quality4.other

III: Role of urban agriculture in improving physical, natural, human, social and economic livelihood of urban community

Economic capital	Respondents	
Does your urban agriculture generate more income?	High	
	Medium	
	Low	
	Total	
Does your urban agriculture create job opportunity?	High	
	Medium	
	Low	
	Total	
Does your urban agriculture improve your saving culture?	High	
	Medium	
	Low	
	Total	
Does your urban agriculture improve your credit service?	High	
	Medium	
	Low	
	Total	
Physical capital	Respondents	
	High	

Does your UA cover yearly food consumption of your household?	Medium	
	Low	
	Total	
Does your UA help to get hen/cow/oxen/ crop or animal products?	High	
	Medium	
	Low	
	Total	
Does your urban agriculture help to build store, home, and car school?	High	
	Medium	
	Low	
	Total	
Human capital	Respondents	
	High	
Does your urban agriculture helps to get Knowledge?	Medium	
	Total	
Does your urban agriculture help to get skill training?	High	
	Medium	
	Low	
	Total	
Does your urban agriculture improve your education?	High	
	Medium	
	Low	
	Total	
Does your urban agriculture improve your health?	High	
	Medium	
	Total	
Social capital	Respondents	
	High	
Does your urban agriculture improve Edere and Mehaber participation?	Medium	
	Low	
	Total	
Does your urban agriculture improve Ekube participation?	High	
	Medium	
	Low	
	Total	
Does your urban agriculture improve your friendship?	High	
	Medium	
	Low	

	Total	
Natural capital	Respondents	
	High	
Does your urban agriculture help to get Land/ spring water/ trees?	Medium	
	Low	
	Total	

25. What was your range of monthly income before involving in UA: 1. <2000birr 2.2001-3000birr 3.3001-4000birr 4.4001-5000 5.5001-6000 6.above 6001birr

IV: Constraints and opportunities of urban agriculture

What are the constraints encountered while doing urban agriculture?		
	Respondents	
Do you have shortage of input and fodder for your urban agriculture?	High	
	Medium	
	Low	
	Total	
Does your urban agriculture faced difficulty to make fence?	Yes	
	No	
	Total	
Do you have shortage of water for your urban agriculture?	Yes	
	No	
	Total	
Did you challenged by luck of credit service for your urban agriculture?	High	
	Medium	
	Low	
	Total	
Did you face shortage of land for your urban agriculture?	Hig h	
	Medium	
	Low	
	Total	
Did you face challenges of disease and pests for your urban agriculture?	High	
	Medium	
	Low	
	Total	
Did you face a challenge by initial capital to start urban agriculture?	Yes	
	No	
	Total	
	Yes	

Lack of treatment and provisions of specialized seeds for your urban agriculture?	No	
	Total	
Are you facing Problem of soil fertility for your urban agriculture?	Yes	
	No	
	Total	
Do you have Shortage of waste disposal site for your urban agriculture?	Yes	
	No	
	Total	
Does your urban agriculture exposed for theft?	Yes	
	No	
	Total	
Do you have luck of skill training and assistance?	Yes	
	No	
	Total	

V. Opportunities

Prospects of UA			
Questionnaires		respondents	Per cent
Do you have Availability of market and transport for your urban agriculture?	Yes		
	No		
	Total		
Do you have Availability of show room and storage area for your urban agriculture products	Yes		
	No		
	Total		
Did you get Skill training and assistance for your urban agriculture?	Yes		
	No		
	Total		
Have you got fertilizer and special seeds for your urban agriculture?	High		
	Medium		
	Low		
	Total		
Dose government supports in policy and inputs for your urban agriculture?	High		
	Medium		
	Low		

	Total		
Did you get Treatment for animal and crops from your woreda?	High		
	Medium		
	Low		
	Total		
Did you get land for your urban agriculture from your woreda?	Yes		
	No		
	Total		
Do you get credit service for your urban agriculture?	Yes		
	No		
	Total		
Did you get appreciation or reward from stakeholders while you are practicing urban agriculture?	Yes		
	No		
	Total		

PART II. CHECK LIST FOR KEY INFORMANT INTERVIEW

Background information

1. Address: Region ____sub-city _____woreda _____position ----------Age ----------sex----------

2. Status of marriage:1. Married 2. Single 3. Divorced 4. Widowed 5. Other

3. Educational status: 1.diploma 2.degree 3.masters 4. PhD

4. What are the main sources of livelihood for the house hold in your sub city/ woreda?

5. What proportion of people in your woreda/sub city is engaged in farming?

6. Is there enough land available to engage in urban agriculture in your woreda sub city? 1. Yes 2.no

7. What happened to the size of land holding of beneficiaries over the last decades? 1. Decrease 2.no change 3.increase

If your response decrease what are the reason 1.large house hold size 2.urban expansion 3.decline quality of land 4 other

8. What is the dominantly practiced urban agriculture in your woreda/sub city? Crop/livestock/ poultry

Start from very important one

9. How do you assess urban agriculture's contribution to enhancing the standard of living in urban areas?
10. What are the major livelihood improvements that beneficiaries gain while practicing urban agriculture in your sub city/woreda? Start from the most important and put it in order?

•Physical capital (animal and crop product, house, store, building, car, small dam----

•Natural capital (land, tree, bee keeping)-----

•Social capital (Edere, Ekube Maheber)-------

•Human capital (training, knowledge, health, education) ------

•Economic capital (income, credit, saving, creating job)--------

11. What are the major opportunities beneficiaries gain ?

12. The major constraints beneficiaries repeatedly asked ?

13. Measures taken to tackle the problems ----------

PART III.CHECK LIST

I. The surroundings

1.Kolfe keraniyo sub city area in km2----------

2. Land use : building area----------forest land----------resedent area--------

Agricultural land------water body----------other---------

3. Land form

II. Population

1. Total population of kolfe keraniyo sub city : male----------female----------total----------

2. Settlement pattern 1.scattered settlement 2.densly settlement

3. Ethnicity: 1.Oromo2.Amhara 3.Gurage4.Tigre 5.others

4. Religion: 1.Orthodox 2.Muslim 3.Protestant -------4.other----------

III. Economy

1. Primary source of income: 1. cultivating 2. activities outside of farming

2. Dominant crop----

3. Size and type of livestock----------

4. Infrastructure :health -------school----------bank---------post office-------transport----------water supply----electricity----------market access----------