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STATUS OF URBAN AGRICULTURE IN LEMIKURA SUB CITY, THE CASE OF WOREDA 02, ADDIS ABABA

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Title

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DECLARATION

I declare that this thesis is my original work and has not been presented in any other university/institution for consideration of any certification. This Thesis has been complemented by referenced sources properly acknowledged.

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Acronyms

CSA	Central Statistical Agency
EPA	Environmental Protection Authority
FAO	Food and Agriculture Organization
IPCC	Intergovernmental Panel on Climate Change
ND	Newcastle disease
NMA	National Meteorology Agency
UN	United Nations
UNAP	Urban Agriculture Productivity
UNDP	United Nations Development Program
UNEP	United Nations Environment Programme
UNFPA	United Nations Population Fund Agency

ABSTRACT

Many developing nations including Ethiopia are struggling to meet the food demands of their citizens particularly in urban areas. Consequently, this study aimed to assess Status of Urban Agriculture in Lemikura Sub City, the Case of Woreda 02, Addis Ababa. A descriptive survey design was utilized as the most suitable research method. Data for this research was collected from both primary and secondary sources, employing qualitative and quantitative methods. Primary data were gathered from using questionnaire, focus group discussion, key informant interviews, and 86 sample household surveys. The qualitative data were transcribed and analyzed through narrative methods, while the quantitative data were organized and summarized using percentages, frequencies and graphs. The study's key finding shows that the majority of urban farmers in the study area are middle-aged groups who are economically active. The majority of urban agriculture practitioners are carried out in the open spaces that surround Lemikura Sub City. The most significant vegetables grown in the study area are carrot, tomato, onion, lettuce, chard (kosta), cabbage, and potatoes. Potatoes and carrots are used for household consumption than are intended for domestic sales. In the study area, dairy and poultry production primarily serve commercial purposes, contributing significantly to household income. The income earning status of household can matter to meet basic necessities of family members. Urban agriculture must therefore be accepted as a valid form of urban economic activity. Thus it needs integrate in sustainable urban development, food security improvement, public health enhancement and urban environmental preservation. According to the result of this study shortage of land, lack of adequate water and lack of adequate extension service are the major challenges in urban agriculture in the study area. So, providing land, extension service and adequate water to urban farmers should be given the highest priority in the study area. In general urban agriculture activity in the study area is affected by many challenges, which were not fully covered by the researcher. Thus it requires further research to determine its growth and sustainability.

Key Words: *Urban agriculture, vegetable, households.*

CHAPTR ONE

1. INTRODUCTION

1. Background of the Study

Horizontal urban expansion in less advanced countries is faster rate than in advanced nations, attaining 4 in step within one year. Rapid urbanization in less industrialized countries is basically caused by rural-to-urban movement of the population. The rural to urban movement of the population in developing countries in caused by many pull factors in urban areas such as advancement in science and technology, economic development, and in general better standard of living. Rapid population growth in rural areas is another factor (CSA, 2022).

Ethiopia is characterized by one of the least countries in the world in urban development. Ethiopia is one of the least citified countries in the world. Its urban population accounts only 22.7 of the total population of the country. The countries urban growth rate is at a figure of 4.64% (UN-habitat, 2017). As the rate of urbanization increases in developing countries, the biggest challenge for the future will be unable to feed the fastest growing population. At this time developing nations substantially are not suitable to give sufficient food for their citizens. Thus, urban agriculture activities are more important in large cities. These agricultural activities are not only for household consumption, but also it can serve as source of income. In developing countries, the activity of urban agriculture production is popular, but has not given as a survival strategy- rather as a relaxation activity (Nazev, 2019).

The productivity of urban agriculture is receiving increasing recognition from prominent global organizations, because of this it has been linked as a significant contributor to the pursuit of the United Nations' sustainable development pretensions. Despite a rise in urban agriculture productivity enterprise within developing nations, the practice continues to be largely overlooked and deficiently incorporated into urban planning fabrics. In discrepancy, urban agriculture practitioners frequently face challenges primarily due to inadequate capital to meet their essential requirements. Many researchers output proved that developed countries shows more interest in urban agriculture activity as a counter to mass consumption, however there is a notable lack of awareness regarding the urban agricultural practices prevalent in less advanced regions. This gap

is also evident in the existing literature, particularly concerning community-based urban agriculture, as noted by Marco (2018).

Addis Ababa, which is the capital of Ethiopia and a pivotal diplomatic hub in Africa, reflects wealthy records of 130 years of improvement that shapes its modern civilization with economic, social and political characteristics. As a primate city positioned on the core of the nation, it serves as a confluence point for people those come from different regional administration within the country. The metropolis's developmental demanding situations largely stem from its unstructured beginnings and enlargement, impractical development strategies, inadequate implementation talents, and pervasive poverty, which have brought about continual issues throughout nearly all facets of urban lifestyles (Abnet *et al*, 2017).

Many researchers pointed out that, the productivity of urban agriculture within cities has become a topic of increasing interest. The current government also gave great attention to the sector in line with this its significance has grown alongside the rising rates of urbanization in the country. However, urban agriculture is currently insufficient to meet the food demands of the population, serving instead as a crucial livelihood strategy for numerous impoverished households. This practice effectively addresses the needs of urban residents in densely populated areas and acts as a vital survival mechanism for economically disadvantaged urbanites (UN-habitat, 2017).

Many researchers pointed out that, the productivity of urban agriculture within cities has become pressing issue to avert the problem of urban poverty. The current government also gave great attention to the sector in line with this its significance has grown alongside the rising rates of urbanization in the country. Still, urban agriculture production is inadequate to meet the food demands of the population, serving rather as a pivotal livelihood strategy for multitudinous impoverished homes. When the practice of urban agriculture activity is effectively addressed then, it can acts as a vital survival medium for economically underprivileged requirements of urban residents. Despite its eventuality, urban agriculture still didn’t get great attention from development agencies and non-governmental organizations (Nazev, 2019). There is also a notable insufficiency in exploration, pressing critical need for this sector from different institutions (Nazev, 2019). Urban agriculture production stands as a critical food source for urban areas. Accordingly, this thesis was concentrated on assessment of urban agriculture production in *Lemi-kura sub*-city of Addis Ababa.

2. Statement of the Problem

In old civilizations, agriculture regarded as the fundamental business-related activity attended inside urban centers. However, with the advent of industrialization, the significance of non-agricultural pursuits within cities began to increase. Consequently, agricultural practices transitioned to areas outside urban boundaries. The swift pace of urbanization and global

migration has given rise to numerous urban challenges, including elevated unemployment rates, inadequate food supply, escalating urban poverty, and heightened pollution levels. The economic, social, and environmental issues stemming from rapid urbanization, migration from rural to urban areas, high unemployment, and urban poverty have prompted a revival of agricultural practices within urban contexts. This emerging phenomenon is referred to as urban agriculture (Duchemin *et al,* 2022).

Global urban population growth has a substantial impact on food demand and increases food insecurity, especially in less advanced countries. This problem is particularly noticeable in some parts of Africa, where food insecurity is continues to be a critical concern. Sub-Saharan African cities are experiencing remarkable growth, with an annual increase of approximately 5 percent (Saghir & Santoro, 2018).

The primary challenges facing urban agriculture include establishing effective monitoring and control mechanisms across environmental, economic, and social dimensions, as well as recognizing urban agriculture as a sustainable element on a global scale. Furthermore, there is a need for a comprehensive analytical framework to enhance understanding of the interplay between urban agriculture and sustainability (Game & Primus, 2015).

Engaging in agriculture within urban settings can serve as a viable coping mechanism for the urban impoverished (Alemayehu *et al,* 2017). Urban agriculture plays a crucial role in supplying fruits and vegetables in numerous cities and towns across both developed and developing countries. Nevertheless, the initiatives taken by municipal authorities or relevant officials to enhance urban farming are often insufficient. Urbanization and agriculture are frequently perceived as conflicting pursuits that vie for costly urban land. Nonetheless, there remains a sizable portion of land that can be used for agriculture in urban settings. Backyard gardening is a fairly easy hobby that can be maintained by women or children, and it produces produce that can benefit households. (Alemayehu *et al,* 2017).

Different research scholars confirmed that, there hasn't been enough focus on the connection between urban agriculture and food security. According to Masuku *et al.* (2017), there hasn't been a sufficient evaluation of urban farming's. Thus, it is imperative to conduct an assessment of how urban agriculture affects food security with a particular emphasis. Many of the empty lots

in the study area many of which have not produced anything have been recognized, especially those near residential areas. Consequently, the purpose of this study is to assess the productivity of urban agriculture in the *Lemikura* sub-city.

1.3. Objectives of the study

1.3.1. General Objective of the Study

The overall objective of this study was to assess urban agriculture productivity in *Lemikura* sub city of Addis Ababa.

1.3.2. Specific Objectives of the Study

1. To assess the current status of urban agriculture in *Lemikura* sub city,
2. To analyze the contribution of urban agriculture on income and food security of urban households in *Lemikura* sub city,
3. To identify the opportunities and challenges of urban agriculture in *Lemikura* sub city.

1.4. Research Questions of the Study

1. How is the current status of urban agriculture in *Lemikura* sub city?
2. What does the contribution of urban agriculture on income and food security of urban households' in *Lemikura* sub city?
3. What are opportunities and constraints of urban agriculture practices in *Lemikura* sub city?

1.5. Significance of the Study

This research will serves as a documented resource for the towns and cities referenced for future investigations mainly for those who are interested to know information about urban agriculture. The outcomes of this study can greatly benefit researchers and development practitioners engaged with the dynamics of urban agriculture production. Additionally, it aids in comprehending the existing socioeconomic challenges associated with urban growth. The findings of this research will be crucial in offering practical information and foundational insights for urban planning professionals, decision-makers, urban administrators, researchers,

policymakers, both governmental and non-governmental organizations, academics, and other stakeholders aiming to address issues faced by peripheral farming communities.

1.6. Scope of the Study

Geographically, this study was limited to *Lemikura* sub city, which is located heavily adjacent to the city and is impacted by the process of horizontal urban expansion.

1.7 Limitation of the Study

Due to time and financial constraints, the scope of this study was restricted to evaluating the *Lemikura* sub city's urban agriculture production's current state, its impact on urban households' income and food security, and its opportunities and limitations.

1.8 Organization of the Thesis

The study was structured as follows: Chapter one discuss the introduction part, including the background of the study, statement of the problem, the significance, scope and objectives of the study. Chapter two literature reviews, chapter three discusses the methodology, including methods of data collection and analytical techniques used to analyze the data. Chapter four presents the socio-economic characteristics of the survey households. Chapter five presents, conclusion and recommendations of the study.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1. Concepts of Urban Agriculture

The idea of urban agriculture combines the two essential elements of agriculture and urban areas. Areas with a high population density and a varied mix of residents who may differ in terms of their educational attainment, religious beliefs, and ethnic backgrounds are referred to as "urban." These metropolitan environments frequently have more formal social control and intricate organizational structures (FAO, 2015).

On the other hand, agriculture is recognized as a fundamental economic activity, encompassing both the science and art of cultivation of crops and livestock management. It plays a crucial role in human society by supplying essential food resources for households, source of income and providing raw materials for various industries. Most importantly, agriculture serves as the primary source of livelihood for a significant portion of the global population (Berga *et al.*, 2014).

Therefore urban agriculture can be understood that agricultural activities of urban settlements mainly in engaged in important sectors including, horticulture, vegetables and root crops, livestock, feed and fodder or food for animals and milk production, aquaculture, forestry, fuel wood production, shade, fencing, windbreak trees, ornamental and medicinal plants etc. Those, agricultural goods produced in cities can be the cornerstones of many urban economies (Russo *et al*, 2014). Urban agriculture competes with other industries for labor, energy, water, and land in and around cities (Pribadi *et al*, 2015).

2.2. Trends of Urban Agriculture in the World

The practice of urban agriculture yields numerous positive impacts and externalities within urban and surrounding areas, benefiting residents who partake in its offerings. It presents an opportunity to enhance health, improve food supply and conditions, bolster the local economy, foster social integration, promote environmental sustainability, and optimize land use. However, the roles and potential of urban agriculture vary significantly across different countries. While urban agriculture can effectively address many challenges faced by urban environments, poor

practices may lead to adverse effects on human health and the environment (Belayneh and Addisu, 2021).

About six million urban residents in Northern Africa and the Middle East work off-farm and engage in small-scale horticultural and livestock production, specializing in fruits, vegetables, and poultry. Eleven million urban residents in South Asia engage in urban agriculture, which focuses on the intensive production of high-value, perishable commodities like fresh vegetables and milk. This industry is essential to improving food security in urban environments. About seven million people work in urban agriculture in various large towns and cities in East and Southeast Asia, specializing in the intensive production of high-value, perishable commodities (FAO, 2015).

In sub-Saharan Africa 10%, or around 11 million people urban residents is active in urban agriculture. Urban agricultural activity in this region is found to be very heterogeneous, ranging from small-scale, but most of the productions are capital intensive, market-oriented vegetable growing and dairy farming. They are practiced in part-time as well as subsistence farming by the urban poor (FAO, 2015).

2.3. Trends of Urban Agriculture in Ethiopia

Due to their faster rate of urbanization, many developing countries have recently focused a great deal of attention on urban agriculture production. Most urban agricultural production in Ethiopia is meant for domestic consumption caused by subsistence activity, while surplus is sold. The farm gate, neighborhood stores, community markets, middlemen, and supermarkets are the places where these goods are sold. While primarily fresh produce is sold, some items are packaged for retail, prepared and sold along the road side of the cities, or processed for personal use (Belayneh and Addisu, 2021).

In 2008, the Ethiopian government implemented measures aimed at enhancing food security for urban residents, particularly the impoverished. One of the strategies adopted by urban inhabitants has been to participate in urban farming. A significant segment of the urban population in Ethiopia relies more on rural farmers to meet their basic food requirements; meanwhile, the poor, elderly, and marginalized urban residents engage in urban agriculture to supplement their food supply and generate additional income (Yonas, 2011).

Urban agriculture represents a vital yet underutilized economic activity in Ethiopia. Currently, it serves as a part-time occupation for most urban farmers, who continue to employ traditional farming techniques similar to those used in rural areas, where both labor and land are relatively plentiful. Consequently, crop yields in urban agriculture in Ethiopia are significantly lower than those in rural agriculture, in contrast to experiences in other regions of the world. This untapped potential in Ethiopia is partly due to the absence of appropriate policy and legal frameworks governing urban agriculture (Tewodros, 2007).

A portion of Ethiopia's unrealized potential can be attributed to the lack of suitable legislative and policy frameworks for urban agriculture activity. Neither the National Urban Development Policy nor the nation's 1990s policy documents specifically address it. Furthermore, it is not clearly articulated within the most recent Agriculture Sector Policy and Investment Framework or in the last decades of five-year macroeconomic plans. There are two important problems with urban agriculture's lack of a policy and legal framework. As it competes with other urban land uses, like green spaces, parking lots, and playgrounds, it first affects the allocation and property rights concerning land designated for urban agricultural use (Tewodros, 2007).

2.4 Urban Agriculture in Addis Ababa

Urban agriculture production has a long-standing history in Addis Ababa, serving as a vital source of food and employment, particularly for the urban poor. In the city, agricultural activities are conducted in backyards, open areas surrounding residences, and along riverbanks, while peri-urban agriculture is prevalent in the urban peripheries. The primary products of urban agriculture in Addis Ababa include dairy items, poultry, milk products, cattle, beekeeping, vegetables, and mushrooms, whereas peri-urban areas focus more on crops, vegetables, and horticulture (Alemayehu, 2022).

The enduring practice of urban agriculture production is supported by various opportunities. The Ethiopian government, through the city’s trade and industry office, acknowledges urban agriculture in its urban development policy as a crucial factor in alleviating poverty among the urban poor by generating employment and supplying food to unemployed youth and low-income families. Nevertheless, urban agriculture has not garnered sufficient attention from either the federal government or the Addis Ababa city administration (Mandefro, 2010).

Researchers indicated that the Ministry of Agriculture and Rural Development (MoARD) does not regard urban agriculture as part of its responsibilities. Although land is a significant asset for urban agriculture, its availability is diminishing over time. Additionally, accessible water sources and open spaces near rivers present further opportunities for the cultivation of vegetables, crops, and livestock. The favorable climate of Addis Ababa and the consumer preference for locally produced agricultural goods also contribute to the potential of urban agriculture (Woldegerima *et al*., 2017).

The urban agriculture sector in Addis Ababa is significantly influenced by the core process and various non-governmental organizations (NGOs), which are crucial for sustaining and improving productivity. Despite these efforts, the sector primarily operates at a subsistence level, with limited market opportunities and inconsistent support that varies by location. The current city administration offers various forms of assistance, including facilitating training programs, low-rent sales spaces, seeds for specific vegetable varieties, and additional extension services. Furthermore, the establishment of input production centers, such as poultry multiplication facilities, urban agriculture demonstration centers for seedlings, and mushroom spawn laboratories, contributes positively to the growth of urban agricultural practices (Alemayehu, 2022).

To bolster urban agriculture activities, the city government has established the urban agriculture extension service core process, which operates from the city level down to the Kebele level. This initiative is complemented by the efforts of non-governmental development organizations. For instance, USAID provides support to urban farmers in Addis Ababa through training and credit facilities. Additionally, local NGOs such as ENDA and PICDO also play a vital role in supporting urban agricultural initiatives (Poulsen *et al.*, 2015).

Alemayehu (2010) asserts that there are many obstacles to agricultural production in cities, and the policies and strategies put in place have posed serious problems for the industry. The difficulties facing urban agriculture are both general and unique to individual urban agricultural systems, according to a large number of researchers and academics. Plans for urban expansion, land degradation, uneven rainfall patterns, and progressive land fragmentation are major problems affecting peri-urban agriculture (Mandefro, 2010). Moreover, a number of significant obstacles to agricultural advancement in these areas have been identified, including restricted

access to advanced crop technologies, the elimination of the input credit system, a lack of focus on the needs of peri-urban farmers in Addis Abeba to increase crop and vegetable yields, drawn-out procedures for obtaining fertilizer, a scarcity of animal feed, and a lack of knowledge about improved livestock management practices (Woldegerima et al. 2017).

The Urban Agriculture Bureau of the Addis Ababa has developed policies addressing various challenges, including water source pollution, seed supply shortages, and inadequate storage facilities, which are significant constraints for vegetable farmers. In terms of animal husbandry, challenges include feed supply and quality issues, costly and ineffective veterinary services combined with a high prevalence of diseases, a lack of dairy extension and training services, waste management difficulties, negative attitudes from kebele administrations, and market-related issues (Woldegerima *et al.*, 2017).

2.5 Urban Forestry

Urban forestry refers to the management of urban forests to maximize their contributions to the environmental, social, and economic health of urban communities. This practice is characterized by an integrated, interdisciplinary, participatory, and strategic methodology for planning and overseeing forests and trees within urban settings (EPA, 2011). It encompasses various activities such as assessment, planting, maintenance, preservation, and monitoring of urban forests, which can be applied at various scales, from individual trees to entire landscapes. Urban forestry includes all woodlands, clusters of trees, and solitary trees situated in urban and peri-urban regions; this encompasses forests, street trees, trees in parks and gardens, as well as trees in neglected areas, along with associated vegetation in locations where people reside (FAO, 2015).

Urban forests are an essential part of green infrastructure because they link the rural and urban areas, while reducing a city's environmental impact. All tree-related activities fall under the categories of urban and peri-urban agriculture and forestry (IPCC, 2013). In order to provide residents with benefits in terms of the economy, environment, and society, this integrated approach to urban and peri-urban forestry places a strong emphasis on the planting, maintenance, and management of trees in these areas (Smith, *et al.* 2015).

Eucalyptus trees were brought to Ethiopia around 1895, when Emperor Menelik II was in power. To be more specific, their presence in Addis Ababa has helped to alleviate pressure on the

remaining natural vegetation and meet the growing demand for wood for construction and fuel. Addis Ababa became the capital of Ethiopia and a center of diplomacy in Africa as a result of this introduction, which successfully reduced the scarcity of fuel wood. Currently, plantations made mostly of Eucalyptus trees make up about 98% of the city's forests. Only certain places are covered by natural forests, mostly it can be found on the grounds of embassies and churches. The forests located in the high ground areas play a vital role in providing essential environmental services to Addis Ababa, including watershed protection against erosion and landslides, as well as ensuring clean water and air, and offering recreational opportunities (Luis *et al,* 2010).

There are insufficient laws and policies pertaining to urban forestry protection in Addis Ababa. At present, the city lacks an urban forest policy, a forest law, and even a tree ordinance. Realizing the goals of urban forestry is made more difficult by the lack of effective policies and their execution. Since forests are not adequately protected from illicit logging and land conversion for alternative uses, especially in the Entoto hills, management is ineffective. Furthermore, there's no community involvement in the plantation initiatives being carried out (Luis *et al*, 2010).

Urban forests face many challenges as a result of unchecked urban growth as well as inadequate funding and maintenance. Urban forests have been demonstrated to promote a healthy environment when established, preserved, and restored strategically, but these forests are usually valued more for their aesthetic qualities than for their ecological roles. Urban forests are not given the priority they deserve because mayors, planners, and other decision-makers in the city frequently fail to recognize the enormous economic, social, and environmental benefits that these green spaces can provide (FAO, 2018).

2.6 Vegetables and Fruits

A diverse range of vegetable crops is cultivated by smallholder farmers across various agro-ecological zones in Ethiopia, primarily serving as a source of income and food. The scale of vegetable production varies significantly, from small-scale cultivation in backyards for personal consumption to extensive farming aimed at supplying domestic and local markets. Vegetables, being short-duration crops, can generate substantial income for farmers. The principal vegetable varieties grown include cabbage, Chinese cabbage, cauliflower, broccoli, pekoe, mustard greens,

tomatoes, eggplants, bell peppers, onions, leaf lettuce, yard-long beans, French black beans, cowpeas, papayas, cucumbers, sponge gourds, shallots, wax gourds, and chilies (Chou, 2011).

One of the most important commercial vegetables, the onion (Allium cepa) is tolerant of a broad range of climatic conditions. It does best in temperate regions; it stays away from extremes of heat, cold, or precipitation (Dawit, 2004). Up until the product is consumed, handling and choosing the right storage techniques for that particular cultivar are essential to preserving its quality. The annual production of onions is close to 35 million tons worldwide. However, crop productivity in Ethiopia remains low and inconsistent under local farming conditions, despite its significant advantages and potential. This is probably caused by a dearth of better crop varieties, a lack of varieties that are sufficiently adapted to different agro-ecological zones, insufficient inputs, a lack of appropriate agronomic practices, the prevalence of diseases, and ineffective extension services (FAO, 2018).

One of the most important and lucrative vegetable crops in the world is the tomato (Lycopersicon esculentum Mill.). It provides a significant amount of vital vitamins, minerals, and organic acids. The vast majority of fresh market tomatoes are grown by small-scale farmers who prefer to grow tomatoes over other vegetables because they can produce multiple harvests, which increases profits per unit area. Shape, size, color, flesh thickness, number of locules, blossom end shape, and overall fruit quality are just a few of the visible fruit characteristics that tomatoes display and are important for both fresh market and processing applications (Abay, 2007).

Many fruits, including bananas, pineapples, papayas, mangos, and guavas, are grown in tropical climates. Worldwide, papaya (Carica papaya) is grown in many frost-free subtropical regions as well as all tropical countries. In Ethiopia, papaya is farmed on a commercial scale by state farms and in home gardens, semi-commercially by farmers, and mainly for local markets for fresh fruit and juice (CSA, 2018). Papaya trees usually start producing fruit nine to fourteen months after they are planted, and they do so all year long. In addition to being eaten fresh in tropical climates, the ripe fruit is used to make syrups, soft drinks, jam, ice cream flavoring, and crystallized fruits. The seeds are known to have therapeutic qualities as well. Young leaves and unripe fruits can be cooked and eaten like vegetables, and the juice is especially good for older people because it helps with digestion (CSA, 2018).

Vegetables are notorious for having a high perishability because their quality starts to decline as soon as they are harvested and doesn't stop until they are eaten. Well-designed facilities, equipment, and marketing channels are necessary to address this problem. Vegetables have a shelf life that makes it difficult to store them for long periods of time, so fresh produce must frequently be transported from one area to another without guaranteed buyers or set prices. The scheduling of vegetable supply to meet market demand is made more difficult by the perishable nature of the product and the biological aspects of the production process. As a result of shifting consumer preferences and production circumstances, crops are exposed to substantial risks regarding price and quantity fluctuations. Significant crop diseases and unfavorable weather during harvest or production can have a negative effect on the marketing system (Bezabih and Hadera, 2007).

From the time of harvest until the produce is exhibited for sale, a uniform process of marketing preparation is necessary, which includes washing, chilling, and efficient management. Vegetables are generally thought to need to have a few days of shelf life after purchase in order to continue appealing to customers. For a number of reasons, including the rapidly rising demand from growing urban populations, the possibility of generating foreign exchange through the export of high-value off-season produce, the ability to generate income for small farmers, and the labor-intensive nature of their production, handling, and sales, vegetables are important in developing nations (FAO, 2018).

Harvesting horticulture usually results in much higher income levels for farmers than for those who grow cereals, because of these horticultural practices are labor-intensive in general and have a high labor-to-land ratio. Thus growing fruits and vegetables can lead to profitable employment opportunities. A rise in horticultural production makes the rural economy more commercialized and creates a large number of jobs off the farm. But the yield from growing vegetables is still not very high. The principal factors behind these low yield levels are the absence of suitable crop varieties and cutting-edge technologies. Notably, there are significant differences in yield between farmers and between provinces, which can be attributed to differences in the methods and inputs used. Safe vegetables are in high demand right now from grocery stores, eateries, and lodging facilities. Nevertheless, obstacles like restricted market access, inadequate market knowledge, and different biological factors usually obstruct the growth of production.

Furthermore, studies have revealed a number of crucial problems that have an impact on Ethiopia's vegetable production: extreme seasonality in output, variations in seasonal costs, poor pre- and post-harvest handling, an abundance of pests and illnesses, and inadequate storage facilities (Chou, 2011).

2.7 Poultry Population and Distribution in Ethiopia

The raising of hens and the production of eggs are only two aspects of poultry production; other aspects include their distribution and retailing. In Ethiopia, this industry contributes significantly to the country's GDP. Poultry production is divided into four different systems: industrial, commercial, medium commercial, and village chicken production. These systems are determined by biosecurity levels, bird species, and products sold from them (Russo et al. 2014). Ethiopia and other developing countries have seen the introduction of factory farming and high-bred chickens in recent decades. Poultry offers important nutritional benefits from both red and white meat, which contributes to family nutrition, in addition to its social and cultural advantages. The availability of suitable feed has a significant impact on the production of chickens. Production and consumption of chicken are increasing worldwide, and over the past few decades, there has been a noticeable rise in the consumption of white meat (Solomon, 2007).

All domesticated birds raised for human consumption, mainly for meat and eggs, are referred to as poultry. These include pigeons, doves, turkeys, ducks, geese, ostriches, guinea fowls, and chickens. Natural habitats are usually the homes of these birds. Turkeys and geese, however, are not very common in Ethiopia. As a result, chicken and poultry production are frequently confused in the current Ethiopian context (Wilson, 2010). Local ecotypes are the most common type of chicken raised in Ethiopia; they vary greatly in terms of body size, color of plumage, and productivity (Halima *et al*. 2007).

The estimated number of poultry in the country is 51.35 million, of which 38.3 percent are chicks and 33.32 percent are laying hens. About 5.04 million pullets are thought to be in the population. Additionally counted separately are cocks and cockerels, estimated at 5.26 million and roughly 2.72 million, respectively. Furthermore, 1.55 million, or roughly 3.01 percent, of all poultry in the nation are non-laying hens. According to breed distribution, million chickens were

reported to be native, hybrid, and exotic, making up 96.73%, 20.37%, and 0.83% of the total (CSA, 2014).

Diseases, parasites, predation, poor nutrition, poor housing, and inadequate care are some of the main issues that Ethiopia's poultry production system must deal with (Tadelle *et al*. 2001). Of these, Newcastle disease (ND) is particularly notable as an extremely contagious disease that causes more losses than any other tropical disease. In the absence of vaccination, recent surveys carried out throughout Africa have shown elevated rates of sero-positivity. Approximately 70 to 80 percent of unvaccinated urban hens die each year from ND, a recurrent problem in developing countries (Branckaert *et al*. 2000)).

Additionally, environmental factors play a crucial role in poultry production; extreme cold and heat can lead to production losses and negatively impact the health and welfare of the birds, with severe conditions potentially resulting in increased mortality rates. The production of poultry is influenced by various elements, including the breed and strain of chickens utilized, the environmental conditions within poultry housing, and the management practices employed (Ahmed and Singh, 2007).

2.8 Possible Advantages of Urban Agriculture Products

Enhancing food production, preserving food safety and quality, and promoting sustainable urban farming are all potential benefits of urban agriculture production. The benefits of urban food production are basically including social, economic, and environmental improvements. In addition, it can offer ways to improve global food security.

Food Security: Urban agriculture production is primarily practiced outside of the city center and empty areas, as well as along riverbanks where land is unsuitable for road transport, residential or industry. Many researchers proved that, the issue of food security has grown in importance. They also pointed out that the population of cities will rise sharply over the next several decades. According to UN estimates, by 2050, there will be more than 9 billion people on the planet, a 40% increase in population. Additionally, the United Nations projections, 80 percent of the world's population will live in cities. Moreover, it projects that by 2050, we will require 70% more food to meet global population demands (UN, 2015).

There is a greater demand for food in developing nations as a result of urbanization. This is primarily seen in Ethiopia and other less industrialized cities. However, as urbanization has increased, so too has the number of impoverished urban households; many of these households is expected to struggle to make ends meet by purchasing an adequate amount of food for themselves. This is mainly achieved through practicing urban agriculture activities particularly in metropolitan areas (Thomas, 2013).

Urban residents' lives could be greatly improved by urban agriculture production, particularly those who depend on access to locally grown food and have the lowest incomes (Mireri *et a*l, 2016). Food purchases account for a large portion of the expenses incurred by the urban poor, leaving them with little money for other necessities like health and education improvements. In addition, they eat very little variety in their diet. The improvement of the urban poor's standard of living as a result of urban farming production is not satisfactory. However, urban agriculture production plays an important role in ensuring food security and is frequently a response by the urban poor to insufficient, unstable, and inconsistent access to food and a lack of purchasing power (Bryld, 2018).

Producing more food on less land is easy with urban farming activities. Compact, self-sufficient ecosystems with a variety of uses, from waste management to food production, would result from urban farming activities. It could facilitate the efficient and sustainable production of food, conserve energy and water, improve the economy, lessen pollution or carbon sink, create new job opportunities, rebuild ecosystems, and increase access to wholesome food. Crops grown under controlled conditions will be less vulnerable to pesticides, dust, nutrient cycles, crop rotation, and the whims of the weather (UNDP, 2015).

Regulate Locale Climate: studies proved that loss of arable land has been exacerbated by climate change all over the world. Thus the global economy has suffered as a result of the significant reduction in valuable agricultural land caused by storms, flooding, and drought (Shahidur *et al*., 2017). According to scientific predictions, unfavorable weather patterns and climate change will both continue to occur more frequently. Large areas of arable land will become despoliated as a result of these events, making them unusable for farming. In order to prevent these issues, urban agriculture enhances microclimate, nutrient recycling, and the creation of picturesque scenes and landscapes (Bryld, 2018).

This enhanced the aesthetic value of the city and helped create a microclimate conditions in some areas of the urban centers. Because ever greenness prevented soil erosion and reduced greenhouse gases emission, thus contributed to air purification. According to some study results, urban agriculture has shielded their regions from being used as dumps for unkempt waste (Bryld, 2018). Additionally, urban agriculture may help to moderate the city's and the nearby towns' urban temperatures. Approximately 70% of greenhouse gas emissions globally are produced in urban areas. It is expected that in their pursuit of development, both developed and developing nations will contribute to greenhouse gas emissions. This demands that urban agriculture production in metropolitan areas like Addis Ababa, Ethiopia, receive more attention (UN habitat 2010).

Health and Social Benefits: Conventional farming methods both in rural and urban areas frequently prioritize financial success and commercial gain at the expense of the harm they cause to the environment and human health. But with more people living in cities than ever before, urban agriculture production plays a critical role in ensuring food security and promoting healthy nutrition for the urban households. Because of its ability to shorten supply periods and lower transportation costs, it has made it possible for the urban population to have access to perishable fruits and vegetables that are packed with essential nutrients (Touliatos *et al*, 2016).

According to Thomas (2013), urban agriculture production is a key solution for the urban poor because of the lack of food and the rise in the price of agricultural outputs in urban and peri-urban areas. Increasing the price of agricultural production are also the main causes of hunger in these areas. urban farming activities strengthens social integration of farmers by forming cooperatives and giving them a chance to make extra money, while also assisting vulnerable groups in lowering their reliance on others. Urban agriculture thus contributes significantly to the urban poor's increased access to a healthy and nourishing food supply.

Environment and Ecosystem Benefits: Many researchers confirmed that agriculture is the most destructive activity on Earth, upsetting more ecological processes than anything else. They also proved that urban farming activity can control the detrimental effects of climate change and restore biodiversity, which will lessen the agricultural impact on the planet's ecosystems. Urban farms could contribute to a significant reduction in CO_2 emissions in cities by producing only 10% of the land area they use. This would allow for the development of more advanced

technological innovations aimed at long-term improvements to the biosphere's condition. Water quality in rivers and coastal areas could be improved and the number and species of fish resources could rise by removing fertilizer runoff. The potential to restore ecosystem services and functions is the strongest argument in favor of shifting the majority of food production to urban farming activities (UNEP, 2018).

Economic Benefits: As urban agriculture product costs rise, it is becoming more feasible to sell its products directly to consumers, saving money on transportation which can account for as much as 60% of total costs by doing away with the intermediary (Kodmany, 2018). Additionally, vertical farms make use of cutting-edge technology and intensive farming techniques that can significantly boost output. Furthermore, urban farming offers a chance to boost the regional economy. In urban areas where fresh produce is hard to come by, abandoned buildings can be converted into vertical farms that grow nutritious food (Kodmany, 2018).

2.9 Challenges of urban agriculture Production

Urban agriculture production has many issues that impact the urban environment, but when done poorly, it can also have detrimental effects on the environment, the economy, and public health, among other issues. For instance, excessive use of chemical pesticides and fertilizers in urban agriculture can contaminate nearby water sources, raising the risk of contamination to urban farmers' health (Veenhuizen, 2014).

Due to the potential for crop and livestock contamination from the use of waste water, dirty rivers, and untreated compost, urban agriculture may pose a health risk (Tewodros, 2007; UNDP, 1996; Corbould, 2013). Since slum areas have unsafe water supplies, poor sanitation, uncollected garbage, polluted rivers, and poor air quality, urban poor people who practice urban agriculture also face the risk of contamination and disease, which result in a decline in the product's nutritional value as well as crop yields (Corbould, 2013).

Veenhuizen (2014) claims that disposing of waste material poses a significant issue in many cities across the globe. Chemical fertilizers and pesticides can contaminate drinking water; wastewater discharged from intensive poultry farms can carry large numbers of microorganisms and contaminate drinking water supplies; and neighbors who do not farm may complain about

noise, dust, and unpleasant smells. Urban farmers may also use treated drinking water for irrigation, which could result in a significant water shortage.

2.10 Determinants to Practice Urban Agricultural Production

Even though urban agriculture is a financially viable endeavor, its growth is hindered by a number of unfavorable perceptions and barriers. Sociocultural biases and institutional limitations, restricted access to resources, inputs, and services, unique risks associated with urban farming, post-production limitations, particularly in processing and marketing, and organizational limitations are the main obstacles to urban farming (Echakara, 2015).

Government organizations at all levels ought to provide more institutional support, primarily in the form of land, wastewater treatment facilities, subsidies, agricultural extension services, and credit, and they ought to include urban agriculture in the process of developing policies for urban landscape planning and development. The claim that institutional quality and support improve the effective use of various resources is well-established. Thus, it is especially important for the national and local governments to begin incorporating urban agriculture into their developed and expanding cities. Urban agriculture's primary obstacles can be divided into three main categories: capacity-related, institutional, and financial (Mpofu, 2013).

The Financial challenges: Urban agriculture production needs financial legitimacy to increase its contribution to food demands of urban households while, financial support for urban farmers remains quite limited. For most urban farmers, the lack of access to financing is a major obstacle in their capacity to maintain and expand their activities, and more generally in the potential for scaling up affordable food production in cities. Therefore, the two most important financial obstacles that urban producers had to deal with were high interest rates that they had to pay when they borrowed money from financial institutions and a lack of credit, which was necessary for urban farmers to begin and grow their farming operations (Mpofu, 2013).

The majority of national governments include urban agriculture into their rural agriculture programs, and most international donors and specialized financing organizations still do not view urban agriculture as a serious problem. Although they are usually scarce, microcredits for small-scale urban farmers are available in many cities. They are far less common for vegetable crops

and much more common for commercially oriented activities like animal husbandry, agro-processing, or marketing (UN–Habitat, 2017).

The following list of the main perceived or actual bottlenecks, which are based on numerous studies, includes a lack of knowledge about urban agriculture, worries about farmer repayment practices, a propensity to focus only on large-scale commercial enterprises, and the risk-averse attitude that the financial crisis brought about (UN-Habitat, 2017).

Space for cultivation: Housing is much more common than utilizing land for farming in most of urban centers. Therefore, it suggests that the decline in urban agriculture production was caused by the lack of space in cities for the production of crops and vegetables (Tewodros, 2007). Mekuria and Mesay (2018), confirmed that the issue of land is not limited to small-scale urban farmers; it also poses difficulties for major commercial enterprises. For medium-sized or large-scale commercial enterprises, urban agriculture thus necessitates the use of sizable land for production, packaging, sale, and storage. However, in and around Addis Ababa, land is a scarce resource.

In addition to discouraging producers from making longer-term investment plans, the current land insecurity has also restricted the amount of services and other resources, such as funding, that can be offered. The lack of other essential resources, such as electricity and water, which are actually insufficient for human consumption, let alone for urban agriculture, which requires enormous amounts of these resources, presents another challenge to urban agriculture. Water scarcity is endangering food production and biodiversity worldwide, not to mention in the United Arab Emirates. Rainfall, shallow wells, municipal pipe lines, and rivers are sources of water for urban agriculture production in Addis Ababa and the surrounding towns, as observed during the fieldwork. The majority of small-scale dairy farmers do not use the municipality's inadequate pipe water supply for UA; rather, they use it for household purposes (David *et al*, 2016).

Institutional challenges: According to Mpofu (2013), there are a number of factors that prevent urban agriculture from growing and developing sustainably. These include a lack of institutional support for the sector, a failure to integrate it into land use and zoning plans for cities, a lack of coordination among public agencies, and a lack of training and technical support to raise productivity. Peri-urban farms and empty lots are being demolished to make room for new

buildings due to the growing urbanization of the area. Arable land will also be taken away from farmers and placed on land with limited production capacity as a result of the extensive conversion of urban farm land into buildings, raising concerns about the long-term viability of urban agricultural production (Corbould, 2013). As more urban newcomers attempt to purchase land, the traditional agricultural land distribution system is upset, driving up land prices. As a result, some traditional farmers are selling their land, giving up farming, and engaging in other revenue-generating ventures (Veenhuizen, 2014).

The quality of soils and irrigation water, as well as new demands for recreational spaces and new products, changes in urban zoning and related norms and regulations, are all being adversely affected by urban traffic and industry. Due to the introduction of new products, general increases in information availability, and shifting consumer preferences, super markets see a rise in sales as a result of globalization (Veenhuizen, 2014). The illegality or ambiguous legal status of urban farming activity restricts the production and security of urban crops in developing nations (Corbould, 2013). It consequently lowers crop yields, restricts the output and stability of urban agriculture, and keeps farmers from implementing sustainable farming techniques (Corbould, 2013).

The sector received less attention as a result of a lack of policy issues regarding urban agriculture, lack of awareness at various levels, availability and cost of water, reliance on non-governmental organizations or other international organizations, and seed quality and availability. Farmers become economically insecure due to a lack of working capital and excessive resource use, which in turn reduces their commitment to and investment in farming. It is anticipated that urban agriculture production will advance swiftly in the future by becoming integrated into urban planners' professional endeavors. However, urban agriculture production projects are typically implemented on low-value properties which lead to disputes over tenure between individuals, groups, and organizations. Urban planners could tackle the issues surrounding short-term leasing options in this context (Lavallée, 2018).

In order to select a suitable location for urban agriculture production projects and other food processing phases, urban planners should gather the opinions of all stakeholders. Furthermore, it appears that in order to achieve a pluralistic policy that incorporates the opinions of all parties, including the public, corporate, institutional, and governmental sectors, UA needs to transition to

participatory governance. Because of this and the challenges that come with living in an urban environment, policies and governance structures must take the city into consideration (Moragues-Faus and Morgan, 2015).

2.11 Conceptual Frame Work

Urban agriculture production can be caused by various factors, including institutional and socio-cultural biases, limited access to resources, inputs, and services, unique risks associated with farming in urban areas, post-production constraints, especially in processing and marketing, and organizational constraints. This is illustrated by the conceptual framework that is introduced below. Ineffective urban farming methods can be a major cause of issues with the environment, the economy, human health, and other related issues. Institutional, financial, and capacity-related issues are the primary obstacles facing urban agriculture.

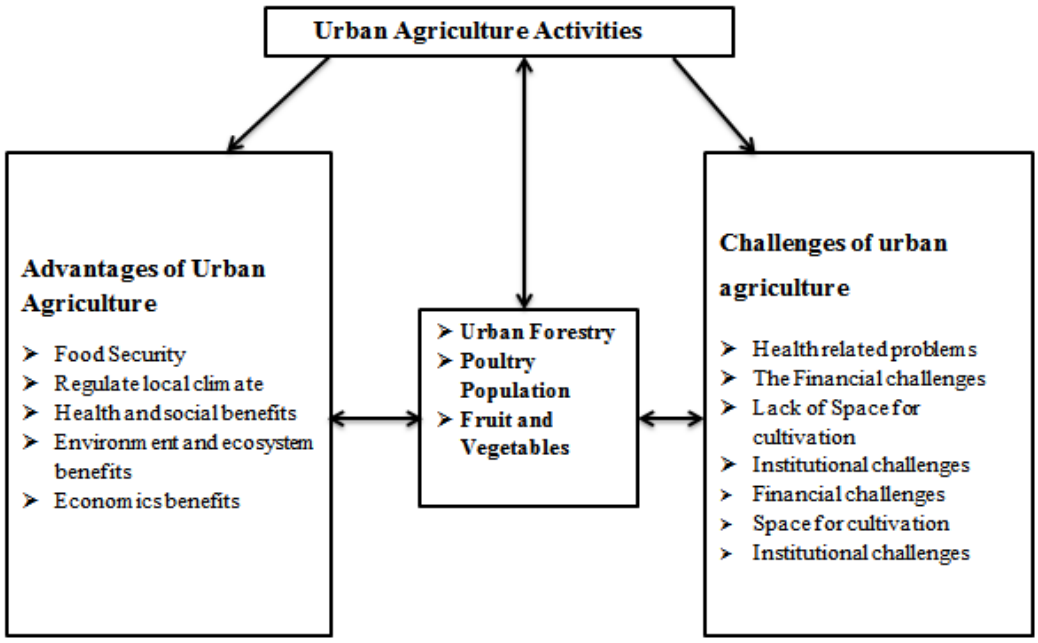

Fig. 1, Conceptual Frame Work

Source Owen, 2024

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CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Description of the Study Area

3.1.1 Location

Lemi-Kura is recently established sub cities of Addis Ababa. Geographically it is found in east of Addis Ababa. The sub city is located 9° 1' north latitude and 38° 52' east longitudes. It is a recently reorganized sub city comprises ten *Woredas*, which has been active since, October 20, 2020. Addis Ababa City Council, on its 8th year 1st regular meeting, has forward a draft proclamation to rebuild and divide the city in to 11 sub cities establishing an additional one named "Lemi Kura" (*Lemi Kura* Sub City Administrative office, 2022).

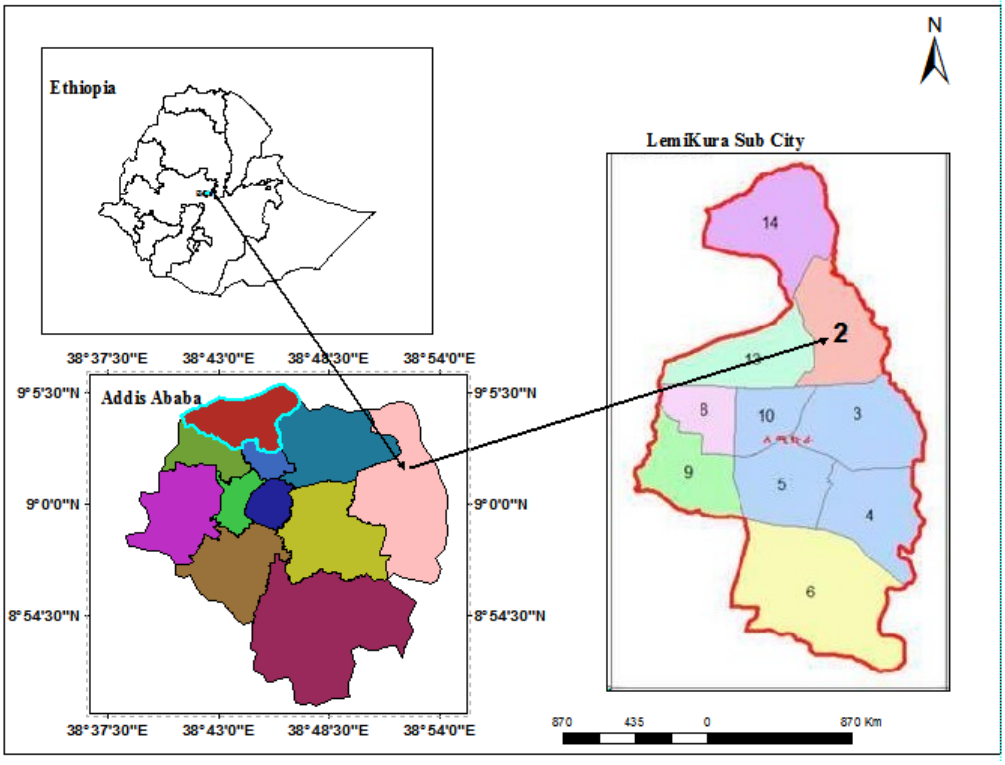

Fig. 3.1 Map of the study area

Source: GIS Software, 2024

3.1.2 Climate

Addis Ababa is situated within the tropics, an area characterized by maximum solar exposure, where the sun is directly overhead twice a year. Nevertheless, due to its significant elevation, the city's climate is predominantly influenced by altitude, resulting in a temperate and sub-tropical environment. The Lemi Kura sub-city experiences a sub-tropical highland climate, maintaining a consistent moderate temperature with an average high of approximately 23°C and an average low of around 11°C throughout the year. The primary rainy season, known as Kiremt, occurs from June to early October, while a brief rainy period, referred to as Belg, takes place from early March to mid-April. The average annual precipitation is approximately 1,200 mm, with nearly 80% of this total occurring during the main rainy season (NMA, 2017).

3.1.3 Socio-economic Activities

Addis Ababa serves as the economic hub for the nations, nationalities and peoples of Ethiopia where a diverse array of products is concentrated for both trade and transit purposes. It stands as Ethiopia's biggest trading center, characterized by a significant wholesale market, and functions as the administrative heart of the country. Consequently, it boasts the highest urban population in Ethiopia. The city's labor force engages in a wide range of economic activities, encompassing all sectors from primary to tertiary, with varying levels of participation. Urban agriculture on the outskirts of the city plays a crucial role as a source of employment and income for numerous households (CSA, 2022).

Lemi Kura is identified as one of the semi-peripheral areas of the city, notable for its informal business operations. The primary economic activity in this region is trade and commerce, with the majority of residents involved in trading, while a smaller segment participates in various other economic pursuits, including agriculture, handicrafts, metalworking, and jewelry making.

3.2. Research design

The study used descriptive survey as an appropriate research method to meet its objectives. This is due to the fact that the descriptive research method was determined to be valuable in characterizing and elucidating the precise and real-world circumstances surrounding the subject of the study. It also allows for collection of information at one point in time from a selected

sample of respondents. It is cost effective and allows inclusion of participants or groups of people from whom a comparison can be made. It involves the collection of data at a specific time.

3.3 Research Approach

Both qualitative and quantitative methodologies were used by the researcher to successfully achieve the stated objectives. This two-pronged approach was required because the study needed statistical (numerical) data to be gathered using the quantitative method, and the qualitative method was used to provide insights into the current production of urban agriculture in the Lemi Kura Sub City.

3.4. Source of Data

The data for this research was obtained from a combination of primary and secondary sources. Primary data were gathered from households engaged in urban farming, while key informants included officials and exemplary households within the urban farming sector. The secondary sources were numerous and varied, encompassing reports from the Ministry of Agriculture and Woreda, various registries, government publications (such as those from the Central Statistical Agency), academic literature (including books, journals, research reports, and articles), online documents from various profiles on the internet, as well as land use regulations and policy documents issued by the government. The primary tools employed to collect pertinent information included questionnaires, interviews with key informants, field observations, and focus group discussions. The data enumerator was selected randomly from respondents at a mutually agreed-upon time.

3.4.1 Questionnaire:

In order to collect primary data from the selected households regarding the effects of urban agriculture in the designated study area, a set of questionnaires was developed and distributed to 86 households. These households were chosen through purposive sampling, utilizing a list obtained from the sub-city administration office. The questionnaire was initially drafted in English but was subsequently translated into the local language to ensure clarity and

comprehension for the respondents. Household surveys were conducted through direct interviews between the interviewer and the respondents.

The questionnaire comprised both closed and open-ended questions. The first section gathered general information about the respondents, while the second section focused on evaluating urban agricultural production within the study area. The final section aimed to identify the primary challenges faced in urban agricultural production in the region. The research employed a combination of qualitative and quantitative methods. For qualitative data collection, interviews, focus group discussions, and field observations were utilized. In the quantitative component, both closed and open-ended questions were included in the questionnaires, with the closed-ended questions featuring dichotomous (yes/no) options, scale or rating questions (Likert scale), and list questions.

3.4.2 Key Informant Interviews

The researcher employed a semi-structured questionnaire and in-depth interview to obtain good study results. By using the purposive sampling method three key informants were selected from urban agriculture experts. The purpose of the interview was to get in-depth information about the problems with urban farming productivity in *Lemikura* sub city, the current state of affairs, and the direction that the livelihood strategies used by urban farmers in the study area are likely to take.

3.4.3 Focus Group Discussion

The Focus Group Discussion (FGD) was employed to facilitate triangulation in validating the data acquired through both structured and unstructured questionnaires. It comprised six participants selected from Woreda 02 in Lemikura sub city, with each individual being purposively chosen that represented community members, three women, and three young men engaged in urban farming practices. The discourse significantly aided the researcher in comprehending the attitudes and perceptions of urban residents concerning urban agricultural production and food security.

3.4.4 Observation

Field observation can provide valuable background information about the environment as well as practical situation of urban farming. The researcher observed the current situation of urban farming production in the study area. It is mainly emphasize to have clear information about the nature of urban farming production in the study area. The researcher has observed and collected the necessary visual information with the help of camera from the existence and level of urban agriculture production.

3.5. Sampling technique and sampling size determination

The selection of samples for the study population involved distributing questionnaires to urban households those who are practicing urban agriculture within the Lemi Kura sub-city. A purposive sampling technique was utilized to ensure that the targeted group of households residing in the urban area of Lemi Kura sub-city was adequately represented. The sampling frame for the study comprised all households engaged in urban and peri-urban agriculture within the designated area. Lemi Kura sub-city is divided into 10 *Woreda* administrations, from which one Woreda (02) was chosen through purposive sampling due to its extensive urban and peri-urban agricultural activities and favorable topographical conditions. To gather reliable and manageable data, the researcher determined the sample size from the entire population of urban agriculture participants in Woreda 02 of Lemi Kura sub-city. The total number of urban agriculture participants in Woreda 02 of Lemi Kura sub-city is about 86, and consequently, all 86 participants were included as sample households.

3.6. Data Analysis Technique

The data gathered from various sources has been systematically organized into coherent facts, accompanied by detailed explanations. This indicates that the data underwent both quantitative and qualitative analysis and interpretation. Subsequently, descriptive statistical percentage and frequencies was employed to analyze the data collected through questionnaires. Based on the findings, interpretations and discussions were conducted regarding urban agriculture activities within the study area. The quantitative data obtained from surveys were utilized to assess numerical changes in assets, while qualitative data derived from informant interviews, focus group discussions, and the researcher's observations will serve to elucidate these changes and

identify the factors influencing them, including adaptive strategies and challenges associated with urban agriculture production.

3.7 Ethical Consideration

The research was conducted by an individual holding a postgraduate degree as part of the requirements for a Master of Arts Thesis at Addis Ababa University. Household heads were approached to obtain their consent to participate as free respondents in the study. The individuals selected for the sample were not explicitly identified, and their responses were treated with confidentiality. The questionnaires were translated into Amharic and clearly outlined the study's objectives, emphasized the importance of confidentiality, and ensured that participation was voluntary. The collection of information from respondents was carried out in a manner that was ethical, responsible, and respectful of their human and democratic rights. The study was conducted without any form of political, religious, or personal bias.

CHAPTER FOUR

RESULT AND DISCUSSION

This chapter analyzes the data collected through questionnaires, interviews, focus group discussions and field observations. The analysis and presentation are consistent with the objectives and research questions, including general overviews of the respondents' socio-economic characteristics. Furthermore it highlights the key findings of the study on the assessment of urban agricultural productivity in the Lemi Kura sub-city of Addis Ababa. It also includes a brief discussion of demographic and socio-economic characteristics relating to urban agriculture production carried out by households *Lemi Kura* sub-city of Addis Ababa.

4.1 Demographic Characteristics of the Respondents

The following data was gathered and examined regarding the respondents' demographics, including their sex, age, level of education, and size of household. Contributions are crucial to the process of socio-economic development planning, which has as its main objective enhancing the welfare of the urban population in Lemikura sub city of Addis Ababa.

4.1.1. Sex Structure of the Respondents

Based on the data presented in Table 4.1, 63% of the total respondents were male, and 37% were female. This indicates that male-headed households made up the bulk of the urban farming respondents in Lemikura sub city of Addis Ababa. However Yared (2019) research report indicates that women are primarily involved in the subsistence urban food production sector. Due to the ease with which agriculture and associated activities of processing and selling can be integrated with their other household responsibilities, women make up a significant portion of urban farmers. Nevertheless, the focus group discussion revealed that in the study area the majority of women take care of the house, keeping the children, and assist their husbands with various household tasks.

According to the key informants, one of the major goals of the current government is to employ young people particularly women in urban agricultural activities such as growing fruits and vegetables, raising dairy and poultry, preparing organic fertilizer and other activities related with

the sector. In line with this it can serves a dual importance in protecting the urban environment by facilitating plantations. Training for jobless youths in various urban agriculture activities within the city as a way to economically empower women and young people and guarantee sustainable development was another accomplishment.

On the other hand the key informants agreed that, the local government was unable to provide enough urban farm land and because of this the sector was unable to engage all unemployed urban youth in urban agriculture production activities. In addition focus group participants pointed prevailed that the sector was unable to address all urban agriculture production trained unemployed youths.

Table 4.1 Sex Structure of Household Heads

Sex of household head	**Frequency**	**Percent**
Male	54	63
Female	32	37
Total	86	100

Source: Lemikura Woreda2 urban land administration, 2024

4.1.2. Age of Household Heads

Researchers proved that different age groups had a significant impact on the development of urban agriculture production and other economic activities. In addition to promoting social, psychological, cultural, and economic development for people of all age groups, well-designed and maintained urban agriculture activity can also raises households consumption expenditures. People who are older tend to spend a larger percentage of their consumption budget on food; however it depends on family size of households (Seid, 2011).

As indicated in table 4.2 below, 72% of the sampled households belonged to the 18-30 age groups, 16% were between 31-60 years of age, the remaining 12% of the sampled household were 60 and above years of age. Therefore, the majority of the sampled household's age groups were age between 18 up to 30. Therefore it is possible to conclude that, in the study area the urban agriculture is mainly practiced by economically active age groups.

Table 4.2 Age Structure of Household Heads

Age of household head	Frequency	Percent
18 to 30 years	62	72
31 to 60 years	14	16
Above 60 years	10	12
Total	86	100

4.1.3 Family Size of Households

To analyze the family size of households in the study area, three categories were created based on the survey data gathered from a subset of sample households: 1- 3, 4- 6, and 7-10 family members, respectively. Table 4.3 reveals that 83.7% of sample household respondents have 1-3 family sizes, 10.3% of households have 4-6 family sizes, and only 6% of respondents indicated having 7–10 family sizes. As a result, the majority of responders in the study area had one to three family sizes. Key informants attested to the fact that a family's household size has significant implications in consumption of food and other services mainly in urban areas. Thus consumption of food and social services inevitably rises as household members get larger. The household's income level may have an impact on a family member's ability to pay for their essential needs. Focus group discussions in the study area pointed out that urban agriculture production increases as household size rises. They agreed the fact that is true when households having large plots of land for vegetables, dairy farming, and poultry production and it need to participate in more labor. The key informants on the other hand agreed that the accessibility of urban agricultural land is better in Lemikura sub city as its geographical location is to the urban periphery.

Table 4.3 Family Size of Households

Households' Family Size	Frequency	Percent
1-3	72	83.7
4-6	9	10.3
7-10	5	6
Total	86	100

4.1.4. Educational Status of the Respondents

Education plays a crucial role in the social and economic advancement of humanity. The educational attainment of a household significantly influences the quality of life for its members. Insufficient access to education and lower educational levels contribute to the proliferation of informal settlements and associated challenges. Furthermore, many researchers agreed that education is a key factor in determining the number of household heads living below the poverty line, as well as those engaged in informal settlements in many urban areas. The educational qualifications of household heads, particularly those who have completed high school or obtained degrees from higher education institutions, positively affect the development of the community (Ayelu, 2018).

Regarding the respondents' educational attainment, most urban agriculture practitioners of households can read and write. Therefore, only 4.5% of the respondents did not attend school or were illiterate, while 53.5% had completed elementary school, 35% had finished secondary school, and 7% had obtained a certificate from a college or university. Thus, it is reasonable to draw the conclusion that the study area is populated primarily by those with a high proportion of educated respondents. It is crucial to remember, however, that individuals with varying educational backgrounds from the illiterate to those who have attended universities engage in urban farming activities. According to key informants, those with higher education levels participate in urban agriculture activities more frequently and are more productive. This study result is similar with the research finding of (Aelu, 2018) that such highly educated people have great attention for urban agriculture growth and ultimately tend to protect their investments by influencing policies and regulations in their favor.

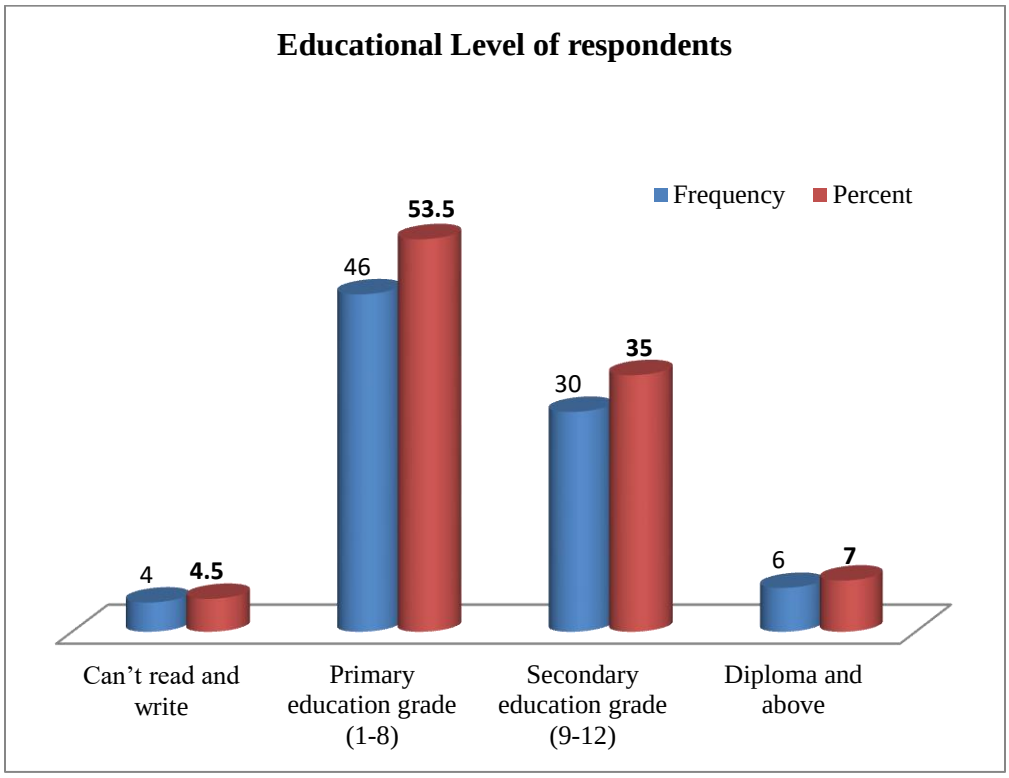

Fig. 4.1 Educational Status of the Respondents

4.2 Socio- Economic Status of Households

Numerous studies have demonstrated that urban areas tend to exhibit a higher level of civilization compared to rural regions. Cities and towns are generally better equipped with essential infrastructure and services than their rural counterparts. Urban centers provide greater access to industries, healthcare facilities, financial institutions, educational establishments, and transportation and communication networks. Addis Ababa serves as the economic and administrative hub of the nation, as it is the focal point for the majority of the country's products, facilitating both trade and transit. It stands as Ethiopia's largest trading center, characterized by a significant wholesale market, a predominant share of industrial establishments, employment opportunities, and industrial output, while also functioning as the administrative center of the country. Consequently, it boasts the largest urban population in Ethiopia (Teferee, 2003).

Focus group discussions revealed that there is a clear correlation between the respondents' socioeconomic status and their economic field of participation such as private sector, daily jobs, and other related activities. As a result, it is essential to participate in urban agriculture and other

activities and examine factors, which affect urban agricultural activities, income level, and occupation.

4.2.1 Occupation of Respondents

As shown in figure 4.2 the households in the study area practiced the following essential alternative sources of income. Government employee 7% private sector 52.3%, trade 16.2% and daily labour 24.5% were among the most important sources of livelihood of the respondents. In addition to this focus group discussion proved that the majority of the households' are employed in privately owned corporations such as contractors, technicians, designers, and health and transport services.

According to focus group discussion in the study area many urban households engage in peri-urban agriculture activities and they used as a source of income and household consumption. As a result, the majority of urban agriculture practices take place in a few pocket areas with open space and in the outer reaches of the Lemikura subcity. It is easy to explain why urban agriculture continues to play a major role in household income, food security, and job opportunities. Despite its potential, urban agriculture production in the Lemikura sub city's periphery is underappreciated as a part of the urban economy and lacks technical support, primarily from the urban agricultural extension service. This residential neighborhood engages in low-productive, basic urban farming practices.

Consequently, the focus group discussion comes to the conclusion that the productivity of urban agriculture has not increased for commercial purposes. They indicated that a household's lack of appropriate experience, skills, and knowledge of urban agriculture activities was the cause of the low productivity in urban agriculture. The key informants also demonstrated that experienced and non-professional workers earn different amounts from this activity and they also confirmed that they did not give priority to the activity of urban agriculture.

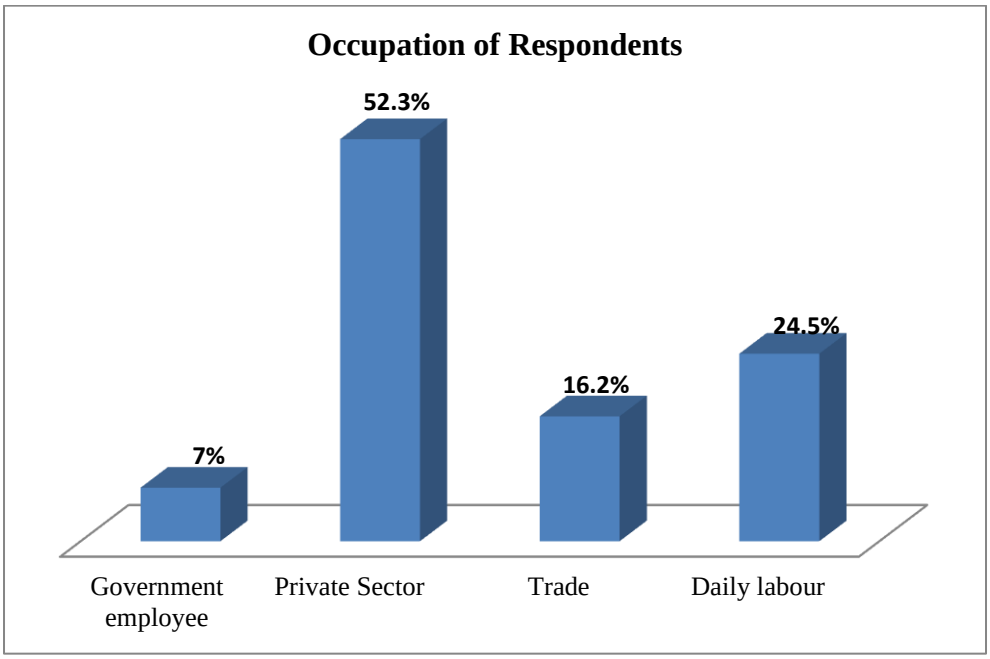

Fig. 4.2 Occupation of Respondents

4.2.2 Monthly Income Situation of Household Community

Amsalu (2020) asserts that urban agriculture production significantly contributes to reducing gender inequality, poverty, and unemployment rate in urban areas by enabling direct access to food products and generating new revenue streams, as a result it increases urban agriculture participant's income. He also found that poultry and dairy producers can achieve a net monthly income that rivals the salary of a senior public administrator. Furthermore, Amsalu concludes that urban agriculture helps mitigate the current price fluctuations on real income and consumption for urban households, as many agricultural products with substantial transaction margins, such as vegetables, fruits, and roots, can be cultivated in urban settings. Consequently, urban agriculture can augment the urban food supply and diversify nutritional options.

Given the perspectives provided by key informants on gender, poverty, and work, urban agriculture appears to be a practical means of enabling women economically and mitigating gender inequality. In accordance with Table 4.5, the percentage of households with incomes below 4000ETB is 2.3% and whose income was between 2,001-5,000ETB was about 16.2%, those households whose income was between 5001-10,000ETB was 62.8%, whose income was

between 1001-20,000ETB decreases from 11.7% and whose income was above 20,000ETB was only 7%. In general the largest number of households' income was between, 5001-10,000ETB.

Based on information gathered from focus group discussions, urban farming provides households with additional income, nutrition, and food security benefits. The primary financial advantage of urban farming for households is the creation of additional revenue. In Addis Ababa, urban agriculture produces vegetables for human consumption in addition to providing supplemental or primary incomes for a sizable number of household members. Thus, in addition to the money received directly from the sale of vegetables, a sizeable portion of the households' overall food intake has been met by the consumption of food that they have grown themselves. This has allowed the households to save a larger portion of their cash income for non-food expenses like health, education, clothing, and transportation.

Table 4.5 Monthly Income of Household Community

Monthly Income in Ethiopian Birr	**Frequency**	**Percent**
Below 2000	2	2.3
2001-5000	14	16.2
5001- 10,000	54	62.8
10,001- 20,000	10	11.7
Above 20,000	6	7
Total	86	100

Source: Own survey, 2024

4.2.3 Types of Urban Agriculture Production

4.2.3.1 Vegetables

Table 4.6 and Figure 4.3 present the estimated average amount of production from urban agriculture that is sold and how it is used over the course of a three-month vegetable production season. As a result, the most significant vegetables grown in the research area are Kosta (Chard) which is 23.5%, cabbage (17%), Lettuce (15%), potato (13.4), tomato (12.7%), onion (11.7%), and carrot (6.7%). The majority of the vegetable crop types produced in Lemi-kura sub city is

Kosta (Chard), cabbage, lettuce, and potato, which are the main sources of income for urban farmers. Conversely, more potatoes and carrots are eaten than are intended for household sales.

The study area's key informants attested to the fact that growing leafy greens like cabbage, lettuce, and Swiss chard during the summer rainy season presents a number of difficulties, including pest outbreaks that damage the crop and cause bacterial infections as well as heavy precipitation in the form of ice or snow that causes the leafy greens to deteriorate. They also require six full sun hours each day. During the summer months in the study area, the key informant also suggested root vegetables like carrots. However they also confirmed that heavy rainfall has a negligible potential effect on root vegetables.

All of the participants in a focus group discussion attested to the fact that urban farming households year-round consume a significantly higher quantity of fresh vegetables than non-farming households. Thus, it is reasonable to draw the conclusion that households that grow vegetables have comparatively better food quality, quantity, and nutritional balance. They also concurred that by enabling households to obtain fresh vegetables that they would not have been able to easily afford to buy, self-production has also increased food security. This is because the current price of vegetables is unstable. Hence the households have gained better quantity, quality and stability of their diet.

Moreover, vegetables increase the amount of food that is available all year round, lower the rate of hunger, improve food quality, and improve urban residents' nutrition and health. Focus group discussions revealed that urban farming practices have aided female-headed households in guaranteeing food access for their children. Table 4.6 indicates that the primary economic advantage of urban farming for households is related to consumption. In addition to household consumption urban agriculture production in the study area is also providing for income earnings. Thus, in addition to the money received directly from the sale of vegetables, a sizeable portion of the households' overall food consumption has been met by the consumption of food that they have grown themselves. This has allowed the households to save a larger portion of their cash income for non-food expenses like health, education, clothing, and transportation. Numerous households in the study area engage in vegetable production, which yields quick and profitable returns. Compared to livestock production, vegetable production requires a larger

production area and a lower initial capital investment. But at the moment, it becomes susceptible to rapid urbanization and land scarcity.

Table 4.6 Types of Vegetable Production in the study area

Type of Vegetables	Average Production within 3 Months		Use of urban agriculture production			
	Total production in Kgs.	Percent	Home consumption in kgs.	Percent	Selling in kgs.	Percent
Cabbage	50	17	30	16.2	20	17.7
Onion	35	11.7	20	10.8	15	13.3
Carrot	20	6.7	20	10.8	-	-
Chard (Kosta)	70	23.5	40	21.6	30	26.5
Lettuce	45	15	20	10.8	25	22
Tomato	38	12.7	25	13.6	13	11.5
Potato	40	13.4	30	16.2	10	9
Total	298	100	185	100	113	100

Figure 4.3 Types of Vegetable Production in the study area

Source own field survey, 2023

4.2.3.2 Dairy Farming and Poultry Production

The findings of the study in Table 4.7 below, shows those households' average milk production per month was 450 litters and consumption 90 litters. On the other hand, the average quantity sold per same month was 360 litters, generating 21600 ETB. The result of the study shows that, from the total cheese and butter produced 6 kilograms per month, urban households had sold 4%

and 5% of the product respectively. On the other hand the poultry production per month is 190 meat chicken and 5000 eggs in number. The average consumption of the household is about 80 and 1400 meat chicken and eggs respectively.

We can conclude that compared to dairy, poultry production and consumption as well as sold had taken over the biggest share of households' income. The following figure 4.4 shows the dairy and poultry production mainly used for commercial purposes in the study area. Focus group discussion reported that, they were generating high households' income.

Table 4.7 Types of dairy farming and poultry production per month

Dairy &poultry products	Production per Month	Use of dairy and poultry production		
		Consumption	Selling	Income in Birr
Milk (in litter)	450	90	360	21600
Butter (in kigs)	6	1	5	3500
Cheese (in Kigs)	6	2	4	600
Meat chicken (in number)	190	80	110	5500
Egg (in number)	5000	1400	3600	32000

Source: Own survey, 2024

Fig.4.4 Poultry and dairy production in the study area

Source: own field survey, 2024

4.2.4 Urban Farmland holding size in the Study Area

According to the urban agriculture respondents in table 4.8 indicates that 60% of the urban farming households own between 0.1 ha to 0.2ha of farm land; 24% owned between 0.21ha to 0.25 ha farm land while others 10% urban farming households have 0.26-0.5ha and 5% owned

0.51-1ha of urban farmland. Therefore, it is possible to infer from the data above that most urban farming households operate on less than one hectare of land. This indicates that the majority of urban agriculture production in the study area is in hand to mouth.

The focus group discussion concluded that it is challenging to find land for urban farming in the sub-city, and every sample household mentioned having land constraints. Agricultural production is further hindered by the horizontal expansion of the city, which results in the long-term loss of farmland. The key informants also highlighted that smallholder farmers' participation in the production of dairy and poultry was hampered by a lack of skills and knowledge. Urban farming activities, particularly the production of vegetables, are concentrated in the study area's periphery of Lemikura sub-city city. This is because access to land is better in the urban periphery and higher land values in the city center discourage urban agriculture activities.

Table 4.8 Households Urban Farm land holding size

land holding size in Hectare	**Frequency**	**Percent**
0.1-0.2ha	52	60
0.21-0.25ha	20	24
0.26-0.5ha	10	11
0.51-1ha	4	5
Total	86	100

Source: Own survey, 2024

4.3 Opportunities and Challenges in Practicing Urban Agriculture

4.3.1 Opportunities in Practicing Urban Agriculture

Urban agriculture was primarily produced by urban farmers for household consumption and revenue generation. Discussions from focus groups indicate that the area around the cooperatives is comparatively more polluted. This would have led to some of the study area being used as a landfill for the other part of the city. As a result, there would have been significant pollution in the living conditions in these areas, which raises the risk of various respiratory infection and other diseases.

However, the key informants demonstrated that urban agriculture plays a significant role in enhancing the urban environment by reducing dust and absorbing pollutants, especially green plants sink carbon dioxide, which cleans the air. Thus urban farming mainly green vegetables playing an important role in reducing the negative environmental impacts of urban growth in the city and improved the environmental health. In addition, during the focus group discussion, respondents also brought up the fact that urban agriculture had not only transformed ugly lots into well-kept green spaces but also lessened the communities' susceptibility to natural disasters like landslides and floods.

The key informants claim that the study area's commercialization has increased as a result of urban agriculture's growth. In addition, there are new markets opening up in the nearby cities. It is anticipated that enhanced veterinary care nationwide will open doors for business owners. More opportunities are provided by urban poultry production than by any other alternative that would require a significant investment, especially in urban areas. Small spaces, lower labor and capital requirements, technical skill, management, and urban communities' comparative advantages are all necessary.

In addition the key informants and focus group discussion concurred that, other potential opportunities include the availability of market demand for milk and milk products, eggs, and chicken, rising prices today, and good demand for milk and milk products, eggs, and chickens, as well as a strong culture for meat and egg consumption in large urban areas like Addis Ababa. Furthermore, rising animal product prices in urban areas, and over-all in the country present urban poor engaged in poultry production with a genuine and sustainable business opportunity.

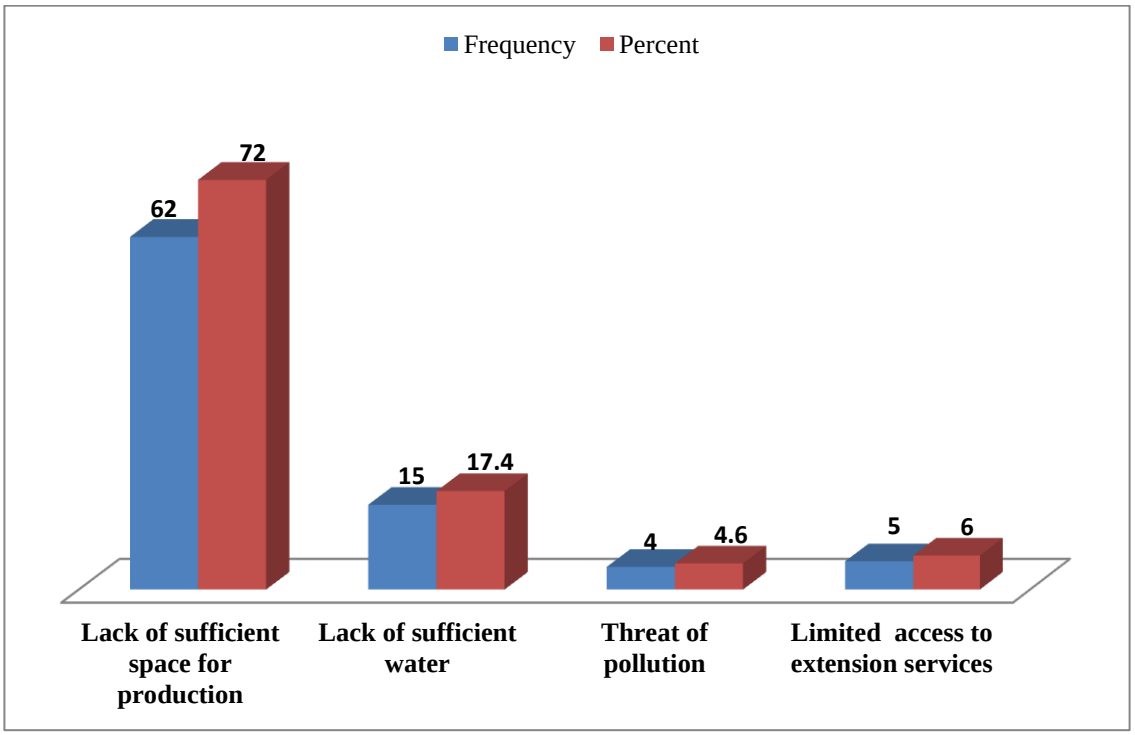

Fig. 4.5 Challenges in Practicing Urban Agriculture

Numerous obstacles varying in size and type impact the urban farming practice in Lemi-Kura sub city of Addis Ababa. As we can see from figure 4.5 the majority of the respondents' encountered with considerable challenges in practicing urban agriculture in the study area are lacks of sufficient space for production (72%), lack of sufficient water (17.4%), threat of pollution (4.6%) limited access to extension services (6%). These actual and potential problems of the urban farming are amongst the findings of the research and each of them is briefly discussed as follow.

Urban Farming Land Availability: A significant barrier to urban agriculture production in the research study area is the scarcity of land. Thus 72% of the respondents agreed with lack of sufficient space. Therefore urban agriculture is forced to be intensive on little space. The empirical data as shown in figure 4.5 support for it, and also still emphasize that the lack of space makes it difficult for the existing urban agriculture in urban environment. The existing horizontal expansion of urban areas is eliminating peoples not to access the raw materials from the natural environment such as agriculture, forestry and fisheries. As infrastructure and buildings grow, so does demand for land, driving up prices in Addis Ababa and the surrounding

towns. Multiple land uses alter the agricultural practices on the land and in the surrounding areas. People seek proximity to jobs and services as they become more complex both physically and economically.

Nonetheless, the field observation researcher verified that the availability of urban land isn't the primary obstacle for certain outlying urban farming communities. Therefore, there is a noticeable distinction in the study area between the urban core and outlying communities that have problematic urban land. Therefore, the issue of urban agriculture land is not as pressing for farmers who are located on the outskirts of cities as it is for those who live in urban centers. More households practicing agriculture were located far from the city center, while fewer households practicing agriculture and a higher percentage of households choosing other sources of income were found closer to the city center.

In a different phrase, homes in pre-urban areas had higher agricultural participation rates, while homes in urban areas had lower agricultural participation rates. Based on the results of focus groups, municipal government policies are the primary cause of the constraints on urban agriculture caused by a scarcity of available land. They make the point that the success of urban agriculture depends on land use regulations. Nonetheless, the local government would rather build homes on the vacant land. This merely serves to underline how much regulation affects urban agriculture from an economic standpoint.

Water Availability: The government has chosen to use nearby surface water sources from the Akaki River due to a sharp rise in population and the ensuing demand for water. Nevertheless, the groundwater, a different source of clean water for the city, will eventually be impacted by seepage from the contaminated rivers and runoff. One of the most important issues presently affecting the population's health in and around Addis Ababa is the contamination of surface and groundwater (Tamiru, 2004).

In a typical household, the main uses of water are bathing, cooking, cleaning clothes, and drinking (for both humans and animals). In the study area, potable water has always been in short supply and its valued high, yet demand for it is still rising. In the past, the community controlled household water usage to maintain a balance between supply and demand. According to focus group discussion the majority of urban farmers, use the domestic water needs of village

households and their animals, as well as provide water for planting trees and irrigating vegetable gardens. Nonetheless, a few urban farming participants demonstrated that the primary obstacle preventing their projects from progressing in the study area was a shortage of sufficient water during winter (Bega season).

Pollution: When excessive amounts of chemical fertilizers and pesticides are used, urban agriculture activity runs the risk of contaminating nearby water sources. This could jeopardize drinking water supplies and increase the health risks for urban population. The safety of crops and livestock can be further compromised by the use of untreated compost and wastewater. Additionally, urban poor households engaged in urban agriculture production face significant threats of contamination and disease due to the presence of unsafe water supplies, inadequate sanitation, uncollected waste, polluted waterways, and poor air quality in slum areas. These factors contribute to diminished crop yields and a decline in the nutritional quality of agricultural products (Corbould, 2013).

Researchers have shown that irrigating vegetable farms in Addis Ababa with heavily contaminated river water is one of the biggest issues with urban farming in the city. However, neither the producers nor other governmental or non-governmental organizations appear to be considering that at all. The majority of urban farmers in the outlying areas of the city irrigated their vegetable farms using the rivers that traverse Addis Ababa.

Key informants of the urban farming experts attested to the fact that urban water bodies are constantly vulnerable to pollution and heavy metal and chemical contamination from both human and industrial waste. They also concurred that it might be dangerous for customers' health to use these kinds of water bodies to irrigate vegetable farms. Moreover, the city's rivers receive both liquid and solid wastewater from businesses, residences, garages, and factories, among other sources. Because of this, it has a significant potential to cause consumers to experience serious health issues. To ascertain the extent of the contamination and its effects on the physical environment, more investigation is typically necessary.

To increase productivity, some farmers apply untreated household wastes to their farms, which is another potential source of pollution. Nonetheless, key informants of the experts in urban farming concurred that treated household sewage and composted organic solid wastes contain

nutrients that are advantageous to agricultural production and have historically been utilized by farmers. However, every focus group member concurred that they have never received assistance or a waste-control mechanism for the household wastes they use on their vegetable farms.

Focus group participants from urban agriculture participants confirmed that due to the possibility of excessive or indiscriminate use of agrochemicals by these illiterate farmers, which could leave harmful residues on the vegetables and have an adverse effect on the environment and public health if experts are not closely and promptly supervising them. The washing of the vegetable products is the other possible issue. The farmers were using heavily contaminated river water to wash their produce that included vegetables. Important informants concurred that there would be a significant increase in the possibility of vegetable contamination if vegetable products were washed in contaminated water.

This is because, after being cleaned with dirt water, the edible portions are probably going to become directly contaminated, potentially endangering the consumers' health. An additional cause for concern is the overuse of chemical fertilizer in vegetable production, as these crops are highly susceptible to chemical contamination. According to the focus group discussion, nearly all of the farmers in the periphery fertilize their private plots primarily with urea and DAP. The primary purpose of the fertilizers that focus group participants used so heavily was to boost vegetable yields, according to informants.

A few focus group participants affirmed that the cooperatives face certain challenges, including limited market access during the month of fasting, especially with regard to decreased demand for processed dairy products like cheese and butter. The other constraint related with dairy farming is shortage of fodder for cows. Therefore, farmers who lack official recognition are also more likely to experience financial instability, which in turn reduces their dedication to and capital investment in urban farming. Therefore, the success of these newly formed dairy cooperatives depends critically on the development of potential intervention strategies to get past these obstacles.

Providing the dairy cooperatives with the necessary resources, such as inputs to members to increase animal productivity, building market connections, educating farmers on how to prepare

cow dung and ensure high-quality milk, milk testing procedures, milk marketing, etc., are some potential improvement measures that should be implemented by urban farmer participants.

Access to Extension Services: According to key informants in Addis Ababa, the city administration is attempting to reorganize and reorganize its office for urban agriculture, which spans from the city administration to the *Woreda* level. This was primarily due to the fact that Addis Ababa's urban and peri-urban agriculture policies do not aim to achieve the level of efficiency and effectiveness that they do.

Key informants in the study area also attested to the serious difficulties caused by a lack of professionals in the field of urban agriculture, officers' inadequate technical knowledge, and widespread misconceptions about the practice among the public, city administrators, planners, and operators of urban agriculture. In addition this they explained that lack of funding, low productivity per unit area, gaps in genetic improvement, an inadequate supply of feed in terms of both quality and quantity, and gaps in the implementation of policies and strategies. Due to the various circumstances, Urban agriculture production in and around Addis Ababa requires thorough and integrated approaches.

According to focus group discussions, the number of experts in urban agriculture assigned to work in the sub city of *Woredas* appears sufficient to support urban farmers from the preparation of land for vegetables to post-harvest handling of poultry and dairy products; however, they lack the technical capacity to support the urban farmers in their interest. Low quality and productivity are the ultimate result of most farmers producing without sufficient knowledge and skill**.**

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Urban agriculture's impact on household income and food security is specifically examined, and the socioeconomic implications and difficulties of urban farming are also explored. The respondents' gender, age, household size, and educational background were among the demographic variables whose data was collected and examined. In addition, an evaluation was conducted on the socioeconomic standing of households, the kind of urban agriculture that takes place, and the main obstacles that it faces.

The result of this study confirmed that that women make up a significant portion of urban farmers since farming and associated activities such as processing and selling can frequently be more easily integrated with other household responsibilities. Nevertheless, the focus group discussion revealed that the majority of women take care of the house, raise the children, and assist their husbands with various household tasks. Ages 18 to 30 made up the bulk of the age groups in the sampled households. This suggests that the majority of urban farmers in the study area are middle-class individuals who are employed.

According to this study, when the size of the household member increases the food and social service consumption necessarily increases. The income earning status of household can matter to meet basic necessities of family member. People with high number of educated respondents predominate in the study area. On the other hand, it is also important to note that urban farming is practiced by people with different educational levels ranging from the illiterate ones to those who attended higher institutions.

This study indicates that there is a direct correlation between household member size and increases in food and social service consumption. The household's income level may have an impact on a family member's ability to pay for their essential needs. In the study area, the majority of respondents are highly educated. On the other hand, it is also important to note that urban farming is practiced by people with different educational levels ranging from the illiterate ones to those who attended higher institutions.

The most important vegetables grown in the study area are chard (kosta); lettuce and cabbage account for the majority of the income earned by urban farmers. The study's findings demonstrated that, in contrast to dairy farming, the majority of household income now comes from the production and sale of poultry.

The result of this study also confirmed that lack of adequate water, access to land, threat of pollution, lack of adequate extension services were the major constraint in the study area to urban agricultural activities.

5.2 Recommendations

The study's findings have led to the formulation of the following significant recommendations, which aim to enhance urban agriculture production in Lemikura sub city of Addis Ababa.

- The household's ability to pay for its members' basic needs may depend on their income. Urban agriculture must therefore be accepted as a valid form of urban economic activity. Therefore urban agriculture production must be recognized by stockholders as a legitimate urban economic activity. Thus it needs integrate in sustainable urban development, food security improvement, public health enhancement and urban environmental preservation.
- According to the result of this study access to urban land for agricultural activities and lack of adequate water are the major challenges in urban agriculture. So, providing land and adequate water to urban farmers should be given the highest priority may be made fairly to allocate some land for agriculture in the study area. Such arrangements should be coordinated and supported by the local governments.
- The result of the study confirmed that lack of adequate extension service such as poor technical knowledge of the officers; wide misunderstandings about urban agriculture among residents, urban planners, city administrators and the urban agriculture operators themselves and low productivity per unit area are among major challenges. As a result, the government ought to finance all agricultural inputs as well as opportunities for training and consulting.

- In general urban agriculture activity in the study area is affected by many challenges, which were not fully covered by the researcher. Thus it requires further research to determine its growth and sustainability.

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Questionnaire:

Dear Respondents:

This questionnaire is designed to gather data on Assessment of Urban Agriculture Productivity in *Lemi Kura Sub City.* Thus, I kindly request you to read the questions carefully and give accurate and real data. The questionnaires are solely for academic research purpose, so be free and give your honest response.

Part. 1. Demographic Information:

1. Sex of the household head: A. Male _____ B. Female _____ C. Age _____

2. Family size of households: Male _____ Female ____ Total_____

3. Educational Level of the household:

   A. Can't read and write C. Secondary education (grade 9-12)

   B. Primary education (grade 1-8) D. Diploma and above

4. Where is your birth place? A. Addis Ababa B. Outside Addis Ababa

5. If your place of birth is outside Addis Ababa when was you are coming here? _____ Year.

5. If your place of birth is outside Addis Ababa what was your major reason for coming here?

   A. Marriage B. Job opportunities C. Following relatives D. Educational opportunity E. if other, specify_____

Part. 2. Socio- Economic Status of Households

6. What is your main Occupation?

   A. Government employee B. Private Sector C. NGO D Trade E. Others specify _____

7. What is the estimate average monthly income you are gaining these days in ETB?

   A. Below 2000 B. 2000-5000 C. 5000- 10,000 D. 10,000- 20,000 E. Above 20,000

8. When did you start to engage in urban agriculture? Month: _____ Year_____

9. Types of vegetable and fruit production, and use.

Type of urban agriculture production	Average Production level in Kilogram per 3 Months	Use	
		Home consumption	Selling
Cabbage			
Onion			
Carrot			
Lettuce			
Chard (Kosta)			
Tomato			
Potato			
Sweet potato			
Fruit (Orange, Mango, Papaya, Banana etc.)			
Other, specify			

10. Types of dairy farming and poultry production per month

Dairy farming and poultry products	Average Production level per Month	Use		
		Home consumption	Amount of Selling	Income in Birr
Milk (in litter)				
Butter (in kigs)				
Cheese (Kigs)				
Meat chicken (number)				
Egg (number)				
Other, specify				

11. What is the approximate area of your urban agricultural land that you are farming on it?

12. Do you face challenges when you are practicing urban agriculture production? A. Yes B. No

13. If your answer is yes please mark from the following table, (it is possible to select more than one challenge).

No	Challenges	✓
1	Lack of sufficient space for production	
2	Lack of sufficient water	
3	Lack of inputs such as seeds, breeds, fertilizer, credit facilities.	
4	Low market access	
5	Threat of pollution	
6	Limited access to extension services	
7		
	Other (specify)	

Questionnaire for Key informants

1. How do you evaluate the extent of urban farming in this *Woreda*?
2. What types of urban agricultural activities are commonly produced in your Woreda?
3. What problems do the urban farmers face in urban farming activities?
4. How do you evaluate the importance of urban agriculture production activities as compared to other income generating practices?
5. What are the possible opportunities and challenges of participating urban agriculture production activities?
6. How do you evaluate urban agriculture extension services in Woreda 02 of Lemmikura sub city?

Questionnaire for Focus Group Discussion

1. What are the most important practices of urban agriculture in *Woreda 02 of Lemikura Sub City*?
2. Do you have any challenges when you are practicing urban agriculture activities?

If your answer is yes please mention them,

_____

_____

_____

3. How do you solve these problems?
4. What are the major advantages of practicing in urban agriculture in your Woreda?
5. How do you evaluate the sustainability of urban agriculture activities in your Woreda?