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**ADDIS ABABA UNIVERSITY**

**COLLEGE OF SOCIAL SCIENCE DEPARTMENT OF  
GEOGRAPHY AND ENVIRONMENTAL STUDIES**

**MASTERS PROGRAM IN GEOGRAPHY AND ENVIRONMENTAL  
STUDIES**

**A STUDY ON URBAN AGRICULTURE CHALLENGES AND  
OPPORTUNITIES: A CASE STUDY ON POULTRY FARMING IN  
WOREDA 07 AND 15: KOLFE-KERANYO SUB-CITY, ADDIS ABABA.**

**BY**

**SEID MOHAMMED ABATE**

**JUNE: 2016**

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**BY: SEID MOHAMMED ABATE**

**APPROVED BY BOARD OF EXAMINERS**

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## **DECLARATION**

I, Seid Mohammed Abate declare that this research study titled, A study on Urban agriculture challenges and opportunities; A case on poultry farming in Kolfe-Keranyo sub-city of Addis Ababa in Woreda 07 and 15 is My own personal work, presented to the Graduate School of Addis Ababa University Faculty of Social Science Department of Geography and Environmental Studies, in partial fulfillment of the requirement for Masters of Art degree in Urban and Regional Development Planning. The intention of this work is to provide in site look of the urban poultry farming constraints in the study area and to provide solution of the problems at hand.

Name: Seid Mohammed Abate

Signature \_\_\_\_\_

Date \_\_\_\_\_

### **LETTER OF CERTIFICATION**

This is to certify that Mr. Seid Mohammed Abate completed his project titled, A study on Urban agriculture challenges and opportunities: A case study on poultry farming in Woreda 07 and 15: Kolfe-keranyo sub-city, Addis Ababa. As I have evaluated, his project is appropriate to submitted as a partial fulfillment requirement for the masters of Art degree in Urban and Regional Development Planning.

Project advisor: Dr. Mohammed Assen

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

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## **List of Acronyms**

|       |                                                      |
|-------|------------------------------------------------------|
| CSA   | Central statistics authority                         |
| EARO  | Ethiopian agricultural research organization         |
| EMA   | Ethiopia Mapping Authority                           |
| FAO   | Food and agriculture organization                    |
| GDP   | Gross domestic product                               |
| HHHs  | Household heads                                      |
| IFPRI | International food policy research institution       |
| NGOs  | Non-governmental organization                        |
| SNNPR | Southern Nations Nationalities, and Peoples' Region. |
| SSA   | Sub-Saharan Africa                                   |
| UA    | Urban agriculture                                    |
| UNDP  | United nation development programme                  |
| UPA   | Urban and peri-urban agriculture                     |
| USAID | US agency for international development              |

## Abstract

*This research paper is a study on urban agriculture challenges and opportunities with particular emphasis on urban poultry farming in two selected Woredas of Addis Ababa. The general objective of the study is to identify some of the major problems and constraints faced by the urban poultry farmers, and investigate and explain the character and role of urban agriculture with emphasis to urban poultry farming. It also tries to see the types of assistance needed and suggests possible solutions to the problems. The analysis of the study utilized both primary and secondary data. The primary data were collected through a questionnaire survey that covered 114 small-scale poultry farming households with more than 2,484 breeds reared in two 'weredas', of Addis Ababa. The 'weredas' are located in the northern and western peripheral parts of the city. The secondary data were collected from different libraries, document centers, organizations and offices. The study discusses the role of urban agriculture in connection with nutrition and food security, income generation and employment. An assessment was also made on the problems of urban agriculture. An attempt was made to investigate the characteristics of urban poultry farming households' profile. Accordingly, people are dominated in the sectors both the middle age groups with the secondary level of education (35.3%) and an average household sizes (47.05%). As the findings of the study reveal, the need to feed family as the major factor that motivated poultry farmers to start the activity with the initial capital less than 5,000 birr which accounts (38%). Most of the poultry farmers initially purchased the breeds by using their own money from private hatchery center to start operation (50%) and the majority (70.6%) of the poultry farmers used agricultural extension services to improve their poultry production. Nearly 29.6% of the farmers have never been supported by extension agents in their activity. The flock type in both locations is composed of (23.5 %) local, (5.9%) hybrid and (70.6%) exotic breeds. The producers mainly conduct the poultry farming activity using family labor in smaller land area, including around the living accommodation. Poultry health care is one management aspects in the study areas. Evidence from the findings of this study indicated that the farmers (70.6%) used modern medicine to cure their chicken against diseases like:-Newcastle, fowl typhoid, and fowl box. On the contrary, the other famers used traditional medicine practice such as lemon, paper, mitmita, senafech and tetra cycle. Poultry feeding system is practiced in both locations and about (82.4%) depending on purchased feed Menno. The major feed sources include: - grains, Menno, Food left over, green plants. The major problems in managing the poultry farms include shortage and high cost of chicken feed, diseases, and low production potential of indigenous chicken, lack of adequate space for rearing, lack of labor, credit and extension services. Most of the producers have fear of eviction and do not know government's attitude towards urban poultry farming and its recognition, and most of them have never received assistance from the government. Finally, Evidence from the findings of this study indicated that the most ranked source of expense of egg production is poultry feed followed by utilities and health care. Similarly, the most ranked factor that affects the productivity and profitability of the poultry farms is choice of breeds followed by feed resources and improved feed system and health care. Most of the producers do not keep records every day, of eggs output from each chicken. Most of the eggs is allocated for sale and the sale of the eggs is the most frequent and regular source of cash income for the producers. The majority of the farmers sold eggs to directly the Kio sky shop and Hotel followed by supermarket and consumers. Proximity, price and reliability were considered in the selection of market outlets. Eggs prices are found to be slightly higher in the inner city compared to the periphery and prices are determined mainly by the producers.*

# CHAPTER ONE

## 1. INTRODUCTION

### 1.1 Background of the Study

Urban population is growing fast because of natural growth and rapid migration to the cities. Feeding urban populations adequately is a major problem in developing countries. Rural areas don't produce enough food to feed both rural and urban people and food importation is constrained by lack of sufficient foreign exchange (Sawio, 1973). In supplementing, urban agriculture has recently becoming a familiar, almost permanent feature all over tropical Africa and in many developing countries (Sanyal, 1984). The urban based population is keeping cattle, sheep and chicken or growing rain fed crops, on the plots adjacent to their houses and in stream borders. In Ethiopia, like many other developing countries, the increasing concentration of population in the urban areas, coupled with drought and famine has put enormous pressure on food supply system in both urban and rural areas (Gebre-Egziabher, 1994).

The role of urban agriculture plays in food security is much greater in the developing countries. In many areas of the world, produce from urban agriculture constitutes a large percentage of total crop production around 90% of fresh vegetable consumption in some towns comes from production within the city and peri-urban agriculture (Maxwell, 1995).

Urban agriculture contributes to producer's well-being in several ways, including nutrition, health, cash saving and income generation. Regarding nutrition for instance self-produced food accounted for as much as 18% of total house hold consumption in east Jakarta (Yeung, 1985). However, percentage are much higher in surveyed Africa cities as urban farmers produce mostly for household consumption: 77% in urban Kenya (lee., *et al*, 1991). In Nairobi over 50% used the entire amount harvested to feed their families about 25% shares or pay helpers with food (Lado, 1990). In Addis Ababa, co-operative household's consumption of vegetables was 10% higher than the rural average and this enabled them to save 10-20% of their income (Gebre-Egziabher, 1994). A survey of household's consumption of vegetables in Addis Ababa in 1983 showed that 17% of the 1352 surveyed households produced their own vegetables (Hormann and Shawel 1985). It also indicates that the area under cultivation in all income categories was usually less than 25M<sup>2</sup>.

As an urban agriculture system, poultry farming plays an important economic, nutrition and socio-economic role in the livelihoods of poor household. It has been estimated that more than 80% of the global poultry population occurs in traditional family based production system and contribute up to 90% of the total poultry products in many countries (Gueye, 2009; Sonaiya and Swan, 2005). Nearly all rural and peri-urban families in developing countries keep a small flock of free-range chicken (Jens et al, 2004). The types of production inputs used in this system are few and are also poor in quality and low in quantity. However, low level of risk of scavenging chickens farming has made it a choice of livelihood strategy for subsistence farmers (Sonaiya, 2009).

Poultry production is deeply embedded in Ethiopian society kept by all strategy of society from the landless rural poor to the well off in the cities (Wilson, 2010; Tadelle *et al*, 2013). In the Ethiopian context poultry effectively means domestic chicken, out of a total of 44.89 million chickens in Ethiopia, the small-scale family poultry production accounts for about 98% mainly indigenous birds (96.6%) (CSA, 2012), and contributes to more than 90% of the national chicken meat and egg output (Dana *et al*, 2010).

According to Mamo (2012), poultry production in Ethiopia cannot be described not only as the production of meat and egg, but also is important as job creation in the distribution and retailing of these products. Based on its level of bio-security and birds or their products marketed, the poultry production sector is classified in to four areas: industrial, large commercial, medium commercial and village chickens' production system (Rushton et al, 2004). Poultry production in developing countries is often described as a scavenging or village system (Kitali, 1998). Sonaiya & Swan (2004) report also that in sub-Saharan Africa 85% of the poultry sector is managed using village production systems.

Although traditional practices continue to dominate domestic poultry production in Ethiopia, there has been a shift to industrial production to exotic and mainly urban market supply (FAO, 2008). Poultry production systems are outlined under the social and physical environmental conditions of Ethiopia (Alemu, 1995). According to (CSA, 2013/14) reports the chicken populations of Ethiopia are around 51.35 million. However, the largest production of eggs and poultry meat in Ethiopia is produced by village system (Tadelle 1999).

About 99% of the annual poultry meat and eggs production comes from indigenous chickens kept under traditional or scavenging management system (FAO, 2008).

Population growth; urbanization and rising income in many parts of the developing world have caused a growing demand for food of animal origin. According to the World Watch Institute (2011), 74% of the world's poultry meat, and 68% of eggs are produced in ways that are described as 'intensive' in the year 2011. The proportional contribution of poultry by the year 2020 is expected to increase to 40%, the major increase being in the developing world (Delgado *et al.*, 1999). In total, poultry production/eggs and meat/constitute 30% of all animal protein consumed worldwide. Within the last 10 years, this production has increased from 20% to 30% of all animal protein (IFPRI, 2000).

Rising income and urbanization in many parts of the developing world caused a growing demand for alternative food resources like animal products. There are only few alternative animal protein sources available in the tropics including chicken and chicken products (Odunsi, 2003). The per capita chicken meat consumption in Ethiopia is reported to be 2.85 kg per annum and chicken meat was relatively cheap, available and affordable source of animal protein in the country (Alemu and Tadelle, 1997; Kenea *et al.*, 2003). However, the prices of chicken is showing an increasing trend from time to time like other livestock products and could not be easily affordable by the poor if the situation continues.

## **1.2. Statement of the Problem**

Acceleration of urbanization in developing countries has been accompanied with increased demand for food consumption. Yet, the number of poor urban households has also significantly being rising along with urbanization, so do many households who cannot afford to buy enough food for their own consumption (Bryceson and Potts; 2005).

Most of urban farming is practiced by urban poor who consume most of the production and supply the surplus to market (Bryld, 2003, Mireri *et al.*, 2006). Although urban agriculture plays a significant role in producing food and generating employment and income for the urban dwellers; but, it has been given less emphasis (Tinker, 1994). The major expense for most of the urban poor is purchasing of food; thus, they will be left with nothing for health, education and other necessities. They also hardly consume varieties of food.

This, it is not surprising that urban farming contributes to improving livelihoods for the urban poor. It improves not only quality of food intake but also the nutritional value if the poor self-growing, vegetables, chickens, fruits and so on (smith, 1996: in Bryld 2003: 81, UNDP 1996). In this connection (RUAF 2007: 2) stated that the role of urban agriculture:

*‘The contribution of urban agriculture to food security and healthy nutrition is probably its most important asset. Food production in the city is in many cases a response of the urban poor to inadequate, unreliable and irregular access to food and the lack of purchasing power’.*

Small-scale poultry production represents one of the few opportunities for saving, investment and security against risks. It accounts for approximately 90% of total poultry production (Branckaert, 1999). Despite the acknowledged importance of poultry production opined that it is characterized by low production level due to limited finance for the procurement of basic poultry equipment and materials (Akanni, 2007). According to Delgado et al(1999), the dramatic increases in consumer demand for poultry products, mainly in urban areas, will have major implications for demand in availability and prices of concentrate feeds that will, in turn, affect intensive poultry production activities in most developing countries.

Diseases, predator and management factors appear to be more important for survival of the individual bird and for the overall productivity of the flock. Thus if production could be improved, poultry would create an opportunities for development of the poor segments of the society (Gueye, 1998). Poor availability of feed resources, in terms of both quantity and quality, is the other major problem affecting production and productivity of livestock including urban chicken (Mohamed *et al.*, 1995). In addition to the above mentioned constraints, Singh (1990) reported other vital problems affecting the productivity of chicken including: low productivity of local breeds (attributed to low genetic potential, disease, and poor chicken management practices), poor extension services and inadequate credit facilities, availability of few or limited research activities and lack of organized marketing and processing facilities. In the study area some farmers drop out due to unknown reasons after starting the farm. However, urban poultry farming is facing a number challenges. This study is mainly focuses on major urban poultry production challenges and problems in woreda 07 and woreda 15 of Kolfe-Keranyo sub-city of Addis Ababa.

### **1.3. Objective of the Study**

The general objective of the study is to identify the major problems faced by the small-scale poultry production and the socio-economic function of chicken to the urban poultry farmers: in the case of Kolfe Keranio sub city, Addis Ababa.

#### **1.3.1. The specific objective will be:**

- A) To assess the performance, socio-economic function of the chicken in the study.
- B) To carry out a survey on management practice and production performance of urban household chicken in the system.
- C) To see the market prospects and economic benefits of the poultry farmers in the study area.
- D) To identify the major constraints and possible opportunities in the system.

### **1.4. Research Questions**

Based on the above objectives, the following questions are set as guideline of the study.

1. How do the small-scale farmers carry out the poultry production process and feeding performance in the study area?
2. How do the farmers practice the chicken health management?
3. What are the market prospects and economic benefits of poultry production?
4. What are the challenges and opportunities for small-scale poultry production in the study area?

### **1.5. Research Designs**

The study design includes structured questionnaires for farmers and interview for experts and government officials.

### **1.6. Sampling Method and Sample Size**

To carry out the survey, the sampling technique used was stratified sampling and the method employed was proportional random sampling. Two woredas (Woreda 07 and Woreda 15) out of Fifteen Woredas were purposely selected for the study on the bases of magnitude of the problem of urban poultry production. Accordingly assessment was made to have general picture about the current status of poultry production in the Sub-City. It was found out that the magnitude of the problem is relatively bigger in the two selected Woredas.

In this two sample districts, there are a total of 114 poultry farmers of which 69 are organized in six poultry farmers association while the remaining 45 are independent poultry farmers. In this study a simple random sampling techniques was used to select 34 poultry farmers that consists of 30%. Every third of the 114 poultry farmers list was included in the study. When inconvenient to make the selected individual or unwilling, the next farmer in the list is considered to fulfill the sample size.

## **1.7. Data Sources**

Both primary and secondary data were collected from different sources. These are:

### **1.7.1. Primary Data Source**

The primary data were obtained through survey questionnaires, observations, field visits, focus group discussions and key informant interviews. This is mainly comprised of household heads or the farmer directly responsible for the poultry farm. The survey questionnaire contained both open and close-ended questions which are used to get data and information addressing the entire research objectives. A visit to physical facilities of birds and poultry farming households to get information on the poultry producer's characteristics, management practices, feeding system, opportunities and the related problems faced by the sector producers in the study area. Also interview was used for various agricultural office experts, development agents and key informants by personal interviews using structured questionnaires.

### **1.7.2. Secondary Data Source**

The secondary data source used to gather information from various sources including official documents, recorded, published and unpublished reports, books, report magazine, journal, internets and other related literature to achieve a perspective of the issue under considerations. Sources of several libraries, document centers and offices consulted in order to obtain the secondary data.

## **1.8. Data Collection Procedure**

In urban areas, poultry farming are mainly preferred if it is possible at peripheral areas. So do this, first, Kolfe-Keranyo sub-city was selected for this study because, it is one of the peripheral sub-city in Addis Ababa. Besides, I contacted with the Kolfe-Keranyo sub-city agricultural office.

Moreover, the discussion was made with the representative about the sub-city poultry farming and its related problems. Secondly, from the total of 15 Woredas in Kolfe-Kranyo Woreda 07 and Woreda 15 were selected on the basis of the magnitude of the poultry farming problems. Thirdly, according to data obtained from the offices of these two woredas, there was a combined total of 114 poultry farmers' household there. A rapid field survey was conducted before the main survey work to know the distribution and contribution of the urban poultry farmer household's.

Quantitative and qualitative data were collected on chicken production objectives (purposes), chicken type (local, exotic and high breed), ownership pattern (household member owning the chicken), management systems (feeding, housing and disease control), flock size, marketing practices (prices of eggs), constraints of poultry production and opportunities for improving poultry production in the study area using well organized questionnaires. Moreover, the basic information on the severity of the constraints on the improved chicken and other important aspects of chicken production was collected through group discussion. In addition to this, some officers from Ministry of Urban Agriculture and woredas agriculture experts were also interviewed.

### **1.9. Scope of the Study**

Urban agricultural activities include cultivation of crops, vegetables, fruits, flower, livestock rearing, poultry etc. However the scope of the study is limited to investigate and explain the challenges and opportunities of small scale poultry farming based on a survey of sample respondents from the two woredas (Woreda 07 and Woreda 15) of Kolfe Keranio sub-city of Addis Ababa.

### **1.10. Limitations of the Study**

The study has its own limitations. Some of the limitations include the fact that most of the data obtained from the poultry farmers were mostly rough estimation of fiscal year; some of the poultry farmers might have started the farming and after a few months closed down due to unknown reason, lack of sensitive follow up and concentration of the flocks. On the other hand, lack of review literature on improved poultry farming especially in urban areas of Ethiopia. Some of the poultry farmers' were not co-operative enough to give information.

### **1.11. Data analysis and presentation**

The result of the study presented in a systematic way using different data presentation techniques. The data was analyzed by using SPSS statistical software through simple descriptive statistics like percentage, frequency and presented in form of tabulation.

### **1.12. Rational and Significance of the study:**

The study is believed to have the following significances.

- It will show the bottlenecks that hinder the urban poultry farmers in the study area and recommend viable solutions to solve the problems that can be of some help for all the stakeholders.
- It can provide an insight for professional and practitioners in urban poultry production system challenges facing in the study area.
- Furthermore, it may serve as a base-line work for future investigation in the urban poultry production constraints.

### **1.13. Organization of the Study**

This study paper has five Chapters. The first chapter deals with the introduction part, which again comprises the overview of urban agriculture and poultry production, statement of the problem, research objectives and research questions, methodology, scope , limitations and significance of the study. The second chapter is concerned with the review of related literature where the concept of urban agriculture definition; function of urban agriculture; food security; who are urban farmers?; regional differentiation of urban agriculture; poultry population and distribution in Ethiopia; poultry production characteristics; problems and challenges of poultry production like diseases; Environmental challenges; feeding resources and housing; the socio-economic role of poultry and egg production in Addis Ababa are reviewed. The physical, demographic and socio-economic characteristics of the study area of Addis Ababa are briefly presented on chapter three. Chapter four is devoted to the discussion of the characteristics of urban poultry farming; chicken production system; the poultry health management practice; marketing and distribution methods; the constraints and opportunities of poultry production. The conclusion of the overall parts of the paper and recommendations are presented in chapter five.

## **1.14. Operational Definition of Terms.**

### **1.14.1. Definition of terms:**

**Woreda:** is a small administrative division of Ethiopia, managed by the local government.

**Sub-city:** is a large area of an administrative division of a city of Addis Ababa.

**Kolfe-keranyo:** is one of the ten sub-city of Addis Ababa ...The district is located in the Western suburb of the city, near the Gefersa reservoir.

**Household:** constitute a person or group of person irrespective of whether related or not who normally lives together in the same housing unit and who have common cooking announcement.

**Cage:** is an enclosure house of chicken made of bars, wire normally to hold hens.

**Menno:** It is an ingredient feed of chicken which is prepared from various material of food type.

**Poultry:** are domesticated birds kept by humans for their eggs, meat or their feathers.

**Chicken:** is a type of domesticated fowl, a sub-species of the red jungle fowl, kept by humans for their eggs and meat.

**Opportunity:** is afforded an opportunity to exchange view, situation or condition favorable for attainment of a goal.

**Food Security:** is a measure of the availability of food and individual's ability to access food.

## CHAPTER TWO

### 2. REVIEW OF THE RELATED LITERATURE

#### 2.1. Urban Agriculture: Definition

At one stage in history, the world's entire population was rural, living a nomadic or pastoral life and providing for their own food needs. Over time, this way of life gave way to different economic and social patterns in which people gain certain benefits from gathering together to live in towns and cities (FAO, 1998). Urban agriculture is recent phenomenon as compared to rural farming. Different authors described urban agriculture in various ways on basis of location or time of agriculture activities. In short, any agriculture activity that is practiced in cities is considered as urban agriculture. Yet, Bryld (2003:80) stated that:

*'Activities related to urban agriculture are rarely are isolated from rural areas. Activities in rural and urban areas are often inter-linked across space and sectors. ...city borders are fluent, which is further emphasized by the active rural-urban interactions taking place in the peri-urban areas. It is, therefore, important that urban agriculture that urban agriculture is seen as dynamic concept'.*

As urban centers expand, they often engulf villages whose residents continue to farm in increasingly constricted surroundings (Tinker, 1994). Hence, UPA can be a continuum in space and time when cities grow (Haight, 1999). The urban dwellers often maintain their own peri-urban farms and there have always been ties between villages and urban communities (Tinker, 1994). Urban agriculture is not a recent phenomenon. Field work and aerial images of archaeological sites are unraveling agricultural practices of urban settlements achieved by ancient civilizations, for the production of food, feed and fodder; fuel, building, shade, fencing, wind-break trees, ornamental and medicinal plants and livestock for food, transport (Tinker, 1994). The early cities of hunters required food storage and these led to the selective domestication of animals and to the regeneration of seed stock (Jacobs 1970, in Smith 1994).

The need for food and non food supplies explains the coincidence of ancient city sites for farming. Those cities provided the incentive and testing grounds for innovations and more intensive and productive farming systems (Reader's Digest, in Mougeot 1994). Hence UA is neither a new nor a declining activity in towns; in fact, agricultural goods produced in cities can be the corner-stones of many urban economies.

The capacity of governments to manage urban growth is threatened in many developing countries; providing food, shelter, and basic services and creating sustainable cities are Challenges to many city authorities (Drescher, 2000).

Urban agriculture(UA) refers to the growing of food crops , fruit tree, raising of animals, poultry, fish, bees, rabbit, snakes, pigs or other stock considered edible locality (Tinker,1989). UA is practiced by diverse categories of urban farmers ranging from low income survival to agri-business (Tinker, 1994).Urban agriculture is defined as:

*‘An industry that procedures and markets food and fuel, largely in response to the daily demand of consumers with in a town or city or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and revising natural resources and urban waste, to yield a diversity of crops and livestock (Smit 1996:3, in Sawio 1998)’.*

Most is small-scale and intensive which can be very successful in meeting the needs of urban residents (Smith, 1991). Several researchers have tried to clearly distinguish between urban and peri- urban agriculture (UPA) and rural agriculture. Criteria used to make such distinctions include closeness to the city center, inclusion in the administrative municipal boundaries and type of products grown (de Zeeuw, 2004). After reviewing the related literature, Mougot (2000) concludes that the most important distinguishing feature of UA is not so much its location, or any of the above mentioned criteria, but the fact that it is an integral part of the urban economic, social and ecological system. It uses urban resources such as land, labor, urban organic wastes, water, and produces for urban citizens. Further, urban agriculture is strongly influenced by the urban conditions such as policies; competition for land, urban markets a strong impact on the urban system (urban food security and poverty, urban ecology and health).This is explained by (Mougot 2000:21)

*‘Urban agriculture is located within (intra-urban) or on the fringe (peri-urban) of a town, a city or a metropolis, and grows or raises, processes and distributes a diversity of food and non-food products, re- uses largely human and material resources, products and services found in and around that urban area, and in turn supplies human and material resources, products and services largely to that urban area’.*

Among urban agriculture activities, poultry raising (for both meat and eggs) is most common, but cattle, small ruminants, pigs, and rabbits and other micro-livestock are raised as well (Maxwell and Zziwa, 1992). According to Smith (UNDP, 1996) approximately 800 million

urban citizens worldwide are involved in UA in some way. Considering the proportion of urban population, sixty-eight percent of the households of Dar es Salam, Tanzania (SaOwio, 1998); 35% in Kampala, Uganda (Maxwell, 1999), 22% in Amman, Jordan (Department of Statistics, 2002) and 40% in Havana, Cuba (Lapped, 2002) are engaged in urban agriculture.

## **2.2. Function of Urban Agriculture**

Urban agriculture is mainly practiced in city open spaces, along river side's and urban fringes where land is not suitable for building construction. As Bryld (2003:81) puts it *“urban agriculture brings with it great potentials for enhancing the situation of the urban citizens, especially those with the lowest incomes who are dependent on the access to locally grown food”*. How does urban agriculture enhance the situation of urban poor?

## **2.3. Food security**

Acceleration of urbanization in developing countries has been accompanied with increased demand for food consumption. Yet, the number of poor urban households has also significantly being rising along with urbanization, so do many households who cannot afford to buy enough food for their own consumption (Bryce son and Potts 2005).

Most of urban farming is practiced by urban poor who consume most of the production and supply the surplus to market (Bryld 2003, Mireri *et al.* 2006). The major expense for most of the urban poor is purchasing of food; thus, they will be left with nothing for health, education and other necessities. They also hardly consume varieties of food. Thus, it is not surprising that urban farming contributes to improving livelihoods for the urban poor. It improves not only quality of food intake but also the nutritional value if the poor self-grow vegetables, fruits, chickens and so on (Smith 1996: in Bryld 2003: 81, UNDP 1996). RUAF (007:2) report emphasized the role of urban agriculture as follows:

*‘The contribution of urban agriculture to food security and health nutrition is probably its most important asset. Food production in the city is in many cases a response of the urban poor to inadequate, unreliable and irregular access to food and the lack of purchasing power’.*

## **2.4. Who are Urban Farmers?**

The urban farmers are women and men coming from all income groups. But the majority of them are low-medium income earners, who grow food for self-consumption or as income generation and most of the cultivation are informal with little if any support (Jacobi *et al*; 2000:4)

Maugeot on his part argues that urban farmers do not at all form a homogeneous group of the people and they can be found among almost every socio-economic group of the city. For the reason, he identifies three farmer categories, classified according to the reasons for practicing urban agriculture (Mougeot; 1993:14).

1. Low-income survival farmers: they practice urban agriculture mainly to survive and achieve a combination of nutritional and socio-economic benefits,
2. Middle-income home gardeners: they practice urban agriculture mainly to provide supplemental food and/or income;
3. Agribusiness ‘farmers’; they practice urban agriculture to obtain income.

## **2.5. Regional Differentiation of Urban Agriculture**

According to (FAO, 2001) implemented study provides estimations per-region of urban-based agriculture, as well as population, main crop and livestock system involved in Table 1.

In sub-Saharan Africa (SSA), it is estimated that ten percent or more of urban population is active in UA (around 11 million people). Urban farming in this region is found to be very heterogeneous, ranging from small-scale, but capital intensive, market-oriented commercial vegetable growing or dairy farming, to part-time subsistence farming by the urban poor (FAO, 2001). In Northern Africa and Middle-East region, approximately, six million urban residents are engaged in small-scale production of horticulture and livestock products, notably fruit vegetable and poultry in addition to off-farm work. In south Asia, eleven million urban residents are involved in UPA, including intensive production of perishable high-value commodities such as Milk and fresh vegetables. In this region, UPA contributes substantially to food security in the city. In most large towns and cities throughout East and South-East Asia seven million people were engaged in urban activities, notably intensive production of perishable, high-value commodities.

Table 1: Urban farming per-region

| Region                          | Agriculture Population (%of region) | Principle Livelihoods                                           | Characteristics                                                                                          |
|---------------------------------|-------------------------------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Sub-Saharan Africa              | 3                                   | Fruit, vegetables, dairy cattle, goats, poultry; off-farm work. | Heterogeneous, and dynamics; It is estimated that in some cities, 10% of the population are engaged UPA. |
| Middle East and North Africa    | 6                                   | Horti-culture, poultry, off-farm work.                          | Fruit and vegetable; small contribution to income.                                                       |
| South Asia                      | 1                                   | Horti-culture dairy, Poultry and other activities.              | Often seen as a livestock-based farming system.                                                          |
| East and South East Asia        | 1                                   | Horti-culture dairy, Poultry and other work.                    | Milk and vegetables, often commercial.                                                                   |
| Latin-America and the Caribbean | 3                                   | Horti-culture dairy, Poultry.                                   | Focuses on high demand perishable products, limited space requirements.                                  |
| Eastern-Europe and Central Asia | 7                                   | Vegetables, poultry and pigs.                                   | Recently grown in importance; mainly for own consumption, with occasional selling.                       |

Source: FAO, 2001.

In Latin America urban agriculture system includes mainly horticulture, dairy and poultry. In East Europe farming is wide spread by urban residents, but Mostly for consumption (fruit, vegetable and pigs).

## 2.6. Poultry Population and Distribution in Ethiopia

Poultry production is an important economic activity in Ethiopia. Poultry production can be described not only as the production of meat and eggs but also the distribution and retailing of these products. Based on its level of bio-security and the birds or their products marketed, the poultry production sector is classified into four areas: Industrial, commercial, medium commercial and village chicken production system (Rushton *et al*, 2004). Also Gura (2008) reported that over the past few decades, high-bred chickens together with factory farms have

been introduced in to developing countries like Ethiopia. Beside its social and cultural benefits poultry plays a significant role in family nutrition. Popkin (2009) stated that there are major nutritional benefits to consuming some red and some white meat. A suitable feed source is the main factor for poultry production. Chicken production and consumption is increasing world-wide. According to Zafar *et al*, (2005), all over the world white meat consumption has increased during the last few decades. The chicken production of Ethiopia is estimated to be about 65 million heads (FAO, 2000). Poultry include all domestic birds kept for the purpose of human food production (meat and eggs) such as chickens, turkeys, ducks, geese, ostrich, guinea fowls, doves and pigeons are found in their natural habitat (wild) whereas, geese and turkey are exceptionally not common in the country. Thus the word poultry production is synonymous with chicken production under the present Ethiopia condition (EARO, 1999).

Less than 5% of domestic birds in Ethiopia are internationally recognized or well-known breeds (Wilson, 2010). Each local ecotype/native population/ actually comprised chickens with wide range of morphologic or genetic diversity. The most dominant chicken reared in Ethiopia is local ecotypes, which show a large variation in body position, plumage color type and productivity (Halima *et al.*, 2007). Generally, Tadelle *et al.* (2003a) and Halima (2007) report that the names of the indigenous chicken groups were being called native-chicken.

The distribution of chicken in rural or urban Ethiopia varies with altitude and the highest concentration of village chicken is found in Gojjam, Gonder, Shewa, Sidamo, Tigray and Wollo administrative regions (EMA, 1981). In many countries of the world, poultry are kept as scavengers in and around the residence areas at village and family level (Kitalyi, 1998). Poultry production systems in Ethiopia show a clear distinction between traditional low input systems and modern production system using relatively advanced technology. There is also a third emerging small-scale intensive system as an urban and peri-urban small-scale commercial system (Alemu and Tadelle, 1997).

Table 2: Poultry Population size in Ethiopia by region.

| Region           | Native     | Hybrid    | Exotic  | Total      |
|------------------|------------|-----------|---------|------------|
| Tigray           | 302,9519   | 366,727   | 78,149  | 3,474,394  |
| Afar             | 43,720     | 0         | 0       | 43,798     |
| Amhara           | 9,983,180  | 339,046   | 46,049  | 10,368,274 |
| Oromia           | 11,983,432 | 545,062   | 75,165  | 12,603,660 |
| Somalia          | 106,414    | 0         | 0       | 106,534    |
| Benshangul-Gumuz | 735,343    | 7,260     | 0       | 742,858    |
| SNNPR            | 6,437,286  | 65,978    | 13,862  | 6,517,126  |
| Harare           | 30,794     | 615       | 0       | 31,777     |
| Addis Ababa      | 19,607     | 1569      | 387     | 21,564     |
| Dire Dawa        | 45,581     | 2176      | 0       | 47,852     |
| Total            | 32,414,876 | 1,328,433 | 213,612 | 33,957,837 |

Source: CSA (2008).

There is no recorded evidence indicating the exact time and locations of introduction of the first batch of exotic breeds of chickens in to Ethiopia. It is widely believed that the importation of the first batch of exotic poultry was probably done by missionaries. Four breeds of exotic chickens (Rhode Island Red, Australop, New Hampshire and White Leghorns) were imported to Jimma and Alemaya in 1953 and 1956, respectively under USAID project (Solomon, 2007).

The total poultry population at country level is estimated to be about 51.35 Million (CSA 2013/14). As shown in table 3, most of the poultry is chicks 38.3 %, followed by laying hens 33.32%. Pullets are estimated to be about 5.04 Million in the country. Cocks and Cockerels are also estimated separately, and are 5.26 Million and about 2.72 Million, respectively. The others are Non-laying hens that make up about 3.01 % (1.55 Million) of the total poultry population in the country. With regard to breed, 96.83 %, 2.37 % and 0.8 % of the total poultry were reported to be indigenous, hybrid and exotic, respectively.

Table 3. Number of Poultry Population by Type and Breed, Ethiopia.

| Types of poultry | All        |       | Indigenous |       | Exotic  |      | Hybrid    |      |
|------------------|------------|-------|------------|-------|---------|------|-----------|------|
|                  | Number     | %     | Number     | %     | Number  | %    | Number    | %    |
| All Poultry      | 51,350,738 | 100   | 49,723,605 | 96.83 | 411,809 | 0.8  | 1,215,324 | 2.37 |
| Cocks            | 5,260,659  | 10.24 | 5,074,441  | 9.88  | 54,582  | 0.11 | 131,636   | 0.26 |
| Cockerels        | 2,716,252  | 5.29  | 2,644,079  | 5.15  | 14,218  | 0.03 | 57,954    | 0.11 |
| Pullets          | 45,046,372 | 9.83  | 4,859,337  | 9.46  | 57,388  | 0.11 | 129,647   | 0.25 |
| Non-laying hens  | 1,547,799  | 3.01  | 1,489,807  | 2.9   | 15,175  | 0.03 | 42,816    | 0.08 |
| Chicks           | 19,668,096 | 38.3  | 19,236,420 | 37.46 | 77,593  | 0.15 | 354,083   | 0.69 |
| Laying-hens      | 17,111,560 | 33.32 | 16,419,521 | 31.98 | 192,853 | 0.38 | 499,186   | 0.97 |

Source: CSA, (2013/14)

## 2.7. Poultry production characteristics.

Livestock production covers 40% of agricultural output in Ethiopia, playing an important role in the national economy as it contributes 18% of the total GDP (FAO, 2004). Central statistics Agency (CSA, 2005) reports revealed that 97.8% of the total poultry production comprises indigenous birds, While 2.2% are exotic breeds. The backyard (traditional) poultry production system is characterized by low input, low output and periodic destruction of large proportion of the flock due to disease out breaks (Tadelle *et al.*, 2003b). The poultry sector in Ethiopia can be characterized in to three major production systems based on some selected parameters such as breed, flock size, housing, feeding, health, technology and bio-security. These are large commercial, small scale commercial and village or backyard poultry production system. These production systems have their own specific chicken breeds, inputs and production properties. Each can sustainably co-exist and contribute to solve the socio-economic problems of different target societies (Tadelle *et al.*, 2003c).

Indigenous chickens, however, have low productivity (average 38 eggs); while the carcass at 6 months of age is about 0.5kg. Estimated 40 to 60% of chicks die during their first eight weeks mainly due to diseases and predators (Demeke 2007).

Up to the present, the domestic poultry sector has been dominated by traditional production practice, and local breeds represent almost 98% of the national poultry flock. This is despite government efforts in recent time to modernize poultry production by introducing exotic breeds and encouraging more productive technologies. With the aim of improving poultry productivity, different breeds of exotic chickens were imported to Ethiopia since the 1950's. Since then higher learning institutions, research organization, the ministry Agriculture and Non-Governmental organizations (NGO's) have disseminated many exotic breeds of chicken to rural farmers and urban based small scale poultry producers (Solomon , 2008).

## **2.8. Problems and challenges**

### **2.8.1. Diseases**

The major problem impairing the existing production system in Ethiopia is the high incidence of Newcastle disease (ND), which is named locally as “fengle” (Holye, 1992; Alemu and Tadelle, (1997), Newcastle disease accounted for the largest proportion of overall flock's mortality to be 57.3% followed by fowl pox 31.6%,coccid 9.4% and predator loss 1.7%.The high mortality of chicks in Ethiopia is due to disease, parasites, predation, lack of proper feeding ,poor housing and insufficient care (Tadelle,2001).

ND is highly infectious and causes more losses than any other diseases in the tropics. Several recent surveys in Africa showed high rates of sero-positivity in the absence of vaccination. In developing countries, ND occurs every year and kills an average of 70 to 80% of the unvaccinated urban hens (Branckaert *et al.*, 2000). Other authors reported as mortality could reach up to 100% (Nigussie *et al.*, 2003; Serkalem *et al.*, 2005).

### **2.8.2. Environmental Challenges**

Thermal comfort inside poultry facilitates as unfavorable environmental condition significantly affect production. Both excessive cold and heat may cause production losses and impair bird health and welfare and extreme situations increase bird mortality (Moura *et al.*, 2010).

Poultry production is affected by factors such as breed and strain of chicken used, environmental conditions in poultry house, management practices and feed and feeding management (Bell and Weaver, 2002). The knowledge of performance of economic traits in chicken is important for the formulation of breeding plans for further improvement in

production traits. Growth and production traits of a bird indicate its genetic constitution and adaptation with respect to the specific environment (Ahmed and Singh, 2007).

According to (Desalew, 2012) the laying cycle of a chicken flock usually covers a span of about 12 months. Egg production begins when the birds reach about 18-22 weeks of age, depending on the breed and season. Flock production rises sharply and reaches a peak of about 90%, 6-8 weeks later, production then gradually declines to about 65% after 12 months of lay. Egg production can be affected by feed consumption (quality and quantity), water intake, intensity and duration of light received, parasite infestation, diseases, management and environmental factors (Jacob *et al.*, 1998).

### **2.8.3. Feeding Resources**

Feeding is the most important input for poultry production and the availability of low priced, high-quality feeds is critical for the expansion of the poultry industry (FAO, 2000a). Gura (2008) stated that the recent feed price increment may upset many of the plans to further develop industrial livestock or poultry production. The same author added that the competition between food, feed and agro-fuels is expected to only further increase feed price. Ethiopia has many types feed resources which can be used as ingredients in feeds to substituted/replace the conventional ingredients used in the diets of chickens. However, stakeholders of chicken production in Ethiopia have limited accesses to information that enables them to utilize alternative feed resources. Of these, food safety is the most important concern regarding the recycling of animal protein meals back through animal as feed ingredients (Clarke, 2010).

Therefore, reviewing the available feed resources and chicken production situation in the country is milestone to improving chicken production in Ethiopia. Most of the available feed resource in Ethiopia can be divided in to two main categories; conventional and non-conventional feed resources. Conventional feed sources are those traditional used and they are facing competition with human foods in Ethiopia. Whereas, non-conventional feed sources are not commonly and traditionally used as chicken feeds (Younas and Yaqoob, 2005). The current Ethiopian per-capita egg and poultry meat consumption has been declining (2003) by 0.12 for poultry meat and 0.14 for eggs (USAID, 2006) in the face of population growth.

#### **2.8.4. Housing**

Lack of proper housing is one of the constraints of the smallholder poultry production systems. In some African countries, a large production of urban poultry mortality accounted due to nocturnal predators because of lack of proper housing (Dwinger, *et al.*, 2003). Some research works also indicated that the mortality of birds reduced by improved housing. For instance, in the Gambia livestock improvement program, which included improved poultry housing resulted in lower chick mortality 19% relative to that observed in Ethiopia 66% and Tanzania 33%, where no housing improvements were made (Kitalyi, 1998).

### **2.9. The Socio-Economic Role of Poultry**

Poultry production has an important economic, social and cultural and cultural benefit and plays a significant role in family nutrition in the developing countries. The proportional contribution of poultry to the total animal protein production of the world by the year 2020 is believed to increase to 40%, the major increase being in the developing world (Delgado *et al.*, 1999). It has been estimated that 80% of the poultry population in Africa is found in traditional scavenging systems (Gueye, 2000). The contribution of these birds to household food security and income source is highly significant (Halima, 2007).

Poultry are used for strengthening marriage partnerships and social relationships. In the local culture, particularly in remote areas of Tigray and Amhara regions, women who can provide men with food like a chicken *dish* or *doro-wot* are considered to be contributing to a stable marriage serving *doro-wot* is also a demonstration of respect to guests, thus strengthening a social relationship which is especially important for poor households. For the poor, poultry meat is the only special meal they can afford during religious festivity (Akililu *et al.*, 2007).

### **2.10. Egg Production**

The estimated of total number of eggs produced during the year is about 98.3 million (CSA, 2010). The average length of a single egg-laying period per-hen is estimated to be about 21, 36, and 105 days for local, hybrid and exotic breeds, in that order. The average number of eggs laid per-hen per egg laying period in the country is about 12, 30 and 74 eggs, correspondingly (CSA 2010).

Table 4. Egg production Ethiopia 2010/11

| Egg production                           | Indigenous | Hybrid    | Exotic  |
|------------------------------------------|------------|-----------|---------|
| Average No of egg-laying period/years    | 4          | 6         | 1       |
| Average No of length of period (in days) | 21         | 36        | 105     |
| Average No of eggs /hen/period           | 12         | 30        | 74      |
| Total egg production Per/ No/            | 89,724,654 | 7,771,463 | 804,935 |

Source: CSA, (2010).

## **CHAPTER THREE**

### **3. PHYSICAL, DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS OF ADDIS ABABA**

#### **3.1. City Expansion: Conceptual Framework**

Historically, cities have developed as centers of trade. They are also centers of culture, education and the birthplaces of most artistic and technological innovations. In addition, they are characterized by agglomeration and scale economies. In general, cities are stimulators of development (Devas and Rakodi, 1993:25). In developing countries, they are making vital contributions to economic growth through crucial service and production functions. The overwhelming problem in developing countries is not urban growth in itself but the rapid rate of growth and unplanned expansion of cities, which outstrips the financial capacity of the municipal governments to provide infrastructure and basic urban services (Hall and Pfeiffer 2000:14). There are two major arguments regarding the way that cities should be developed in the future and the impact that the shape and size of cities can have on resource depletion, the economic cost of growth, and environmental degradation. At one extreme, there are those who believe that compact cities are important components of sustainable urban development. Hillman (1996), for instance, stated that compacting the city by encouraging higher density development, infill and redevelopment is one way of reducing the demand for more space, and power and transport costs, and it also makes the most effective use of urban land, thus reducing pressure on the countryside (Hillman, 1996:37). At the other extreme, there are those who believe that compact cities may result in overcrowding and a consequent loss of urban quality, with less open space, more congestion and pollution, and incurring greater costs.

#### **3.2. Historical Origin of Addis Ababa**

Following the founding of Addis Ababa in 1886 as capital of Shewa Province, widespread building programs were undertaken from March 1887. After the coronation of Emperor Menelik II as King of Kings in Ethiopia in 1889, Addis Ababa became the political, administrative, and religious hub of the country (Garretson, 2000:11). The city continued to sprawl from a camp into a metropolis.

According to (City Hall, 1989), currently, the city is also the diplomatic capital of Africa, housing numerous embassies and international organizations, including the United Nation Economic Commission for Africa (UN-ECA) and the African Union (AU).

### **3.3. Physical Characteristics**

**A/ Location:** Addis Ababa, the capital city of Ethiopia, is located at the foot of the 3,000 meters high *Entoto* Mountains which has mean annual rain fall of 1400 mm and temperature of 16 degree Celsius (Environmental Protection Authority, 2005). It was established in 1886 by Emperor *Menelik II*. It is located at 9° 1' 48" N latitude and 38° 44' 12" E longitudes. It rises to over 3,000 meters in the *Entoto* Mountain to the north. The *Entoto* hill on the North and *Menagesha*, *Wechecha*, *Repi* and *Furi* hills encircle the city on the West and South West. The city serves as social, economic and political centre for the country. About 65% of industries of the country are located in the city (Gebre and Rooijen, 2009). The city accounts for one-fifth of the urban GDP in the country (Alaci, 2010). It is a seat for African Union, United Nations Economic Commission for Africa, and other international organizations.

**B/ Climate:** Addis Ababa lies within the tropics, a zone of maximum insulation where the overhead sun is experienced twice in a year. However, because of the high elevation tropical temperature Conditions are not experienced and the city enjoys temperate climatic conditions. Temperatures are mild and relatively constant throughout the year. It averages approximately 15°C, within normal daily highs and lows varying between 25°C and 5°C. Higher and lower temperatures are occasionally reported (EMA, 1988).

### **3.4. Demographic Characteristics**

Population occupies a central place in various activities and everything derives meaning and significance in so far as there exist the human population. The World Bank has clearly indicated the central position occupied by people. What is the city if not the people? Whether by Shakespeare or other claimants to his writings, the phrase rightly places human achievement at the forefront of city endeavors. When we talk of the city economy, it is redolent of the myriad efforts of all the people who make the city thrive (World Bank, 1999).

The urban population of Ethiopia is concentrated in few urban centers, predominantly in Addis Ababa. As shown in Table 5, Addis Ababa has experienced highly accelerated population growth. The rapid population increase of the city has been mainly attributable to natural urban population increase and internal migration. According to the country's 1994 population and housing census, out of the total population of the city, 46.7% were migrants from rural and other urban areas in Ethiopia (CSA, 1999:161).

Table 5. Size and Average Annual Population Growth Rate of Addis Ababa (1961–2004).

| Year | Population Size | Average annual growth rate (%) |
|------|-----------------|--------------------------------|
| 1964 | 443,328         | -                              |
| 1967 | 683,530         | 7.6                            |
| 1978 | 1,167,301       | 4.9                            |
| 1984 | 1,423,111       | 3.5                            |
| 1994 | 2,112,737       | 4.0                            |
| 2000 | 2,495,000       | 2.9                            |
| 2004 | 2,805,000       | 3.0                            |

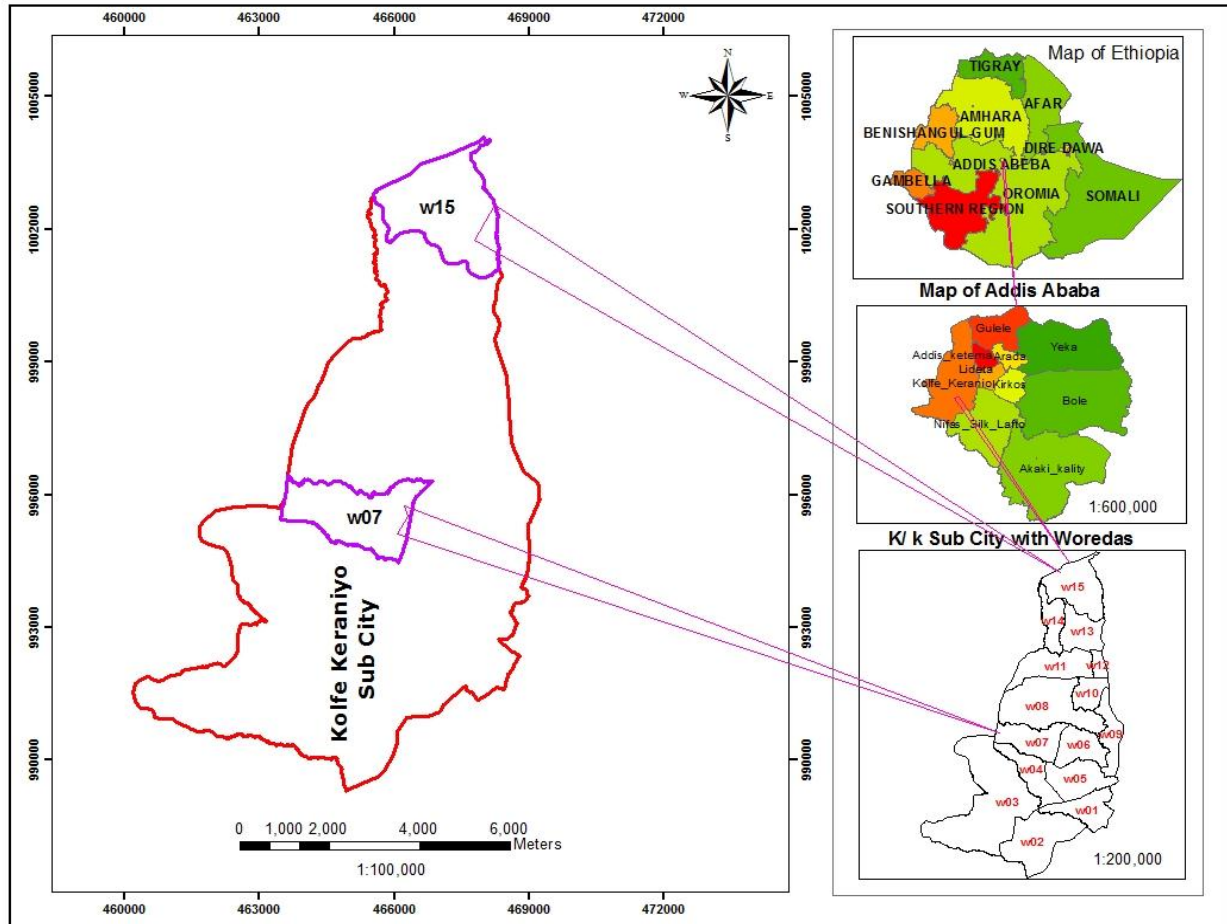
Source: CSA (1999)

Addis Ababa is the largest city in Ethiopia having an area of 54,000 square kilometers and resided by 3,384,569 people (CSA, May, 2007 Census). The city of Addis Ababa is divided in to ten administration zones called Sub-cities, each sub-city having its own administrative organs called Woredas.

### 3.5. Description of the study Area

The study area lies in the Kolfe-Keranyo sub-city. It is one of the newly established ten sub-cities of Addis Ababa. It is located in the western edge of the capital of the city, between 8°57'00"N and 9°05'24"N and between 38°39'36"E and 38°43'12"E. It is one of the largest Sub-cities in terms of the size in the capital, having an area of 61.25 square kilometers and resided by 428,895 people (CSA, 2007). It is known one of the most populous sub-cities in the city followed by Yek and Nifas silk-lafto sub city. It is considered as one of the semi-peripheral parts of the city recognized for its informal business activities. It encompasses 15 Woredas. According to the records of the Sub-city agricultural office, 528 poultry farmers are engaged in this sector and about 120,000 chicken populations are found in kolfe keranyo Sub-city.

Map 1. Location map of the study area.



Source: Adapted from AAUI, 2014.

### **3.6. Socio-economic Characteristics**

Addis Ababa is the economic metropolis of the country in the sense that most kinds of products of the country concentrate in it for trade as well as transit. It is the largest center of trade in Ethiopia with a large wholesale business and has the majority of the industrial establishments, industrial employment and industrial output and is also the administrative center of the country. Hence, it has the largest urban population of the country. In the city, a variety of economic functions are performed by its labour force. In it both the basic productive and non productive functions are undertaken. Activities ranging from primary to tertiary are carried out in the city and people are engaged in them in varying proportions (CSA, 1999). Urban agriculture within the city boundary is an important employer and source of income for many households (Asrat, 1996).

## **CHAPTER FOUR**

### **4. RESULTS AND DISCUSSION**

#### **4.1. Characteristics of Urban Poultry Farming Households**

The practice of urban poultry farming is related to factors that include household head age, sex, marital status, educational status and occupational characteristics of the households. These characteristics of households head are presented in the following few sections.

#### **4.2. Sex, Age and Marital status**

The household characteristics of respondents (Table 6) revealed that the proportion of female respondents were higher than male in the activity (58.8 %).

The greater majority of the urban poultry farmers (35.3%) were in the age group between 31-45 years. Thus the adult group dominated the activity in the study area. On the other hand, the proportion of the poultry farmers' aged between 18-30 and 46-60 years are the same, i.e. about 23.5%. Above the age of 61 (17.6%) years of the poultry farmers participate in this activity.

The highest (67.6%) of the urban poultry farmers in the sample area are married. The proportion of single household heads takes the second position 20.6% and followed by divorced 11.8% of the households. (See table 5).

Table 6: Distribution of poultry farmers by Sex, Age and Marital status.

| Characteristics of households(HH) | frequency | percent |
|-----------------------------------|-----------|---------|
| Sex                               |           |         |
| Male                              | 14        | 41.2%   |
| Female                            | 20        | 58.8%   |
| Total                             | 34        | 100     |
| Age                               |           |         |
| 18-30                             | 8         | 23.5%   |
| 31-45                             | 12        | 35.3%   |
| 46-60                             | 8         | 23.5%   |
| Above 61                          | 6         | 17.6%   |
| Total                             | 34        | 100     |
| Marital status                    |           |         |
| Married                           | 23        | 67.6%   |
| Single                            | 7         | 20.6%   |
| Divorced                          | 4         | 11.8%   |
| Total                             | 34        | 100     |

#### 4.3. Household Size

As table 7 show that, the urban poultry farmer's household is described in terms of those who composed it: the total number of children and adults including relatives and servants who live in the household. Out of the total poultry farming households covered by the survey, the proportion of households with household size of 4-6 persons is higher (47.5%) followed by household size of 1-3 persons (35%). The proportion of households with households' size of above 7 persons is the smallest (17.6%), table 7.

Table 7. Distribution of poultry farmers by household size.

| Household size  | Frequency | Percent (%) |
|-----------------|-----------|-------------|
| 1-3 persons     | 12        | 35.3%       |
| 4-6 persons     | 16        | 47.05%      |
| Above 7 persons | 6         | 17.6%       |
| Total           | 34        | 100         |

#### 4.4. Origin of household heads

The majority (58.8%) of the poultry farmers' household heads in the sample originated from outside Addis Ababa, while those poultry household heads who were born in Addis Ababa accounted for (41.17%) (Table 8). Thus, this shows that, it is evident that the poultry farmers in the study area are predominantly occupied by migrants.

Table 8. Distribution of households by place of birth

| Place of birth      | Frequency | Percent (%) |
|---------------------|-----------|-------------|
| Addis Ababa         | 14        | 41.17%      |
| Outside Addis Ababa | 20        | 58.8%       |
| Total               | 34        | 100         |

#### 4.5. Level of Educational Status and Occupational situation

Concerning about the educational background of the interviewed poultry farmers, about 23.5% were illiterate. The majority (35.29%) of the poultry farmers attended their secondary education. Whereas, 17.6% of the poultry farmers both read and write and graduated. As can be seen from the Table 9. The remaining 5.9% were farmers who attended their elementary school.

Urban poultry farming household heads covered by the survey, (29.4%) of the poultry farmers were private business person. 26.47% of them identified themselves as poultry farmers, about 20.6% as public servants, 17.6% as private workers and 2.9% accounts for both pensioner and NGO workers ( table 9).

Table 9. Number and distribution (%) of urban poultry farmers by educational status and occupational characteristics.

| Characteristics of HHHs     | Frequency | Percent (%) |
|-----------------------------|-----------|-------------|
| Educational status:         |           |             |
| -Illiterate level           | 8         | 23.5%       |
| -Read & write               | 6         | 17.6%       |
| - Elementary level          | 2         | 5.9%        |
| -Secondary level            | 12        | 35.29%      |
| -College diploma and above  | 6         | 17.6%       |
| Total                       | 34        | 100         |
| Occupational Level of HHHs: |           |             |
| -Poultry farmer             | 9         | 26.47%      |
| -Private business person    | 10        | 29.4%       |
| - NGOs worker               | 1         | 2.9%        |
| -Public servants            | 7         | 20.6%       |
| - Private worker            | 6         | 17.6%       |
| -Pensioner                  | 1         | 2.9%        |
| Total                       | 34        | 100         |

#### 4.6. HHHs Sources of Income to start the poultry farm.

Most of the chicken farmers source income (44.1%) is by own saving. about 20.6% of the source is from micro finance institution, this show that the government facilitates the credit for the urban farmers. The farmers get around 17.6% of the initial income borrowing from relatives. About 11.8% of the income is from non-governmental organization and the remaining 5.9% is borrowing from friends. (Table 10).

Table 10. Distribution of source finance to start poultry business.

| Variables                        | Frequency | Percent (%) |
|----------------------------------|-----------|-------------|
| Own saving                       | 15        | 44.1%       |
| Borrowing from relatives         | 6         | 17.6%       |
| Borrowing from friends           | 2         | 5.9%        |
| From micro-finance institution   | 7         | 20.6%       |
| From Non-Government organization | 4         | 11.8%       |
| Total                            | 34        | 100         |

#### 4.7. Distribution of Initial capital to start poultry business

The number of poultry to start the business with the initial capital was less than 5000 birr which accounts 38.2%. This showed the majority of the farmers start the business with small capital. The capital ranged between birr 5001-10,000 income pleted. About 29.4%. 14.7 of the farmers has capital in the range of birr 15,001-20,000. on the other hand, 11.8% of the business man start the business on the range of 10,001-15,000 birr initial capital and the least frequency of the farmers to start the farm ranges greater than 20,001 birr.

Table 11. Distribution of initial amount capital to start the business.

| Initial Capital      | Frequency | Percent (%) |
|----------------------|-----------|-------------|
| Less than 5,000 birr | 13        | 38.2%       |
| 5001-10,000          | 10        | 29.4%       |
| 10,001-15,000        | 4         | 11.8%       |
| 15,001-20,000        | 5         | 14.7%       |
| Greater than 20,001  | 2         | 5.9%        |
| Total                | 34        | 100         |

#### 4.8. Distribution of breed source

As we can see from the table 12, high proportion of breed which accounts 50% is purchased from private hatchery center. This reveals that the private center dominate the business in the urban area. Most of the breed was purchased from private hatchery center. Especially, the breeds brought from Awash Melkasa around Debre Zeit. About 23.5% is purchased from government hatchery center. This showed that the government hatchery center is not well-organized. About 17.6% of the total account provided from NGOs. The NGOs have their own contributions in poultry farming to support the low level income farmers which are in association. The lowest (8.8%) is obtained from agriculture research center.

Table 12. Distribution of breed source.

| sources                                   | Frequency | Percent (%) |
|-------------------------------------------|-----------|-------------|
| Purchased from Gov. hatchery Breed center | 8         | 23.5%       |
| Provided from agriculture research center | 3         | 8.8%        |
| Provided from NGOs                        | 6         | 17.6%       |
| Purchased from private hatchery center    | 17        | 50%         |
| Total                                     | 34        | 100         |

#### 4.9. Distribution of breed type and number of flock size.

The highest 70.6% of the study area is predominately occupied by exotic breed type. 23.5% of the breed type is indigenous. This is because of most of the farmers buy the breeds with low cost, and has trait of having delicious egg and meat. The least 5.9% of the breed type occupied by the hybrids; this means that in the study the breed is not reared mostly.

Table13. Distribution of breed type and Number of chicken.

| Breed type | Frequency | Number of chicken | Percent (%) |
|------------|-----------|-------------------|-------------|
| Local      | 8         | 130               | 23.5%       |
| Hybrid     | 2         | 350               | 5.9%        |
| Exotic     | 24        | 2,004             | 70.6%       |
| Total      | 34        | 2,484             | 100         |

#### **4.10. CHICKEN PRODUCTION SYSTEM**

##### **4.10.1. PRODUCTION SYSTEM OF URBAN CHICKEN.**

Urban poultry chicken was kept mainly for commercial purposes and to support the family life. However, the major (67.6%) production system in the study area was intensive production system. This revealed that most of the poultry farmers were kept by using proper separate poultry house and cage system. About 26.5% of the poultry farmers used poultry kept as a form of backyard or free-range production system. Indigenous chicken were predominantly kept in free-range or scavenging system because it is cheap, less labour intensive and few management interventions are used. Beside, some people prefer local birds as traditionally considered as their meat and eggs was acceptable in the society than others. And the remaining 5.9% kept poultry farming semi-intensive system production.

Table 14. Production system of chicken

| Variable             | Frequency | Percent (%) |
|----------------------|-----------|-------------|
| Production system:   |           |             |
| Backyard/free-range/ | 9         | 26.5%       |
| Semi-intensive       | 2         | 5.9%        |
| Intensive            | 23        | 67.6%       |
| Total                | 34        | 100         |

#### 4.10.2. Purpose of Rearing/Keeping/Chicken.

The main objectives of egg production in the study area are for commercial purposes. The majority (61.8%) of rearing chicken was for the production of egg. This indicated the respondents gave priority to the family income generation capacity using poultry as a reason than for home consumption. About 29.4% rearing chicken used for both eggs and meats and the smallest portion (8.8%) rearing chicken was for the purpose of only meats.

Table 15. Distribution of purpose of keeping chicken.

| Variables            | Frequency | Percent (%) |
|----------------------|-----------|-------------|
| Rearing chicken For: |           |             |
| Only Eggs            | 21        | 61.8%       |
| Only Meats           | 3         | 8.8%        |
| Both                 | 10        | 29.4%       |
| Total                | 34        | 100         |

#### 4.10.3. Perceived benefit to increased production of chickens

From table 16 about (50%) of the respondents strongly agreed that the increases in the number of chicken will help to increase profit or income that will be made from the poultry business. They also agreed (29.4%) that increase chicken productions will improves well-being of the farmer's household. Urban chickens play an important role in the livelihoods of those people keeping them. These chicken have a multitude of functions and these include the many cultural and traditional roles, food and income generation (Scoones 1992; Kusina and Kusina 1999). More than half (58.8%) of the respondents perceived that increase in the layers production will increase the egg production, poultry meat availability and more droppings would be produced which could be used as manure to boost agricultural production. At least 52.9% concurred that increase chicken production could create job opportunity because it will require more labour to handle the increase in poultry business. Among the respondent (44%) agreed that there is adequate government policy intervention in the urban poultry production that could support them to boost their business. According to the respondents opinion that the government did not give much attention on urban poultry activities

Table 16. Perceived Benefit to Increased production of chicken

| S/N | Perceived benefit                                                                                    | SD<br>Freq<br>% | D<br>Freq<br>% | A<br>Freq<br>% | SA<br>Freq<br>% | Total     |
|-----|------------------------------------------------------------------------------------------------------|-----------------|----------------|----------------|-----------------|-----------|
| 1   | Increase number of chicken increase income                                                           | 2<br>5.9        | 5<br>14.7      | 10<br>29.4     | 17<br>50        | 34<br>100 |
| 2   | Increase number of chicken increase Egg production                                                   | 2<br>5.9        | 2<br>5.9       | 10<br>29.4     | 20<br>58.8      | 34<br>100 |
| 3   | Job opportunities increases with the increase No of chicken reared                                   | -<br>-          | 1<br>2.9       | 15<br>44       | 18<br>52.9      | 34<br>100 |
| 4   | An adequate government policy intervention for poultry farmers rearing an increased number of layers | 1<br>2.9        | 8<br>23.5      | 15<br>44       | 10<br>29.4      | 34<br>100 |

NB: SD=strongly disagree D= Disagree A= Agree SA= strongly agree

#### 4. 11. Use of agricultural extension services

The data analyzed for use of agricultural extension services for the development of poultry production in the study area (Table 17) showed that majority (70.6%) of the poultry farmers used agricultural extension services to improve their poultry productivity. About 29.6% of the respondents did not use agricultural extension services. Specially, those who were engaged in local birds in the study area did not use the services. About 35% of the respondents had contact with agricultural experts once in a month. About 29.4% had contacts once in a week and 23.5% were did not have contacts with the experts to improve their productivity and 11.8% had contacts once in a year.

Table: 17. Use of agricultural extension services in poultry production

| Variables                  | Frequency | Percent (%) |
|----------------------------|-----------|-------------|
| Provided Service:          |           |             |
| Yes                        | 24        | 70.6%       |
| No                         | 10        | 29.4%       |
| Total                      | 34        | 100         |
| Contact Time With Experts: |           |             |
| Once in a week             | 10        | 29.4%       |
| Once in a month            | 12        | 35%         |
| Once in a year             | 4         | 11.8%       |
| Not contact                | 8         | 23.5%       |
| Total                      | 34        | 100         |

#### 4.12. Poultry production Training

Information collected on training and credit services provided to respondents on poultry production in the study area. Slightly, more than half (38.2%) of the respondents did not get training on poultry production in the study area. But 29.4% of the poultry farmers were provided with training on improved poultry production practices (Table 4:14).

Table 18: Training and credit services provided

| Training and Frequency             | Frequency | Percent (%) |
|------------------------------------|-----------|-------------|
| Training Provided                  | 10        | 29.4%       |
| Before starting poultry production | 8         | 23.5%       |
| After starting poultry production  | 3         | 8.8%        |
| Training Not Provided              | 13        | 38.2%       |
| Total                              | 34        | 100         |
| Credit Service Provided:           |           |             |
| Yes                                | 7         | 20.5%       |
| No                                 | 27        | 79.4%       |
| Total                              | 34        | 100         |

From those respondents who received training, 23.5% and 8.8% of respondents provided poultry production training before and after starting poultry rearing, respectively. Most (79.4%) of the respondents were not provided credit service on poultry productivity. Majority of them started the business by own savings and borrowing from relatives and intimate friends. Only 20% of the respondents were provided credit serviced from micro-finance institution. (This is not its position)

#### 4.13. Poultry Health Management Practice

Health care is one management aspect of urban chicken production. As indicated in Table 16, the majority of the farmers (70.6%) used modern medicine to cure their chicken against Newcastle diseases, fowl typhoid, and fowl box. They applied modern medicine by veterinarian and some farmers given the medicine as a form of syrup with vitamin. On the contrary, the other farmers used traditional medicine such as lemon and paper or mitmita. According to the study that about 14.7% of the farmers used traditional medicine lemon, 8.8% also paper or mitmita and 5.9% tetracycle with water and injera. Farmers used those traditional medicines because of lack of awareness, low accessibility of government veterinary service, cost of medicine and

inadaptability to use modern medicines. Chicken health care was one of the constraints of urban poultry production. In urban chicken production system, periodic devastation of flock by disease is very high.

Table19. Mechanisms of keeping poultry health management practice

| Mechanisms of Keeping Health                             | Frequency | Percent (%) |
|----------------------------------------------------------|-----------|-------------|
| Traditional Medicine:                                    |           |             |
| Lemon                                                    | 5         | 14.7%       |
| Paper and mitimita                                       | 3         | 8.8%        |
| Senafech                                                 | 0         | 0           |
| Tetracycle                                               | 2         | 5.9%        |
| Modern Medicine (Use Vaccination and Syrup with Vitamin) | 24        | 70.6%       |
| Total                                                    | 34        | 100         |

#### 4.14. Poultry feeding System

Family poultry production in Africa survives by scavenging and generally, no supplements provided except, household waste fed to the birds and other circumstances the diet supplemented with grain (Dwinger *et al.*, 2003). Similarly, in Ethiopia the smallholder chicken production system is characterized by keeping under free range system and the major feed sources are believed to be insect worms, seed and plant materials (Tadelle and Ogle, 1996a; Solomon, 2004).

The majority (82.4%) of the respondents depended on purchased feed (*menno*). Most (67.6%) of the respondents also feed an additional supplementing feed of vitamins and minerals to their chicken followed by scavenging with additional feeds (17.6%). About 14.7% of the farmers feed green plants or cabbage. 11.8% used additional feeds grains and 5.9% were feeds their chicken food left over.

About 64.7% of respondents supplement three times a day (usually morning, noon and evening). On the other hand, 35.3% of the respondents supplement their chicken twice a day and none of them provide only once a day. However, there is a need to investigate further about the quality and quantity of supplementary feeds in the study area.

Table 20. Poultry Feeds and Feeding Practice

| Feed Characteristics                            | Frequency | Percent (%) |
|-------------------------------------------------|-----------|-------------|
| Feeding system:                                 |           |             |
| Scavenging with additional supplement           | 6         | 17.6%       |
| Purchased feed ( <i>menno</i> ) with supplement | 28        | 82.4%       |
| Additional supplementing feed type: Grains      | 4         | 11.8%       |
| Vitamin and minerals                            | 23        | 67.6%       |
| Food left over                                  | 2         | 5.9%        |
| Green plant(Cabbage)                            | 5         | 14.7%       |
| Frequency of feeding: once a day                | 0         | 0           |
| Two times a day                                 | 11        | 35.3%       |
| Three times a day                               | 22        | 64.7%       |
| Total                                           | 34        | 100         |

#### 4.15 Poultry housing system and facilities

Housing is essential to chickens as it protects them against predators, theft, rough weather (rain, sun, cold wind, dropping night temperatures) and to provide shelter for egg laying and broody hen. However, the survey revealed that 47.1% of the respondents rearing their chicken house made with mud and some of them reared their chicken in the cage system. Other farmers reared their chicken without cage system. About 35.3% of the farmers reared their chicken in proper building house and they used cage system. The remaining 17.6% of respondents reared their chicken house made with sheet.

Table 21. Poultry housing system and facilities

| Poultry Housing System                   | Frequency | Percent (%) |
|------------------------------------------|-----------|-------------|
| House made with sheet(not used cage)     | 6         | 17.6%       |
| House made with mud (some used cage)     | 16        | 47.1%       |
| Building house (used Cage system)        | 12        | 35.3%%      |
| Housing facilities:                      |           |             |
| Provision of electricity and ventilation |           |             |
| Yes                                      | 21        | 61.8%       |
| No                                       | 13        | 38.2%       |
| Litter material used:                    |           |             |
| Neat                                     | 23        | 67.6%       |
| Segatura                                 | 11        | 32.4%       |
| Total                                    | 34        | 100         |

Concerning housing facilities, most (67.6%) of the respondents used provision of electricity and air ventilation, where as 38.2% of the respondents did not have provision of electricity and air ventilation. Majority (67.6%) of the respondents used litter material of neat for egg laying and 32.4% of the respondents used segatura on the floor of the house.

#### 4.16 Marketing

Selling of live birds and eggs were a common practice in Ethiopia as well as in the study sites. The practice of selling of eggs (table 22) indicated that higher proportion (50%) of the respondents selling their eggs from 2:80 up to 3:00 birr for hotels and kiosk shop. About 35.3% of the respondents sell their eggs up to 2:70 birr for wholesaler and supermarket. The least proportion (14.7%) of the respondents sell their eggs from birr 3:10 up to 3:50 birr for consumers.

Table 22.Egg selling price and clients

| Selling Price of Eggs | clients                    | frequency | Percent (%) |
|-----------------------|----------------------------|-----------|-------------|
| Birr up to 2:70       | Wholesaler<br>Supermarkets | 12        | 35.3%       |
| Birr 2:80 to 3:00     | Hotel<br>Kiosk shop        | 17        | 50%         |
| Birr 3:10 to 3:50     | Consumers                  | 5         | 14.7%       |
| Total                 |                            | 34        | 100         |

#### 4.17 The benefits of poultry farming

The main purpose of selling of eggs and chicken as indicated in table 23, the higher proportion (41.2%) of the respondents use the profits for buying poultry feeds, like menno, vitamins in the form of syrup etc. The second largest proportion (35.3%) of the respondents uses the income for home consumption. However, 14.7% of the respondents use the income for their chicken health care. The least proportion (8.8%) of the respondents used the income for improving their farm.

Table 23: The benefits of poultry farming

| Variables               | Frequency | Percent (%) |
|-------------------------|-----------|-------------|
| Purpose of income:      |           |             |
| For home consumption    | 12        | 35.3%       |
| For poultry feeds       | 14        | 41.2%       |
| For poultry health care | 5         | 14.7%       |
| For improving the farm  | 3         | 8.8%        |
| Total                   | 34        | 100         |

#### 4.18 Poultry income trends

According to the study, more than half (58.8%) of the farmers' had increased their business trends. About 29.4% of the farmers' income decreased their income, due to the improper care of the poultry production and the least proportion (11.8%) of the farmers' has not been changed their business.

Table 24. Poultry income trends

| Business or income trends | Frequency | Percent (%) |
|---------------------------|-----------|-------------|
| Increased                 | 20        | 58.8%       |
| Decreased                 | 10        | 29.4%       |
| No change                 | 4         | 11.8%       |
| Total                     | 34        | 100         |

#### 4.19 Constraints of poultry production

As shown in table 25, 32.4% of the respondents lack quality ingredients for their poultry feed. The high cost of feed is a major constraint encountered which has prevented them from increasing their poultry production. This implies that if the cost of feed is high and small scale poultry farmers could not afford it, then it will affect the number of chicken they can keep (Sonaiya and Swan, 2004). This results also fairly similar with the reports of Mapiye *et al* ., (2008) in Zimbabwe which indicated that shortage of feed, poor health, and housing management, and socio-economic constraints (lack of markets, poor marketing management, poor infrastructural and institutional support) were the main factors that hampered village chicken productivity.

About 20.6% of the respondents are unable to get building permission for their poultry production. Provision of adequate land or space for poultry production in the area was strongly suggested as a solution by the respondents.

About 17.6% of the respondents informed that they did not have access to adequate veterinary service in the study area. Without adequate veterinary services, poultry production is risky. Most of the respondents said that usually use private veterinary services which is beyond their economic level.

About 11.8% of the respondents faced with disease and pests particularly termites. Farmers challenged with these are those who reared an indigenous chicken in the study area. This is probably because most of small scale poultry farmers could not identify the symptoms of disease earlier enough to prevent disease outbreak. Diseases are major threats that wipe out many of the poultry in developing countries. This concurs with Chitate and Guta (2001) and Smith (1992). Mainly in the free-range and unvaccinated poultry production system; diseases are the major limiting factor to the production (Aini, 1990). The major disease type reported in the study area was Newcastle disease. Research work in some African countries such as Benin (Chrysostome *et al.*, 1995), Burkina Faso (Bourzat and Saunders, 1990), Mauritania (Bell *et al.*, 1990) and Tanzania (Yongolo, 1996) reported that Newcastle is the most devastating disease in poultry production.

Table 25: Constraints of poultry production

| Constraints                           | Frequency | Percent (%) |
|---------------------------------------|-----------|-------------|
| Disease and pests                     | 4         | 11.8%       |
| Inadequate veterinary service         | 6         | 17.6%       |
| Cost of quality feeds                 | 11        | 32.4%       |
| Unavailability of land/space          | 7         | 20.6%       |
| Lack of technical handling of poultry | 3         | 8.8%        |
| Environmental challenge               | 2         | 5.9%        |
| Market price fluctuation              | 1         | 2.9%        |
| Total                                 | 34        | 100         |

Meanwhile, 8.8% of the respondents lack technical knowledge required in the poultry business. Lack of technical knowledge is a major constraint that militates against poultry production Olaniyi et al., (2008). about 5.9% of the respondents said that they faced environmental challenges. The study area is mostly highland with cold weather condition because of this the layers delay on the Egg production and interruption on continuous egg laying process and 2.9% of the respondents shown that market price fluctuation. This is especially, in orthodox Christian fasting days, at most not demand of egg clients.

#### **4.20. Opportunities for improving poultry production.**

The expansion of urbanization and growth in population are two of the potentials to increase commercialization of poultry. Moreover, new markets are emerging in the neighboring countries. Improved veterinary services in the country are also expected to create opportunities for commercial producers. The available of feed resources such as maize and soybean are major sources of inputs for the poultry sector. Ethiopia is the second largest producer of maize and soybean in Africa, which could potentially be used for the feed industry to boost the sector and even export. Urban poultry production benefits more than enough opportunities compared to any other alternative investments required large place particularly in urban areas. It requires small place, less labor and capital, management and technical skill in which urban communities have comparative advantages. Moreover, increasing prices of animal products within the urban areas, in the country and across the globe provide real and sustainable business opportunity for the urban poor involved in poultry production.

Nowadays, The availability of market demand for eggs and chicken, increasing day today price of egg as well as live chicken and good demand of eggs and chickens, good culture for meat and eggs consumption in the big urban areas like Addis Ababa are also possible opportunities mentioned by urban farmers group discussion. There are also other opportunities such as small feed requirement, lower initial cost requirement and employment opportunities for poor urban farmers, idle women and also have small place particularly in urban areas.

## CHAPTER FIVE

### 5. CONCLUSION AND RECOMMENDATION

#### 5.1. Conclusion

The capacity of Third World governments to manage urban growth and provide food, shelter and basic services and create sustainable cities is becoming great challenges. Imported foodstuffs also degrade the local food production base and introduce foreign food tastes. Urban poverty and food insecurity has been growing. This study agrees with the report of Bryceson and Potts, (2005) were reported that many urban households' head who cannot afford to buy enough food for their own consumption. Hence, to meet the food needs of urban dwellers, urban agriculture is becoming a familiar and almost permanent feature in the developing world. In fact, without urban and peri-urban agriculture, the challenge to feed cities would be enormous. Higher proportion of female respondents than males reflected to the fact that urban poultry rearing is mainly managed by females (58.8%). As the poultry producer characteristics indicate, the great majority of the urban poultry farmers (35.3%) of the age group between 31-45 years and female group dominated the activity in the study area. Nearly 67.6% of the producers are married. The average family size per household was 4 to 6 person (35%) in the study area. The great majority (35.3%) of the poultry farmers attended their secondary education in the district and also the majority (58.8%) of their origin of birth place is out of Addis Ababa.

Most of the breed was purchased from private hatchery center. As to the breed type, 70.6% of the district is predominately occupied by exotic type. The main objective of rearing chicken is for the production of eggs.

Feeds are a major input in poultry production systems 82.42% of the respondents provided additional feed supplements to their chicken.. Approximately, 67% of the respondents in the district provided vitamin and minerals additional feed supplements. In the present study, 82.4% of the respondents constructed poultry house based on recommended extension package for improved layers. Generally, it was observed that households provided electricity and litter material in poultry house. The least of respondents did not follow the recommended housing based on extension packages, claimed poor economic status as a reason for not having proper poultry house and wished to have it when their economic status permit.

Input, finance, poultry feed, access to building house, veterinary and government policy on the urban agriculture were constraints being faced by the poultry farmers in the study area.

The performance of exotic chickens in urban production system could be increased through improved veterinary service, feeding, housing facilities, health management practices and government policy. Farmers are aware that hybrid layers can produce more eggs, if they are fed and looked after carefully. Only a few small householder farmers are able to adopt management interventions package yet adoption of full package is often associated with high productivity. Therefore, Policy makers and NGOs should mainly target Women through training on the importance and application of management interventions at farmer and extension level. Adoption of management interventions can be improved in urban areas through increased access to repackaged extension messages that consider farmers economic situation.

## **5.2. Recommendation**

Based on the findings of the study, the following recommendations were suggested towards alleviating the problems being encountered by poultry farmers and increasing their productivity.

- Government and developmental organizations should give attention to urban poultry sector and its development.
- Government policy should be adjusted to improve on the provision of input at a subsidized rate, effective extension and veterinary services allocate in woreda level.
- Urban agricultural bureau should establish modern hatchery center in the city to grant improved chicken to urban farmers
- There should be adequate supply of improved chickens to the farmers, since exotic chicken lack self-replacing ability.
- Training for farmers focusing on diseases control, improved housing, feeding and proper care should be arranged to be successful in layer chicken production system. Capacity training of poultry farmers to enable them to cope with the challenges of modern poultry farming and commercialization of small scale layers poultry production carried out.
- Government should give adequate working area to the urban farmers for rearing chicken production.

- Extension activities should focus on training of the farmers on the improved production management to enable them use the available resources efficiently and increase productivity.
- Technical skills are required specifically in disease control mechanisms, management system, housing and equipment and collective marketing initiatives.

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## Appendix 1

### INTRODUCTION

The objective of this research questioner is to assess the constraints of urban poultry farming in kolfe-keranyo sub-city woreda 07 and woreda 15 and to suggested solution to the problems. The questioner is to filled by households. Thank you in advance!

#### A. General Information of the Household

1. Address: City \_\_\_\_\_ Woreda \_\_\_\_\_ House No \_\_\_\_\_
2. Household head: Sex: A) Male ☐ B) Female ☐ C) Age \_\_\_\_\_
3. Marital Status: A) Married ☐ B) Single ☐ C) Divorce ☐ D) Widowed ☐
4. Family size? A) Male \_\_\_\_\_ B) Female \_\_\_\_\_ C) Total= \_\_\_\_\_
5. Where is your birth place? A) Addis Ababa ☐ B) outside Addis Ababa ☐
6. If your place of birth is outside Addis Ababa what was your major reason for Coming here?  
Marriage ☐ B) Job opportunities ☐ C) Following relatives ☐  
D) Educational opportunity ☐ E) if other, specify \_\_\_\_\_

#### B. LEVEL OF EDUCATIONAL STATUS OF THE HOUSEHOLD:

- A) Illiterate ☐ B) Read and Write ☐ C) Elementary school ☐  
D) High School ☐ E) Diploma and above ☐ F) Degree and above ☐  
G) If you're answer is E, specify your field of study \_\_\_\_\_

#### C. The Socio-Economic Condition of the Respondents.

1. What was your previous occupation before start the poultry business?  
A) Farmer ☐ B) Trader ☐ C) Govt-worker ☐ D) NGOs ☐ E) Private employer ☐  
F) If others specify \_\_\_\_\_
2. What was your source income to start the business?  
A) Own saving ☐ B) from families ☐  
C) Borrowing from friends & relatives ☐ D) from micro-finance institution ☐  
E) If other specify \_\_\_\_\_
3. How much was your initial capital to start the poultry business \_\_\_\_\_ Birr? And what about now \_\_\_\_\_ Birr?

**D. BREEDS ADOPTED/SOURCE/.**

A. Purchased from Govt. /Pvt. Hatchery/

B. provided from agriculture research center

C. Provided from NGO's

D. If any other specify\_\_\_\_\_

**E. BREED TYPES AND FLOCK SIZE OF CHICKENS.**

A. Local If local the No of chickens -----

B. Hybrid If Hybrid the No of chickens -----

C. Exotic If Exotic the No of chickens -----

**F. CHICKEN PRODUCTION SYSEM**

1. What types of mechanisms used to rear chicken production system?

A. Backyard

B. Semi-intensive

C. Intensive

D. If others specify\_\_\_\_\_

2. For what kinds of production do you kept the Poultry?

A. for eggs

B. for meat

C. for both

3. Put thick mark (✓) for the appropriate answer of the questions given below in the table

| S/N | Perceived benefit                                                                               | Strongly disagree | disagree | agree | Strongly agree |
|-----|-------------------------------------------------------------------------------------------------|-------------------|----------|-------|----------------|
| 1   | Do you think that if the number of chicken increase income also increase?                       |                   |          |       |                |
| 2   | Do you think that if the number of chicken increase, although egg production increase?          |                   |          |       |                |
| 3   | Do you suggest that job opportunity increase with increase number of chicken?                   |                   |          |       |                |
| 4   | Do you suggest that the government policy support for urban poultry farmer increase Egg layers? |                   |          |       |                |

### **G. EXTENSION SERVICE**

1. Did you get credit service when you start poultry business? A) Yes                      B) No
2. If the answer Q.1, yes, for what purpose did you use the credit?
  - A) Buy chickens                                              B) Buy Poultry feed
  - C) Buy Poultry equipment and poultry Cages
  - D) If others (specify) \_\_\_\_\_
3. Did you use agricultural extension service? A. Yes                      B. No
4. If yes, how frequently do you contact the extension agents?
  - A) Once in a week                                              B) Once in a month
  - C) Once in a year                                              D. No contact
  - D) Other specify \_\_\_\_\_
5. If your answer is not contact the extension agents, in terms of importance?
  - A) No need                                                                                              B) could not enough time
  - C) others, specify \_\_\_\_\_
6. Have you ever got any training when you started poultry production?
  - A) Yes                                                                                              B) No
7. If the answer for Q.6 is yes, when? A) Before starting the business  
B) After the business started                                              C. Training not provided

### **H. POULTRY HEALTH MANAGEMENT PRACTICE.**

1. What mechanism use to keep your chicken health care practice?
  - A) Traditional Medicine
    1. Lemon                                                                                              2.paper and mitmita
    3. Senafech                                                                                              4. Tetra cycle
    5. Others, specify \_\_\_\_\_
  - B) Modern medicine
    1. Vaccination and syrup with vitamin
    3. Others, specify \_\_\_\_\_

### **I. FEEDING SYSTEM.**

1. How do you feed your birds?
  - A. Traditional way of scavenging system
  - B. Modern way of purchased feed (*Menno*)

2. Do you provide additional supplementary feed type? A. Yes B. No

3. If the answer for Q.2 is yes, what feed type you use?

A. Grains

B. Vitamins and Minerals

C. Food left over

D. Green plants (Cabbage)

E. Others, specify \_\_\_\_\_

4. How frequently do you feed your chicken in a day?

A. Once

B. twice

C. Three times

D. Others, specify \_\_\_\_\_

#### **J. POULTRY HOUSING CONDITION.**

1. Available housing condition?

A) Poultry house made with sheet (not use cage)

B) Poultry house made with mud (some used cage)

C) Proper building house (used cage system)

D) Others, specify \_\_\_\_\_

2. Did have the poultry house electricity and ventilation facilities?

A) Yes

B) No

3. Do you provide litter material in the poultry house? A) Yes B) No

4. If the answer for Q.3 is yes, what type litter material do you use?

A. Neat

B. Segatura

C. If others (specify) \_\_\_\_\_

#### **K. MARKETING SYSTEM.**

1. For what kinds of client do you sale the product?

A. for distributor

B) for retailer

C) for hotel

D. for kiosk shop

E. for super market

F. for consumers

G. If any others, specify \_\_\_\_\_

2. How much the price of eggs for each client?

A) Birr up to 2:70 to Whole seller and supermarket

B) Birr 2:80 to 3:00 to Hotel and Kiosk shop

C) Birr above 3:10 to Consumers

D) If any others, specify \_\_\_\_\_

3. For what purpose do you use the income or benefits most important?
  - A) For home consumption
  - B) For poultry feed
  - C) For poultry health care
  - D) for improving the farm
  - E) If any other specify \_\_\_\_\_
4. How do you evaluate the trends of your income from the time of starting up to now?
  - A) Increase
  - B) Decrease
  - C) No change
  - D) If any other \_\_\_\_\_

#### **L. CONSTRAINTS OF POULTRY PRODUCTION.**

- A). Disease and Pests
- B). Inadequate veterinary service
- C). Cost of quality feeds
- D). Unavailability of land/space
- E).Lack of technical handling of poultry
- F). Environmental challenges
- G). Market price fluctuation

#### **ADDITIONAL INFORMATION**

1. What do think about urban poultry production and management practice in generals?  
\_\_\_\_\_
2. What kinds of risk encounter when you are under the job?  
\_\_\_\_\_
2. Does the government has any kinds of support or follow up of the poultry Sectors?  
 Yes ☐ No ☐ if the answer is yes state the kinds of follow up or support \_\_\_\_\_
4. What are the major production constraints of chicken production and productivity regarding on economic importance?  
\_\_\_\_\_
5. What are the barriers to future expansions of poultry keeping?  
\_\_\_\_\_
6. What do think about the government support to improve poultry keeping particularly in urban areas? \_\_\_\_\_
7. What do you suggest to improve your poultry business?  
\_\_\_\_\_

### Interview Questions for the agricultural experts

1. Does the farmer have knowledge about scientific poultry production system and management practices? If yes state some of them\_\_\_\_\_
2. Do the farmers contact to the experts or advisors to know about profit-lose mathematical solution? \_\_\_\_\_
3. Do you think that the people have any kind of awareness about poultry farming in the city?  
\_\_\_\_\_
4. How much the government is giving emphasized for the development of urban agriculture\_\_\_\_\_
5. What is the policy of urban agriculture towards the poultry production developments?  
\_\_\_\_\_
6. What do you suggest as an expert to develop the urban agriculture particularly, the poultry sectors around cities or town? \_\_\_\_\_  
\_\_\_\_\_

## APPENDIX 2

በከተማ ግብርና የዶሮ እርባታ ዙሪያ ላይ የሉትን ችግሮችን እና የስራ ዕድል ፈጠራን በተመለከተ ለዶሮ አርቢዎች የተዘጋጀ የጽሁፍ መጠይቅ ሲሆን የዚህ መጠይቅ ዋና አላማ በ አ/አ ከተማ የሚገኙ በዶሮ እርባታ ስራ ላይ የተሰማሩ የመሃበረሰብ ክፍልን ተጠቃሚ ከማድረግ አኳያ ያለበትን የእድገት ደረጃ እና ተያያዥ ችግሮችን ለማየት ሲሆን፤ ጥናቱ ተኩረት የሚያደርግው በኮ/ቀ/ክ/ከተማ በ2 ወረዳዎች (ወረዳ 7 እና 15) ላይ ሲሆን፤ በአ/አ ዩንቨርሲቲ ለከተማ እና ከልላዊ ዕቅድ እድገት ት/ርት ክፍል ለድህረ-ምረቃ ጥናት የሚሆን መረጃ ለማሰባሰብ የተዘጋጀ መጠይቅ ነው። እርሶም ዝዬዎን መስዋት አድርገው ስለተባበሩኝ ከልብ እያመሰገንኩኝ በመጠይቁ ላይ ስምዎን መጻፍ አየስፈልጎትም።

ሰለትብብርዎ ከልብ አመሰግናለሁ!

### 1) አጠቃላይ የቤተሰብ መረጃ

1. አድራሻ፤ ከተማ \_\_\_\_\_ ወረዳ \_\_\_\_\_ የቤት .ቁ. \_\_\_\_\_
2. የቤተሰብ ሃላፊ ፤      ፆታ    ወንድ ☐ ሴት ☐ ዕድሜ \_\_\_\_\_
3. የጋብቻ ሁኔታ ፡      ሀ) ያገባ ☐ ለ) ያላገባ ☐ ከ) የፈታ ☐ መ) ሌላ \_\_\_\_\_
4. የቤተሰብ መጠን ፤      ወንድ \_\_\_\_\_ ሴት \_\_\_\_\_ ድምር \_\_\_\_\_
5. የትውልድ ቦታ ፡      አ/አ ☐      ከአ/አ ውጪ ☐
6. የትውልድ ቦታ ከአዲስ አበባ ውጪ ከሆነ ወደ አ/አ የመጡበት ምክንያት  
ሀ) በጋብቻ ☐      ለ) በሥራ ዕድል ☐      ሐ) ዘመድ ተከትሎ ☐      መ) በትመህርት ዕድል ☐  
ሠ) ሌላ ካለ ይግለፁ \_\_\_\_\_

### 2) የትምህርት ሁኔታ

- ሀ) ያልተማረ ☐      ለ) ማንበብና መጻፍ የሚችል ☐      ሐ) አንደኛ ደረጃ ትምህርት ☐  
መ) ሁለተኛ ደረጃ ትምህርት ☐      ሠ) ዲፕሎማና ከዚያ በላይ ☐
- ረ) ዲግሪና ከዚያ በላይ ☐
- ሰ) መልሶ ;ሠ; ከሆነ የተመረቁበትን የትምህርት መስክ ቢገልፁ \_\_\_\_\_

### 3) ማህበራዊና ኢኮኖሚያዊ ሁኔታዎች

1. ይህን ስራ ከመጀመሪያ በፊት የነበረው የስራ ዓይነት  
ሀ) ግብርና ☐      ለ) ነጋዴ ☐      ሐ) የመንግስት ሰራተኛ ☐  
መ) መንግስታዊ ያልሆነ ድርጅት ☐      ሠ) የግል ተቀጣሪ ☐
- ረ) ሌላ ካለ ቢጠቀስ \_\_\_\_\_
2. የዶሮ እርባታ ስራውን ለመስራት መነሻ የገንዘብ ምንጭ  
ሀ) ከራሱ ካጠራቀሙት ☐      ለ) ከቤተሰብ በብድር ☐      ሐ) ከዓደኛ በብድር ☐

መ) ከመደክሮ ፋይናንስ ተቋማት በብድር ☐

ሠ) ሌላ ካለ ቢጠቀስ \_\_\_\_\_/

3. ዶሮ እርባታውን ሲጀምሩ መነሻ ገንዘብዎ ምን ያህል ነበር ? \_\_\_\_\_ በአሁኑ ሠዓትስ ምን ያህል ደርሷል?

#### 4. የዶሮዎች ዝርያ ምንጭ

ሀ) ከመንግስት ዶሮ እርባታ የተገዙ ናቸው ☐

ለ. ከግብርና ምርምር ማዕከል የተሰጡ ናቸው ☐

ሐ. መያድ ሆነው በዘርፉ ከተሰማሩ የተሠጡ ናቸው ☐

መ) ሌላ ካለ ይጠቀስ \_\_\_\_\_/

#### 5. የዶሮዎቹ ዝርያ አይነታቸውን እና መጠናቸውን በተመለከተ

ሀ. ሀገር በቀል ዶሮዎች ☐    ለ. የተዳቀሉ ዶሮዎች ☐    ሐ. የውጭ ሀገር ዶሮዎች ☐  
 ብዛት \_\_\_\_\_ ብዛት \_\_\_\_\_ ብዛት \_\_\_\_\_/

#### 4. የዶሮ አረባብ ሁኔታን በተመለከተ

##### 4.1. ምን አይነት የዶሮ አረባብ ዘዴ ይጠቀማሉ

ሀ. ልቅ ☐    ለ. ባህላዊና ዘመናዊ ☐    ሐ. ዘመናዊ ☐  
 መ. ሌላ ካለ ቢጥቀሱ \_\_\_\_\_/

##### 4.2 .ዶሮዎችን የሚረቡት :-

ሀ. ለእንቁላል ☐    ለ. ለሰጋ ☐    ሐ. ለሁለቱም ☐

##### 4.3 .በዚህ ሥራ ላይ ለምን ያህል ጊዜ ቆይተዋል \_\_\_\_\_/

##### 4.3.የ ራዶት(✓) ምልክት በመጠቀም የሚከተሉትን ጥያቄዎች ሙሉ::

| ተ.ቁ | የሚገኙ ጥቅሞች                                    | በጣም አልሰማማም | አልሰማማም | እስማማለሁ | በጣም እስማማለሁ |
|-----|----------------------------------------------|------------|--------|--------|------------|
| 1   | የዶሮ ቁጥር ሲጨምር ገቢ ይጨምራል?                       |            |        |        |            |
| 2   | የዶሮ ቁጥር ሲጨምር የዕንቁላል ምርት ይጨምራል?               |            |        |        |            |
| 3   | የዶሮ ቁጥር ሲጨምር የሰራ ዕድል ይጨምራል?                  |            |        |        |            |
| 4   | የመንግስት እገዛ ለከተማ ዶሮ እርባታ ምርት መጨመር አስተዋፅኦ አለው? |            |        |        |            |

**5. የግብርና ኤክስቴንሽን አገልግሎት/የባለሙያ ድጋፍ እና ክትትል በተመለከተ**

5.1 ስራውን ሲጀምሩ የብድር አገልግሎት አግኝተዋል ወይ?    ሀ. አዎ ☐    ለ. አላገኘሁም ☐

5.2. መልስህ አዎ ከሆነ ብድሩን ለምን አገልግሎት አዋሉት

ሀ እንቁላል ጣይ ዶሮ ለመግዛት ☐    ለ.የዶሮ መኖ ለመግዛት ☐  
ሐ. የዶሮ ቤት(ጌጅ) ለመግዛት ☐    መ.ሌላ ካለ ቢጠቀስ \_\_\_\_\_/

5.3. ስለ ዶሮዎቹ አረባብ ምርታማነት እና ተዛማጅ ሁኔታዎች በተመለከተ ከባለሙያ ጋር በቅርበት ይወያያሉ?

ሀ. አዎ ☐    ለ. አልወያይም ☐

5.4. መልስህ አዎ ከሆነ ለምን ያህል ጊዜ ከባለሙያ ጋር ይገናኛሉ?

ሀ. በሳምንት 1 ጊዜ ☐    ለ. በወር 1 ጊዜ ☐    ሐ. በዓመት 1 ጊዜ ☐  
መ. ሌላ ካለ ይጥቀሱ \_\_\_\_\_/

5.5. ከባለሙያ ጋር የማይገናኙ ከሆነ ለምን?

ሀ. አስፈላጊ ስላልሆነ ☐    ለ. በቂ ጊዜ ስለሌሉት ☐  
ሐ. ሌላ ካለ ይጥቀሱ \_\_\_\_\_/

5.6. የዶሮ እርባታውን ሲጀምሩ ያገኙት ስልጠና አለ?

ሀ.አዎ ☐    ለ. አላገኘሁም ☐

5.7. መልስህ አዎ ከሆነ?መቼ?    ሀ.ስራውን ከመጀመርዎ በፊት ☐    ለ. ስራውን ከጀመሩ በኋላ ☐  
ሐ. ስልጠና አላገኘሁም ☐

**6.የዶሮ ጤና አጠባባቂ ሥነ-ዘዴ**

6.1. የዶሮቹን ጤንነት የሚጠብቁበት ስነ - ዘዴ

ሀ. ባህላዊ ህክምና

1/ ሎሚ በመጋት ☐ 2/ ሚጥሚጣ በእንጀራ ፈትፍቶ በማብላት ☐

3/ ሚጥሚጣ በእንጀራ ፈትፍቶ በማብላት ☐

4/ ቴትራ ሳይክል በትብጦ በመጋት ☐

5/ ሌላ ካለ ይጥቀሱ \_\_\_\_\_/

ለ. ዘመናዊ ህክምና በመስጠት ከሆነ

1/ በክትባት ☐    2/ ቫይታሚን በሽሮፕ መልክ በመስጠት ☐

**7.የዶሮዎች አመጋገብ ሁኔታ እና ሥርዓት**

7.1 ዶሮዎችን እንዴት ይመግባሉ?

ሀ. በባህላዊ (ልቅ) አመጋገብ ☐    ለ) በዘመናዊ ዘዴ መኖ በመግዛት መቀለብ ☐

7.2. ተጨማሪ የዶሮ ምግብ ይሰጣሉን

ሀ. እጠቀማለሁ ☐ ለ. አልጠቀምም ☐

7.3. መልስህ አዎ ከሆነ የሚጠቀሙት ተጨማሪ የዶሮ ምግብ ዓይነት ምንድን ነው?

ሀ. ጥራ ጥሬ ☐ ሐ. የተረፈ ምግብ መመገብ ☐

ለ. ቫይታሚና ሚንራል ☐ መ. አርንጎዴ ቅጠላቅጠል/ጎመን/ ☐

ሠ. ሌላ ካለ ይጥቀሱ \_\_\_\_\_/

7.4 ዶሮዎችን ለመንከባከብ በቀን ምን ያህል ሠዓት ወይም ጊዜ ይመግባሉ

ሀ. አንድ ጊዜ ☐ ለ. ሁለት ጊዜ ☐ ሐ. ሶስት ጊዜ ☐

መ. ሌላ ካለ ይጠቀስ \_\_\_\_\_

### **8. የዶሮ ቤት ሁኔታን በተመለከተ**

8.1 የቤቱ አሰራር ሁኔታ

ሀ. ከቆርቆሮ የተሰራ /ኬጀ የሚጠቀም/ ☐ ለ. ከጭቃ የተሰራ /ኬጀ የሚጠቀም/ ☐

ሐ. በግንብ የተሰራ /ኬጀ የሚጠቀም/ ☐

መ. ሌላ ካለ ቢጠቅሱ \_\_\_\_\_/

8.2 የዶሮቹ ቤት የተሟላ የአየር ማስገቢ እና መበራት አለው ወይ ?

ሀ. አዎ ☐ ለ. የለውም ☐

8.3 የዶሮቹ ቤት ማረፊያ ጉዝጓዝ አለው ወይ ?

ሀ. አዎ ☐ ለ. የለውም ☐

8.4. የተ.ቁ 8.3 ጥያቄ መልሶ አዎ ከሆነ ምን ይጠቀማሉ?

ሀ. ወንፊት ወይም መረብ ☐ ለ. ገለባ ወይም ሳጋቱራ ☐

ሐ. ሌላ ካለ ቢጠቀስ \_\_\_\_\_/

### **9. የገበያ ሁኔታ በተመለከተ**

9.1. ምርትዎን የሚሸጡት ለማን ነው ?

ሀ. ለአከፋፋይ ☐ ለ. ለቸርቻሪ ☐ ሐ. ለሆቴል ☐ መ. ለሱቅ ☐

ሠ. ለሱፐርማርኬት ☐ ረ. ለተጠቃሚ ☐

ሰ. ሌላ ካለ ይጠቀስ \_\_\_\_\_/

9.2. የእንቁላል ዋጋና የሚሸጡላቸው ደንበኞችን በተመለከተ

ሀ. እስከ 2.70 ለአከፋፋይና ለሱፐርማርኬት

ለ. ከ 2.80 እስከ 3.00 ለሆቴልና ለሱቅ

ሐ. ከ 3.10 ብር በላይ ለተጠቃሚዎች

መ.ሌላ ካለ ይጠቀስ \_\_\_\_\_/

9.3. ከምርቱ የሚያገኙትን ገቢ በአብዛኛው ለምን ጥቅም ያውሉታል ?

ሀ. ለቤት ፍጆታ

ለ. ለዶሮዎች ቀለብ መግዣ

ሐ. ለዶሮዎች ጤንነት ለመጠበቅ

መ. ዕርባታውን ለማጠናከር

ሠ. ሌላ ካለ ይጠቀስ \_\_\_\_\_/

9.4. የገቢዎን ሂዳት ከመጀመሪያ ጊዜ አንስቶ እስከ አሁን ያለው ሁኔታ እንዴት አገኙት ?

ሀ. እየጨመረ ነው

ለ. እየቀነሰ ነው

ሐ. ለውጥ የለውም

መ. ሌላ ካለ ይጠቀስ \_\_\_\_\_/

### **10. በዶሮ እርባታው ላይ የተጋረጡ ማነቆዎች**

ሀ. በሽታ ☐ ለ. ተመጣጣኝ የህክምና እጦት ☐ ሐ. የዶሮ ምግብ እጥረት ☐

መ. የቦታና የግንባታ እጥረት ሠ. ዘመናዊ የዶሮ እርባታ ሥነ - ዘዴ እጥረት ☐

ረ. የቦታ አቀማመጥና የአየር ንብረት ተፅዕኖ ☐ ሰ. የገበያ አለመረጋጋት ☐

### **11. በአጠቃላይ ስለ ዶሮ እርባታና አያያዝ ተጨማሪ አስተያየት ካልዎት**

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12. በስራዎ ላይ ያጋጠመዎን ችግር ካለ የዘርዘሩ \_\_\_\_\_

13. ከመንግስት በኩል ስለሰራው ያደረገሎዎት እገዛ ወይም ክትትል ካለ ቢገልጹ \_\_\_\_\_

\_\_\_\_\_

14. ከኢኮኖሚ ጠቀሜታ አንፃር ሲታይ ስረው ያሉትን ዋና ዋና ችግሮች ቢገልጹ \_\_\_\_\_

\_\_\_\_\_

15. ለወደፊት ሠራውን ለማስፋፋት እንደ ችግር የሚነሱ ነጥቦች ካሉ ቢብራሩ \_\_\_\_\_

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16. በከተማ አካባቢ ለከተማ ግብርና ማደግ መንግስት እያደረገ ያለው እገዛ ካለ ቢጠቀስ \_\_\_\_\_

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17. የዶሮ እርባታው ስራዎ የተሻለ የገቢ ምንጭ እንዲያመጣ በርሶ በኩል ምን ቢደረግ ይሻላል ይላሉ?

#### **1.በግብርና ባለሙያ የሚሞላ**

የዶሮ እርባታው ስለ ሳይንሳዊ የዶሮ አረባብ እና አጠባበቅ ሥነ-ዘዴ እውቀት አለው?ካለው ቢጠቅሱ

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የዶሮ አርቢው ከግብርና ባለሙያ ምክር በመቅሰም ትርፍና ኪሳራን ለማወቅ የሚያስችል ጥናት አድርጓል?ካደረገ ቢዘረዘር

\_\_\_\_\_ /

በከተማው ዙሪያ የዶሮ እርባታ እንደሚከናወን የማህበረሰቡ ንቃት ህሊና ምን የህል እንደሆነ ቢገለጽ?

\_\_\_\_\_ /

የከተማ ግብርናን በተመለከተ መንግስት ለጉዳዩ እየሰጠ ያለው ትኩረት እስከምን ድረስ ነው?ቢብራራ?

\_\_\_\_\_ /

በከተማ የዶሮ እርባታ ግብርና አድጎት ዙሪያ ፖሊሲው ምን ይላል ?

እንደ ባለሙያ በከተማ ዙሪያ የዶሮ እርባታን በተሻለ መልኩ ለማስቀጠል ምን ይመክራሉ?

ይብራራ?\_\_\_\_\_