INDRIA GANDHI NATIONAL OPEN UNIVERSITY

SCHOOL OF CONTINUING EDUCATION

THE CAUSE OF RURAL HOUSEHOLD FOOD INSECURITY AND COPING STRATEGY. IN THE CASE OF EBINAT DISTRICT, SOUTH GONDAR ZONE; AMHARA REGIONAL STATE.

By

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The Cause of Rural household food insecurity and coping strategies. In the Case of Ebinat district, South Gondar Zone, Amhara Regional State

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DECLARATION

I hereby declare that the Dissertation Entitled: CAUSE OF RURAL HOUSEHOLD FOOD INSECURITY AND COPING STRATEGIES. IN THE CASE OF EBINAT DISTRICT, SOUTH GONDAR ZONE; AMHARA REGIONAL STATE,Submitted by me for the partial fulfillment of the M.A. in Rural Development to Indira Gandhi National Open University (IGNOU) New Delhi is my own original work and has not been submitted earlier to IGNOU or to any other institution for the fulfillment of the requirement for any course of study. I also declare that no chapter of this manuscript in whole or in part is lifted and incorporated in this report from any earlier work done by me or others.

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Student ofMA.(RD) from Indira Gandhi National Open University, New Delhi was working under my supervision and guidance for his project work for the course MRDP-001.His project work entitled THE CAUSE OF RURAL HOUSEHOLD FOOD INSECURITY AND COPING STRATEGY, IN THE CASE OF EBINAT DISTRICT SOUTH GONDAR ZONE AMHARA REGIONAL STATE, which he is submitting, is his genuine and original work.

Place_____ Signature_____

Date Name_____

Address of the supervisor

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ACRONYMS AND ABBREVIATIONs

ACP	African Caribbean pacific
ACSI	Amhara credit and saving Institute
AE	Adult Equivalent
CSA	Central Statistics Authority
DA	Development Agent
EHNI	Ethiopian Health and Nutrition Institute
ESFR	Ethiopian Strategic Food Reserve
FAO	Food and Agricultural Organization
FDRE	Federal Democratic Republic of Ethiopia
FFSS	Federal Food Security Strategy
FSS	Food Security Strategy
GDP	Gross Domestic Product
ha	hactar
HH	Household
HCE	Household Consumption Expenditure
HICE	Household Income and Consumption Expenditure
HDW	Hand dug well
IFAD	International Fund for Agricultural development
Kg	Kilogram
Kcal	Kilocalorie
Km	Kilometer
m	Meter
MGD	Millennium Development Goals

MoFED	Ministry of Finance and Economic Development
NGO	Non-Governmental Organization
NPP	National population Policy
RKA	Rural Kebele Administration
SDPRP	Sustainable Development and Poverty Reduction Program
SPSS	Statistical Package for Social Science
Sq.km	Squre Kilometer
St.Dev	Standard Deviation
TLU	Total Livestock Unit
UNCDF	United Nations Capital Development Fund
UNDP	United Nations Development Program
URRAP	Universal Rural Road Access Program
US	United States
USD	United States Dollar
WFP	World Food Program

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ABSTRACT

A clear understanding of the major causes of food insecurity helps policy makers and planners formulate new policies that enhance food security. Therefore, this study was conducted to measure food security/insecurity status of households, to identify factors influencing farm households' food security and coping strategies and policy options. In order to achieve these objectives biophysical; demographic and socio-economic data were collected from 121 randomly selected households in Ebinat District of South Gondar Zone Amhara Regional State. A purposive, cluster and random sampling procedure was used to select 3 PAs. A survey was conducted to collect the primary data from sample respondents. Supplementary, secondary data were collected from various sources. The data were analyzed using descriptive statistics like mean, standard deviation, and percentage. The survey result shows that about 73.8% of sample farmers were food insecure and 26.2 were Food secure. From the study result; family size, level of education,size of land holding fertility of land, size of Livestock holding,number of oxen, Credit access, access to improved technology, access to irrigation, and Income of the household are identified as cause of household food insecurity,whereas age of household, and marital status, had no significant influence on food security level of the HH. From the coping strategies implemented in the study area, income from animal sale, off-farm income, reducing size and number of meals, sale of firewood and charcoal, are widely practiced coping strategy in the area. Following the findings'a number of useful recommendations were made based on the findings of the study".

CAPTER ONE: INTRODUCTION

1.1 Back ground of the study

Food security became a crucial agendum all over the world, because food is very fundamental human right that transcends cultural, political back ground, and religious beliefs. In addition the right to food is acknowledged in universal declaration of human rights as well as the international covenant on economic, social, and cultural rights which bring consequences to the state to ensure right to food which consists of obligations to respect, protect, and fulfill (Hadiprayitno, 2010, cited in Tilksew and Fekadu, July 2013. Despite progress witnessed in reducing poverty in some part of the world over the past couple of decades,dealing with persistent rural poverty has continued to constitute the economic development agenda of Sub-Shara Africa(IFAD 2010).

Ethiopia is one of the most food insecure countries in Sub-Saharan Africa. In Ethiopia food insecurity is still the major factors that hinder human development of the country. A combination of factors has resulted in serious and growing food insecurity problem,affecting as much as 45%of the population (Mesfine 2014). According to the minister of agriculture 2012, Ethiopia has experienced high economic growth in recent years which was double digit. However despite this, significant poverty and chronic food insecurity remains in the country. It was estimated that about 38.7 % of the Households are subsistence farmers, and vulnerable to weather fluctuations. High population growth has contributed to decline in farm sizes. Population pressure leads to the cultivation of marginal land areas, clearing of important forests and wet lands. Such conversion is a major driving force for land degradation. Land degradation in the Ethiopian highlands (i.e. areas above 1500 m a.s.l.) has been a concern for many years. Soil erosion, nutrient depletion and deforestation arecommon. Dramatic variations in

rainfalland repeated environmental shocks further contributing to poverty and food insecurity, however little has been done to determine their impact on productivity.

Amhara region, which represents more than 27 % of the national population, is one of the regions of Ethiopia suffered from food shortage every year. Most of the regionareas are incorporated under safety net program in order to rehabilitate the farmer's living standard and alleviate their food security problems. However the region still characterized by the persistence of food security problems and the need for better intervention. According to the household consumption and expenditure(HCE) carried out in 2011,the proportion of households who are food insecure are about 42.5% in Amhara. This is the highest one and much higher than the national average, which is 33.6% (Mesfine 2014).The study area,Ebinatdistrict is categorized as food insecure in Amhara regional state districts , and all of the rural kebele in the district are identified as food insecure ,even though there is a difference among house hold on the level of wealth. On the other hand investigating the root cause of food insecurity in the cause of Ebinatdistrict was not explored. Hence my intention was to investigate the root cause of food insecurity in the district and coping mechanism of the rural house hold and share finding to decision makers to take their possible majors and to give insight others who are interested to investigate further and take their own majors.

1.2. Statement of the Problem

Ethiopia's economy has grown substantially over the last five years but the country still remains one of the world's poorest countries in the world (WFP, 2012). The history is slowly but surely changing that a significant segment of the population have suffered from food insecurity and poverty related problems like malnutrition and disease for a very long period of time. (Samuel,2003).

A number of factors aggravated growing problem of food insecurity in Ethiopia. Adverse climatic changes (drought) combined with high human population pressure, natural resources degradation, technological and institutional factors have led to a decline in the size of per capita land holding. This was exacerbated by policy-induced stagnation of agriculture and internal conflict and instability in the past resulting in the widening of the food gap for more than two decades, which had to be bridged by food aid (Degefa, 2002).

Such problem has a wide coverage in the countryand there are research findings on the topic in different part of our country, but the cause of Ebinat was not explored. In Ebinat district the 35 rural kebele's entire are categorized as food insecure. Hence the researcher intended to assess the features of the food insecure households,their demographic and socioeconomic characteristics and identify the major causes of food insecurity. Besides their potentials to overcome the problem and assessing of the local coping strategies of the households have had a significant importance.Hence, the research was conducted to examine major causes of house hold food insecurity and coping mechanismand identify policy optionsfor farm household food insecurity in Ebinat district of the Amhara Region.

1.3. Objectives of the Study

1.3.1 General objective: The study aimed at examining the major causes of food insecurity and coping strategies of therural households and identify policy options that minimizefarm household's food insecurity in the study area.

1.3.2 The specific objectives of the study are:

1.3.2.1 To assess the major causes for food insecurity at household level in the area

1.3.2.2. To assess the coping strategies of the farm households to overcome food insecurity

1.3.2.3. To identify policy options for minimizing farm household food insecurity in the study area.

1.4. Research questions of the study

The overriding queries in this research are:

1. What are the causes for food insecurity that farm households encounter in the area?
2. How do different socio-economic variables affect household livelihood?
3. What coping mechanisms do the households practice to deal with food shortage?
4. What interventions and policy options are needed to mitigate the problem of insecurity?

1.5 Significance of the Study

A clear understanding of the major causes of food insecurity has practical implications at the micro level to help policy makers and planners in the formulation of new policies that ensure food security. Moreover, the disaster prevention and preparedness and Food Security Coordination Commission of Amhara, Bureau of Agriculture, and other non-governmental organizations which operate in the study area will plan a household centered food security packages so as to seek a satisfactory balance between community project and household asset building packages.The study gives insight to researchers and students interested in the topic to stimulate further investigations of the problems in other areas.

1.6 Limitation of the study

The study wasundertaken in Ebinat district of South Gondar Zone of the Regional State of Amhara. The study was coveredonly three of the thirty-fiverural kebeles of the district, namely Mechena, Selamaya lanko and Worgaja from which a total sample of 121households was drawn. Therefore, the study was limited due to limited resources in

terms of time, budget, and other facilities. However, the result of the study can be used for the study area and other areas where there aresimilar socio-economic circumstance.

CHAPTER TWO: LITERATURE REVIEW

2.1. Concepts of Food Security

Food insecurity is the lack of access to sufficient food, either chronically or transitorily, that leads to poor health, reduced energy, and other physical and physiological deterioration. Chronic food insecurity is due to the unavailability of food or lack, of resources to acquire it. Transitory food insecurity is a temporary decline in a household's food supply due to instability in food production, prices or market availability, or household incomes. Food security is sometimes equated with food self-sufficiency, either at household or national levels.

Generally, definitions of food security have some common themes although they vary depending on the way the definitions are initially derived. In the majority of the food-security definitions, themes such as sufficiency, access, security and time are the key defining characteristics of the concept of food security. Three definitions of food security that were put forward by Edie (1986), Calkins (1986) and the World Bank (1986) will be briefly reviewed below(as cited in Tesfaye 2005).

According to Edie (1986) "Food insecurity is when the viability of the household as a productive and reproductive unit is threatened by food shortage" This definition emphasizes the importance of the household as a productive and reproductive unit, and that its viability can be threatened by food insecurity.

On the other hand, Calkins (1986) defines food security as the capacity of a population to produce or to buy enough food, even in the worst years, to satisfy its basic needs. This definition begins with recognition of the capacity of the people as a determinant for food insecurity. The definition emphasized the need for both production and purchasing capacities of the people to achieve food security. The difference between the

above two definitions is only the level of aggregation that is 'household versus population'.

The other definitions of food security is the one forwarded by the World Bank (1986), which states food security as access by all people at all times to enough food for an active and healthy life.

The USAID (1992) defines food security as: "when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life." Food security is a broad and complex concept that is determined by agro physical, socioeconomic and biological factors (von Braun, et al. 1992). According, to this definition, food security has three fundamental elements.

Food availability is achieved when sufficient quantities of food are consistently available to all individuals within a country. Such food can be supplied through household production, other domestic output, or commercial imports or food donation.

Food access is ensured when households and members of the household have adequate resources to obtain appropriate food for a nutritious diet. Access depends on income available to the household, on the distribution of income within the household, and on the price of food.

Food utilization is the proper biological use of food, requiring a diet proving sufficient energy and essential nutrients, potable water and adequate sanitation. This aspect thus focuses more on nutrition, and in this it differs from the normative definition by the World Bank (1986).

At the 1996 World Food Summit, food security was defined as „Food security exists when all people, at all times, have physical, social and economic access to sufficient food which meets their dietary needs and food preferences for an active and healthy life" (FAO, 2012). This definition is well accepted and widely used (Suresh C, 2009). On the other hand, food

insecurity exists when people are undernourished because of the physical unavailability of food, lack of social or economic access to adequate food, inadequate food utilization and availability, accessibility and utilization irregularity. Household food insecurity results when food is not available, cannot be accessed in socially acceptable ways, or is not utilized completely (Frongillo and Nanama, 2004). Food-insecure people are those individuals whose food intake falls below their minimum calorie (energy) requirements, as well as those who exhibit physical symptoms caused by energy and nutrient deficiencies resulting from an inadequate or unbalanced diet or from the body's inability to use food effectively because of infection or disease (FIVIMS, 2006, cited in Tadesse, 2008). At household level food insecurity refers to either a household's temporary failure to acquire enough food (transitory food insecurity) or permanent failure to acquire enough food (chronic food insecurity) or cyclical food shortage (cyclical food insecurity) caused by factors such as weather (Maxwel and Frankenberger, 1992.

Finally, the concept and definition of food security were developed and clearly expanded based on the growing hunger, food insecurity and malnutrition scenarios in developing countries. From the above definitions of food security, slight variations were observed. However, the overall basic principles and definitions of food security, that is, "availability and access" were stressed in the definitions cited above. Therefore, for the purpose of this study, the definition put forward by World Bank 1986 was taken as a working definition of food security and the household level is considered as the key unit of food security analysis.

2.2. Sources of Food Insecurity

Rural households faced a variety of risks, which may vary from natural to manmade factors (Debebe, 1995). Drought (climate) could be considered as a major cause of famine. Hansen (1986) provided a purely scientific, meteorological definition of

drought and a definition that relates drought to human activities." With widespread crop failures, natural or other disasters as well as the risk of fluctuation in production are some of the risk condition contributing to food entitlement failure. Moreover, variability in food supply, market and price variability, risks in employment and wages, and risks in health and morbidity, and conflict are also an increasingly common source of risk to food entitlements (Table 1).

Table 1. Sources of risks of food insecurity and the affected population groups

Risks	Households and people at risk of food insecurity
Crop production risks (pests, drought, and others)	Smallholders with little income diversification and limited access to improved technology, such as improved seeds, fertilizer, irrigation, and pest control
Agricultural trade risks (disruption of exports or imports)	Landless farm laborers smallholders who are highly specialized in an exported food Urban poor
Food price rises (large, sudden price rises)	Poor, net food-purchasing households
Unemployment risks	Wage-earning households and informal-sector employees (that is, in poor urban areas and when there is sudden crop production failure, in rural areas)
Health risks (Infectious diseases, for example, resulting in labor productivity decline)	Entire communities, but especially households that can -not afford preventive or curative care and vulnerable members of these households
Political and policy failure risks	Households in war zones and areas of civil unrest Households in low potential areas that are not connected to growth centers via infrastructure
Demographic risks (Individual risk affecting large groups)	Women, especially when they have no access to education Female-headed households ,Children at weaning age The aged

Source: von Braun *et al.*(1992: 17)as sited by Tesfaye in 2005

2.3. Food Security: Measurement and Indicators

2.3.1. Food security Indicators

Measuring the required food for an active and healthy life and the degree of food security attained is a question to be addressed in a food security study. Given the multiple dimensions of food insecurity, there can be no single indicator for measuring it. For this purpose different indicators are needed to capture the various dimensions at the country, household and individual levels, for example, three sets of indictors are often used to identify possible collapses in food security. These include food supply indicators (rainfall, area planted, yield forecasts and estimates of production); social stress indicators (market prices, availability of produce in the market, labor patterns, wages and migration) and individual stress (which indicate nutritional status, diseases and mortality) (RRC, 1990).as cited inMulugeta 2002. These indicators are very important to make decisions on the possible interventions and timely responses

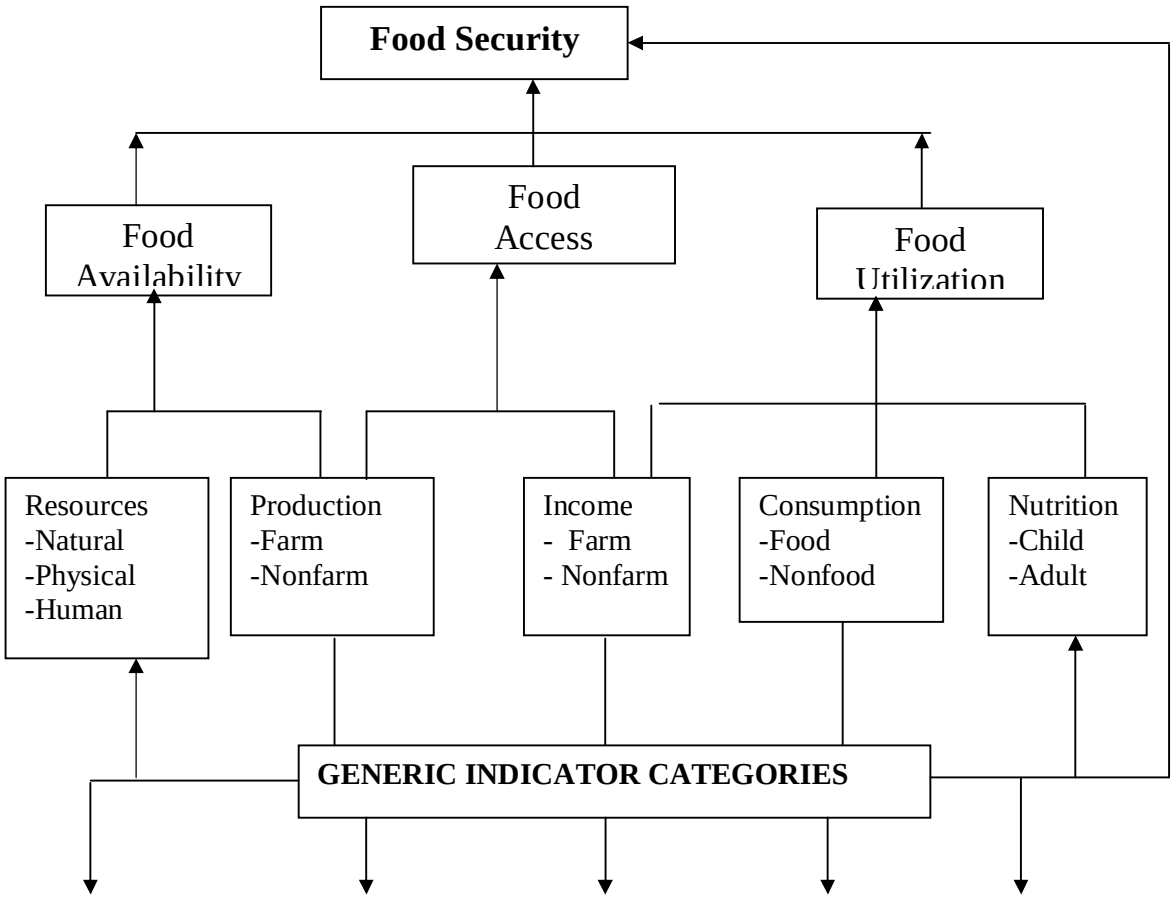
According to Frankenberger(1992), as cited in Aschalew 2006, household food security indicators are divided in to process, access and outcome indicators.

However, Frankenberger (1992) ultimately classified these indicators in to two main categories, process and outcome indicators. The former provides an estimate of food supply and food access situation and the latter serves as proxies for food consumption.

Another important indicator for food security is a coping strategy, which is related to food access indicators. According to Davies(1993) as cited by Mulugeta 2002 coping strategies developed by households and the sequential responses through which people used to pass at times of decline in food availability is one indicator of food security; the responses vary from commitment of low domestic resource to distress migration depending on the intensity of crises.

Chung et al. (1997) as cited by Mulugeta2002,identified and proposed two types of indicators at individual and household levels. First, generic indicators are those that can be collected in a number of different settings and are derived from a well-defined conceptual framework of food security. Second, location specific indicators are those indicators typically carried only within a particular study area because of unique agro climatic, cultural, or socioeconomic factors. Generic indicators associated with each link in the food security causal chain are given in Figure 1 below.

Figure 1: A conceptual frame work of food security and generic indicators categories.



Resources

Natural
Rainfall levels, stability
Soil quality
Water availability
Forest resource access

Physical
Livestock ownership
Infrastructure access
Farm implement ownership
Land ownership, access
Other physical assets

Human
Gender of household head
Dependency ratio
Education literacy levels
Household size
Age of household head

Production
Total area cultivated
Irrigated area
Area in fallow
Access to and use of inputs
Number of cropping seasons
Crop diversity
Crop yields
Food production
Cash crop production
Number of sources of
non farm income
Cottage industry production

Income
Total income
Crop income
Livestock income
wage income
Self-employment
Producer prices
Market, road access
Migrant income

Consumption
Total expenditure
Food expenditure
Nonfood expenditure
Consumer prices
Dietary intake
Food frequencies

Nutrition
Anthropometry
Serum micronutrient
levels
Morbidity
Mortality
Fertility
Access to health
Services
Access to clean
Water source
Access to sanitation

Source: Adapted from Chung et al. (1997:6) Webb and Von Braun (1994), Cited inMulugeta 2002.

2.3.2. Measuring food security

The measurement of food insecurity at different levels was described by Von Braun *et al* (1992) as follows:

Country level: Food security at the country level can be monitored in terms of demand and supply indicators; that is, the quantity of available food versus needs, and net imports needed versus import capacity.

Household level: Food security at household level is best measured by direct surveys of dietary intake in comparison with appropriate adequacy norm. However, it measures existing situation and not the down side risks that may occur. The level of, and changes in, socio economic and demographic variables such as real wage rates, employment, price ratio, and migration properly analyzed, can serve as proxies to indicate the status of and changes in food security.

Individual level: Anthropometric information can be a useful complement because measurements are taken at the individual level. Yet such information is the outcome of change in the above indicators and of the health and sanitation environment and other factors.

2.4. Households Strategies of Coping with Food Insecurity

Coping strategy; could be defined as a mechanism by which households or community members meet their relief and recovery needs, and adjust to future disaster-related risks by themselves without outside support (Dagnew,1993). According to Davies (1994), coping strategies are the bundle of poor people's responses to declining food availability and entitlement in abnormal seasons or years.

Farm households respond to the problems caused by seasonal and disaster (mainly drought) related food insecurity in different ways. Various coping mechanisms that are identified by different authors (e.g., Messer, 1989; Dagnew,1994) as cited by Tesfaye

(2005) can be put under three broad categories. These are production-based responses (expansion of production and improving productivity); market-based responses (food grain purchase through mainly sales of livestock) and non-market-based responses (including institutional and societal income transfer systems such as gift and relief food distribution).

Coping mechanisms used by farm households in rural Ethiopia include livestock sales, agricultural employment, certain types of off-farm employment and migration to other areas, requesting grain loans, sale of wood or charcoal, small scale trading, selling cow dung and crop residues, reduction of food consumption, consumption of meat from their livestock, consumption of wild plants, reliance on relief assistance, relying on remittances from relatives, selling of clothes, and dismantling of parts of their houses for sale. Some of them are likely to be implemented only after the possibilities of certain other options have been pursued (Cutler 1984).

All households are not equally vulnerable to food shortages and do not respond to it in the same way. Deprived households are more vulnerable to disasters than relatively better off households. The destitute are often forced to immediately collapse and get engaged in unusual and marginal kinds of economic activities (such as sales of grass, wood, leaves, and eating wild food and at the end migration). Since the country is dependent on agriculture, crop failure usually leads to household food deficit. The absence of off farm income opportunities, and delayed food aid assistance, leads to asset depletion and increasing levels of destitution at household level. As it was discussed before, farm households in different vulnerable areas of the country use different coping mechanisms against food insecurity.

2.5. Food Security Strategy of Ethiopia-

In order to improve the food security situation of the country, successive national food security strategies have been designed in 1996,2002 and 2003/04. However in spite of all the effort put by the government and donors to ensure the food security of rural households in the country, it continuous to raise and a large proportion of the population faces chronic food insecurity and their livelihood are at risk (Belayneh 2005). That is why both chronic and transitory food security perpetuates in the rural poor.

The major components of food security program involves: improving productivity and production of rural household, developing the contribution of the livestock sector in food security, expanding and strengthening irrigation schemes, implement sustainable land use practices,build-up human and institutional capacity, improve the provision of clean drinking water, expand rural credit services, expand rural market services, expand and strengthen off-farm employment opportunities and implement resettlement program. (Adugnaw 2010)

2.6. Empirical Studies on Food Insecurity

A study by Ashimogo and Hella (2000). In Iringa, Tanzania revealed that household food security was positively influenced by total household asset disposal and income. On the other, hand the study revealed that the transition to commercial agriculture has had negative influence on food security. Deterioration in the ecological conditions of production has also been seen as cause of hunger or food shortage in several African nations. Closely associated with this, Ogbu (1973) as cited in Tesfaye (2005) noted insufficient farmland; low yields on farmers and high storage losses as the principal causes of food shortage in Nigeria.

According to a study by Toulmin (1986) as cited in Tesfaye (2005), the people of Bambara Village of Kala in Mali faced food shortages that were mainly induced by two

principal factors. One of the factors was climatic, specifically low and highly variable rainfall making the people very vulnerable to crop failure. The second class of risk was demographic, consisting of high level of mortality, varying levels of fertility and vulnerability of all producers to sickness and disability (Toulmin, 1986).

Land-use competition between pastoralists and farmer has also become the cause of food shortages in some Sub-Saharan African countries.

The situation in Ethiopia is not much different from the conditions in other developing regions. Mesfin (1991) studied food security in north central Ethiopia and found out that most farmers could not produce enough food to meet the annual requirements, from both the farmers' annual requirement perceptions .Seasonal food insecurity exists even in surplus producing area (Degefa, 1996). The result shows 'variations between households practicing double cropping system (during meher and belg seasons) and those relying on a single harvest (meher) were the proportion of farmers practicing double cropping who reported to have faced seasonal food deficit was smaller than those engaged in single harvest. Food security at household level is affected by a number of interrelated factors. It is determined by household assets ownership, occupation, demographic factors such as gender and age composition of households, educational level, socio-cultural factors, access to credit and inputs, and climatic factors like variability and shortage of rainfall and drought in general (Andersen, 1997).

Some of the general factors that cause household food-insecurity in rural area are poor agricultural growth, unequal distribution of productive resources and income, and rapid population growth. They result in chronic food-insecurity and poverty, whereas, seasonal rainfall variations, lack of draught oxen, inadequate farm size, and shortage of farm inputs are factors responsible for seasonal shortfall of food. Moreover, additional causal factors for transitory food insecurity in the rural area are outbreaks of human and

animal diseases, outbreaks of crop pests, hailstorm and flood hazards leading to serious harvest failure, drought, sharp grain price increases coupled with sharp decrease in livestock prices, food availability, decline and lack of labor demand during crises situations (Dagnew, 1995).

In Ethiopia, Getachew (1995) conducted a study in six rural areas on famine and food security at the household level. According to his study, determinants of household food security/insecurity are level of output, family size, farming systems (agro ecology), land size, livestock, and fertilizer use. The result of logit model analysis revealed that households who have established access to larger land size are better off than those with smaller land size. Moreover, livestock ownership was found to be serving as insurance against food insecurity in normal years. Drought, as noted by Dagnew (1997), was also considered as the major immediate cause of alarming level of food insecurity in many parts of Ethiopia.

Food security document of Ethiopia also recognizes a combination of short-term and long-term causal factors explaining the trend of the increasing food insecurity at household level (FDRE, 2002). Long-term factors, such as the interaction between environments, high population growth, diminishing land-holdings, and a lack of on-farm technological innovation have led to a significant decline in land productivity per household. Ayalneh (2002) describes the food insecure groups of households as those who live on the edge of subsistence often located in remote areas far from markets. They usually work in an insecure and low productivity occupation. Another determinant of food insecurity is gender orientation. Subordination of women in society, their over-burdening and the greater difficulties faced by female-headed households contribute to food insecurity (Haddad, 1997).

According to Hoddinott (2001) household food security issues cannot be seen in isolation from border factors. He viewed these factors as physical, policy and social environment. And he argued that the physical factor plays a larger role in determining the type of activities that can be undertaken by rural households. Government policies toward the agricultural sector on the other hand will have a strong effect on the design and implementation of household food security interventions. Likewise, the presence of social conflict, expressed in terms of mistrust of other social groups or even out right violence, is also an important factor.

Abebaw (2003), from a case study of DireDawa, investigated that family size, annual income, amount of credit received, irrigation use, age of household head, status of education, cultivated land size, livestock ownership and number of ox owned to be the most determinants of food insecurity.

The work of Tesfaye (2005) from Oromia has shown family size, number of oxen owned, use of chemical fertilizer, size of cultivated land, farm credit use, total annual income per adult equivalent, food consumption expenditure, livestock owned, and off-farm income per adult equivalent to be the major causes of food insecurity.

Shumete (2009) also summarized the causes of food insecurity as, population growth and scarcity of resources, small landholding, low level of farmers education, lack of good-governance, participation and empowerment; in appropriate production systems and marketing services, drought and variability of rainfall, politics and ethnic conflicts: urban expansion, lack of access to credit services and income opportunities, lack of access to health services, and cultural factors.

Haile, et al 2005,in Oromia region shows thatAn increase in land holding size, increase in ox ownership, decrease in family size, increase in per capita production, increase in fertilizer use, and an increase in education level of food insecure households have the

potential to increase the number of food secure households in the study area. For example, increase in the availability of fertilizer to food insecure households will increase the probability of food security by 10%. Similarly, improvements in the education level of food insecure household heads and reduction of family size of food insecure households will increase the probability of food security by 5% and 6% respectively. It is therefore recommended that introducing institutions which foster agricultural research and extension, family planning, efficient use of land use, and schools, should receive priority attention in policy making.

Zelalem (2014)**.**The prolonged effects of poor land management and ever increasing population pressure coupled with rugged terrain in the area has resulted in land resource degradation, which in turn responsible for low productivity and diminishing cultivable land holding per household. Shortage and decline in farm land productivity are the major responsible factors for household food shortage, and thus most of the farming households have difficulties to cope with the challenge.

Endale et al. BMC Research Notes 2014, Indicate that Households headed by females were about three times more likely to be food insecure than households headed by males. Even when they had an adequate number of oxen and farm land, female headed households were still more likely to be food insecure as women could not plow their land as men could do in a timely manner. Plowing land is also traditionally given only to males. As a result, women need men's labor to plow their land in exchange for other expenses such as cash and crops. This consequently reduced their income and compromised their status of food security.

Endale et al. BMC Research Notes, 2014, Food insecurity in Farta district of Amhara region indicates that,A high proportion (67.6%) of the heads of the households had worries about the availability of enough foodfor their family. Similar proportions of the

household heads (68.3%) reported the absence of the preferred food to eat and 66.7% of respondents reported that they consumed a limited variety of food. The overall prevalence of food insecurity was 70.7%.

Therefore, the review made so far is quite useful and relevant to this study. It helps develop clear understanding of variables to be selected; factors determine food security status and major causes of food insecurity. It is also important in assessing and identifying coping strategies and policy options at household level.

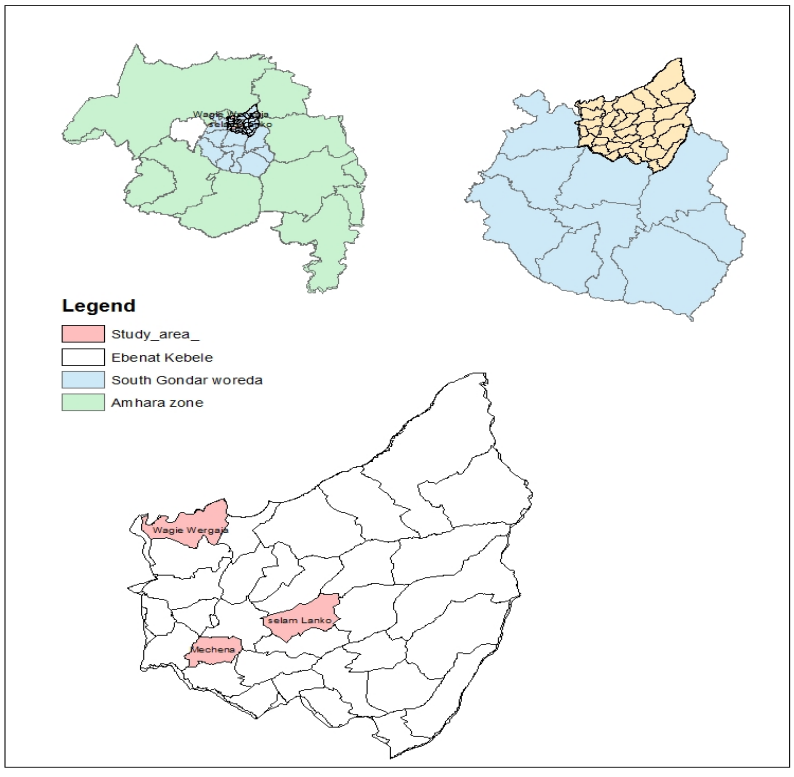
CHAPTER THREE: RESEARCH METHDOLOGY

3.1 Universe (Description of the study data)

3.1.1 Location

Ebinat district is one of the 10 districts in South Gondar Zone, Amhara Regional State which found in North –West Ethiopia. Its capital Ebinat is 698 km. from Addis Ababa, 122 km from Bahir Dar, capital of Amhara Region, and 109km away from the zonal capital Debre Tabor. Ebinat is bordered by Belesa districton the north, Farta districton the south, Bugnaand Dahina district on the east Lai Gaintand LiboKemkem district on the west. The districtcovers a total land area of 2494.27sq.km with altitude ranges from 1800-2150m above sea-level.

Figure2. Location of the study area



3.1.2 Demography and Structure

Ebinat district is structured with 37 rural kebeles adminstration. Two of them are urban and the remaining 35 are rural. About 93% of the local people lived in rural areas. The total population of the district is 242,787 (Central Statistics Agency 2010).

3.1.3 Infrastructure

Roads:-there are two all season roads, from Addis Zemen-Ebnat-Belesa with 84 Km. There are also seasonal roads, that joins 18 rural kebele of the district. Recently 7 rural kebeles are connected by all-weather roads in URRAP (Universal Rural Road Access Program).

Electricity:-The district town and other five rural kebele centers have an access to 24 hour electric power.

Water supply:-Regarding water supply the district town has tap water access and some of the rural kebeles have potable water supply through HDW and shallow well which were constructed by Government and non-government organization even the demand is yet not satisfied.

In terms of education there are only two kindergartens in the district capital, 32 primary school (grade 1 to 4), 62 upper primary school(Grade 5 to 8), 2 secondary school (Grade 9 to 10), 2 secondary and preparatory school jointly (Grade 9 to 12) and one technical collage all over the district. Amhara credit and saving Institute(ACSI) is the dominantly used credit and saving center in the district

Health facilities:-Regarding Health care service providing centers there are 43 extension centers, 10 health centers, and 12 veterinary centers.

Market Access:-There are 13 small markets around the offices of some rural Kebeles. The major market is at the district town, Ebinat only.

3.1.4 Landscape and Agro-Ecology

Topographically, 45% of the districtis mountainous, 35% hilly, 15% plain and 5% is valley. The study area encompasses three distinctive agro-ecological zones namely kola (lowland), woin dega (mid-altitude) and dega (highland). Accordingly, the proportion of the three altitude ranges is 50%, 35% and 15% respectively. Moreover, the average annual rainfall is 500- 1300mm and the average minimum and maximum temperature is 23^0 and 30^0c respectively. (Ebinat district Agriculture Office,2013).

3.1.5 Land use pattern

The total land area of the district is estimated to be about 249,427 sq.km of which 169,784.1 sq.km cultivable; 37,846 sq. km is grazing area; 11,224.4 sq.km covered by forest; 5,509.8 sq.km covered by bush; 4,714 sq.km covered by water bodies; 20,348.8 sq.km covered with housing & other infrastructures.(Source: Ebinat District Agriculture office 2013)

The main stay of economy is agriculture mainly producing crop and rearing of animals

With regard to the farming system, mixed farming of crop and livestock is a common practice in Ebinat district. The district's people earn their lives mainly by producing crop and cattle rearing.

Crop production:

From the total cultivable land of 70730 ha, 9661 ha Wheat, 9041 ha barley,23200 teff,and the remaining is covered by maize, sorghum, and pulses, pea, bean and other associated crops. Crop production is carried out in meher seasons only.

Livestock production

The expected cattle populations are Sheep 43194, Goat 90727, cattle 208747,hen 363566, equines 31811, and Bee colony 21200.The agricultural extension works are supported by 148 development agents who are based in each rural kebele center.

3.2.Research design

To achieve the defined objective of the study, the researcher looked both qualitative and quantitative information from primary and secondary sources. Primary data's were collected from sample household selected from survey RKA's(Kebeles). Secondary were also collected and checked in order to triangulate the result obtained by qualitative and quantitative methods. The following section would give us to insight in to how the research project was carried out. It outlined sampling size and techniques:data collection tools and procedures; and methods of data analysis.

3.2.1 Sampling (Size and Technique);

The study employed purposive, cluster and random sampling methods to select specific sampling sites. Selection of the study district was purposive based on the researcher's prior knowledge of the study area and believed to be a true mirror of insecurity level. The specific rural kebeleadministration (RKAs) - the lowest tiers in the administrative structure of the country was selected in a cluster sampling approach. All the RKAs in the district were clustered into the three major traditional agro-ecological zones (*Dega,Woina-Dega* and *Kolla)* and then three RKAs in each location was selected in a random sampling procedure. The assumption was in similar agro-ecological zones the households share similar opportunity to secure their livelihoods.

The sampling size was determined based on the formula derived from the binomial theorem[2]. Thus the minimum sample size, N for a given confidence level and precision was calculated as

$$\boldsymbol{N = \frac{z^2\ X\ P(n-P)D}{E^2}}$$

Where

- N= Minimum sample size

- Z= Z value(Z score) is derived from the anticipated confidence level for this study. The confidential level is 95 % which has Z score of 1.96.
- P = Anticipated proportion that is to be measured. This is the estimated value of what is the researcher is going to measure (The hypothesis that is going to be tested) using the sample. Since the research anticipates to study the extent of food insecurity, thus by taking a reasonable guess based on other studies, in Ethiopia,according to the 2010/2011 HICES, the proportion of poor people(Poverty head count index) in the country is estimated to be 29.6%(which is 30.4 in rural areas and 25.7 in urban areas). Therefore, P for this study is taken at 30%, (0.3).
- [1]D= Design effect. This reflects the sample design with D at 1 for simple random sampling. For social rating, it is recommended that D= 1.5 for random sampling.
- E = Precision (or margin of error). E is the precision with which the researcher wants to measure something. In most statistical study E is kept at 10% particularly for poverty assessment studies it is recommended using E=10%.
- Therefore to calculate the sample size for this study, let us use the above value

$$N = \frac{z^2 \, X \, P(n-P)D}{E^2}$$

$$N = \frac{1.96^2 \, X \, 0.3(1-0.3)1.5}{0.1^2}$$

$$N = \frac{1.210104}{0.01}$$

[1]Levine,David M, Timothy C,krehbiel, Mark L, Berenson, Business Statistics: A First Course, Pearson Education, 2005

$$N = 121.0104$$

$$N = 121$$

Thus a total of 121 households were selected using proportional systematic random sampling techniques from the list of rural households which were available at each rural kebele office. The randomly selected rural kebeleswere Selamaya Lanko, Mechena and Worgaja

Table 2. Name of rural kebele and location of respondents

S/n	Name of Kebele	Locations	Sample HH
1	Selamaya Lanko	Dega	44
2	Mechena	Mid alttitude	35
3	Worgaja	Kolla	42
	Total	-	121

3.2.2 Data collection tool and procedure.

3.2.2.1 Primary Data

Most of the data required to answer the research questions were collected from primary sources. To generate the required data from the primary sources, different qualitative and quantitative methodological approaches such as in-depth interviews, focus group discussions, and observations were employed. These techniques were used to get the views and understandings of households about what causes the problems, about their coping strategies and as to how the government has responded to the problem.

Individual Interview

Primary data was collected using survey by means of structured interview schedule for the quantitative part of the data. The interview schedule was pre-tested among the non-sampled respondents of matching characteristics and depending on the results of the

pre-test; it was revised in the lights of suggestions received. The interview schedule contained close-ended questions and some suggestions.

Focus Group Discussion

A focus group discussion is a group session moderated by a group leader or a researcher. It allows the participants not only to speak for themselves but also to negotiate their own shared views. It allows the subjects to collaborate actively rather than to respond passively and it favors a collective approach to the production of knowledge (Johnston et al 2000). As cited by Ejiga 2006. The advantage of group discussion is that it allows meanings to emerge in a less directed way. It is a creative encounter in which participants share and test their ideas within the group (ibid).

Focus group discussions were held in each PAs to enrich the first hand data collected through interview. Group discussions were organized for both sexes and held in each selected PAs. The group consisted of seven to ten participants within each gender group. Discussion with district concerned officials, such as district information office, rural development and agriculture office including with some experts was also held.

Observation

Mikkelsen Britha (2002) suggested that observation provides important information during all phases of a study. 'Observation of physical structure, social difference, behavior, action and symbols in solitude or with other whom observation are discussed, provides important information' (ibid).

Observations of the people's way of life, their assets and resources, the ups and downs to overcome their daily struggles, their activities for living, etc, would provide valuable and supportive information. Having a good look at the physiographic configurations, physical and socio-economic infrastructures, the land use, housing conditions, the different economic activities people are involved with would provide valuable contributions to

understand the existing real situations and the overall situation of the poor. Thus, in this study an attempt was made to carefully observe every situation and understand them fully.

3.2.2.2 Secondary data

Secondary data contribute a lot to meet the research objectives. They are supportive in any research processes. They are used to supplement primary data generation or where primary data generation is impossible. However, most secondary data have limitations and were recorded usually with other purposes in mind (Kitchin & Tate 2000).

Secondary materials such as published books, articles, journals, maps and bulletins about the research topic had been collected and assessed from relevant organizations and institutions mainly from Bahir Dar University, and bureau and offices at regional, zonal and district level. Annual reports of bureau and offices as well as policy documents about agricultural development and food security were also among the secondary data collected and utilized. Furthermore, publications related to food security were obtained from food policy and development journals, from the websites of Food and Agriculture Organization of the United Nations (FAO) and other organizations.

Enumerators who have completed two years college training on the fields of agriculture,native to the area, fluent speakers of the local language and working in the rural area as development agent were recruited and trained on the techniques of data collection, including how they should approach farmers, conduct the interview, and convince the respondent to give relevant information on sensitive economic and social issues. After they were made aware of the objective of the study and content of the questionnaire, pre-test was conducted under the supervision of the researcher. Some adjustments were made to the questionnaire and the final data used in the research were collected under continuous supervision of the researcher.

3.2.3 Data analysis method

The unit of analysis was a household. The data was analyzed using descriptive statistics like mean, standard deviation, percentage column-graph and charts etc. The researcher usedboth qualitative and quantitative methods to understand the level of food insecurity, and also the coping mechanisms that the household exercise. For descriptive analysis of the study,the data collected were coded and entered into SPSS version 16.0 software for statistical analysis.

Food security at household level is best measured by direct surveys of income, expenditure, consumption, and comparing it with the adequacy norm (minimum subsistence requirement). Specifically, average income and expenses are commonly used to compute proxy indicators of food security. In this study, the total household food expenditure per adult equivalent was taken to compute proxy indicator of food security. The selection of this indicator as dependent variable in this study was due to the fact that theoretical arguments support it since consumers normally understate their incomes than their expenditure.

The actual household expenditure in this study is considered as the annual expenditure incurred by the household for food consumption. It includes the sum of own produce consumed (cereals, pulses, oil seeds, vegetables, livestock, and livestock products),and purchased food items

This food expenditure per adult equivalent per annum was calculated by summing up all the required food expenditure components and dividing it by the total adult equivalents (AE) of the household. On the other hand, subsistence level of household food expenditure, which should at least meet the needs of adult person, was computed based on the amount of food required. The value of minimum amount of energy (2100 kcal/AE/day or 225 kg cereals/AE/year) at an average price of grain in the local market

needed to cover the minimum expenses to meet the required energy per AE per annum were used as a threshold beyond which the household is said to be food secure or not.

CHAPTER FOUR: RESULTS AND DISCUSSIONS

In this chapter, the food security status of the household is measured and findings from descriptive analyses are presented and discussed. The descriptive analyses are made in terms of mean, percentage and standard deviation to identify the major causes of food insecurity that affect the food security status of the household.

4.1. Current Food Security Status of Households

In this study detailed information on households' food security status was discussed based on World Bank's (1986) definition of food security, which is "access by all people at all times to enough food for active and healthy life". This concept consists of Food security at the household level is measured by direct survey of income, expenditure, and consumption and comparing it with the minimum subsistence requirement. For measuring the security level the consumption expenditure is preferred over income. Consumption expenditure/AE better reflects household's ability to meets their basics. Moreover, the reliability of income data in subsistence farming where record keeping is limited is always questionable (Tesfaye, 2003). Of course, it cannot be denied that measuring food security in terms of income is consistent with objectives of many rural development interventions aimed at raising the level of income of rural households. However, the correlation between income and food security status of household is not always strong (Haddinott, 2001). Consumption expenditure also reflects a household's access to credit and its savings at times when their income is too low. Hence, consumption expenditure is better used to measure household's food security (CSA, 2010/11). Hence to compute food expenditure and consumption level minimum level of income, which is required per adult equivalent, was calculated on the basis of amount of food required by an adult person. The calorie intake result was

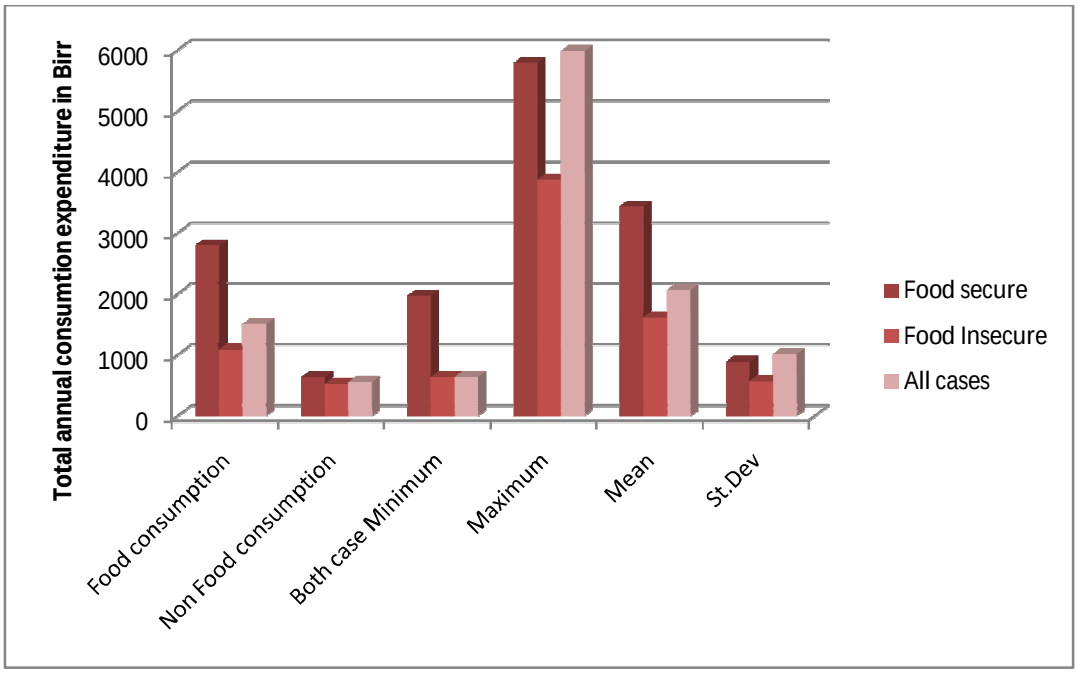
calculated by using the standard food composition table prepared by Ethiopian Health and Nutrition Institute (EHNI, 1998). Accordingly, the calorie intake per person per day is about 2100 kcal /AE which is estimated to be 225 kg of food (grain equivalent) per person per year. Nigatu 2004, as cited by Tesfahun 2015. Consequently, a threshold level was set by computing the value of this amount of cereal by the existing local market price of grain. Thus, those households beyond this thresholds level will be deemed to be food secured otherwise not food secured. Aschalew 2006.

Although food insecurity and poverty are conceptually and empirically distinct, in Ethiopia the overlap between the two is greater than in most countries. (Devereux,2000). Ethiopian food poverty line in the year 2010/11 was 1985 birr per adult person per year (HICE survey 2010/2011).

The comparison of food poverty line with the household food expenses/AE helps to assess the vulnerability of the households to food insecurity. If the state of food security had been limited to attainment of the calorie requirement, only 1800 Birr would have been required per AE per year to meet the required calorie level. Hence the proportion of households with average food expenditure per AE, which is less than the minimum level, is 78.7% and 73.8 respectively in both cases. For this study we considered the minimum amount of grain required to meet 2100Kcal per person per year on the existing market price which is 1800.00 birr food consumption expenditure as bench mark. Accordingly from the surveyed households 73.8 are Food insecure and 26.2 are secured.

The average food consumption expenditure of the farm households of the study area was Birr 1506 per AE, which ranges from Birr 154 to Birr 5341 per AE (Table 3). This shows that the average food expenditure per AE for food secure farm households was Birr 2797 per AE as compared to 1087 Birr per AE for food insecure.

Figure 3; Total annual consumption expenditure 2013/14 crop season



Source: Own survey 2015

Table 3. Distribution of sample households by food consumption per AE in 2013/2014

Food Consumption range (Birr/AE)	Food secure (N =31)	Food insecure (N= 90)	All cases (N= 121)
<700	0	16	16
701-1200	0	44	44
1201-1800	0	30	30
1801-1985	6	0	6
1986-3500	20	0	20
>3501	5	0	5
Below 1800	0	90	90
Below 1985	6	0	6
Average	2797.4	1087.3	1506.22
St.Dev.	865.0	411.9	906.45
Minimum	1802.88	153.58	153.58
Maximum	5341.5	1795.6	5341.46

4.2. Description of Socioeconomic Characteristics of the sample farmers

This section highlights the demographic and social characteristics of the sample households in the study area. The issues discussed here are only those expected to have certain relationships with food availability, income, consumption and expenditure including family size, age and sex composition, education, household access to productive resources such as land and livestock and off-farm income, etc. Accordingly, food secure and food insecure sample households were compared in terms of these variables.

4.2.1. Age and sex composition

The average age of the respondents was 45 years. The age ranged from 25 to 75 years. Out of 121 respondents, less than 14.9 were younger than 30 years. However, about 8.2 were older than 64 years. The majority of the farmers (76.8%) were found in the age range between 31 and 64years as indicated in (Table, 4). It was argued that as the age of the household head increases, he/she would be less prone to be food insecure since he/she acquires more knowledge and experiences. In other words, it was expected that younger farmers are more likely to be food insecure than older farmers, that the older farmers due to better possession in terms of resources accumulation compared to that of younger farmers. But statistically, there was no significant difference between the food secure and insecure groups

Table 4. Distribution of the household heads by age groups and (%)

Age Group	Food secure		Food insecure		Total	
	N	%	N	%	N	%
18-30	4	13	14	45	18	58
31-44	10	32	30	97	40	13
45-64	13	42	40	13	53	17
>64	4	13	6	19	10	32
Minimum	29		25		25	
Maximum	75		71		75	
Mean	46.52		44.31		44.73	
St.dev	13.17		11.98		12.15	

The overall size of the sample household members is 649 (of which 48.9% and 51.1% constitutes male and female population respectively). According to the survey result the sample population has a young population dependency ratio, i.e., the proportion of economically non-active persons to economically active person within the family (the proportion of age group 0-14 to 15-64 years multiplied by 100) in the sample area was 68 %. Similarly, the old dependency ratio, i.e., the population with age of 65 years and above as the proportion of population between 15-64 years multiplied by 100 was 2%. Hence, the overall dependency ratio in the study area reaches 70%. This means, every 100-person within the economically active population groups support not only themselves, but also supporting additional 70 dependent (non-productive) persons with all basic necessities. This clearly shows a high dependency burden in the study area.

In terms of age structure, 40 % and 1.2% of sample household members were found to constitute children of under 15 years and old age of 65 years and above respectively. Hence, the working age population (i.e.,15-64 years old) accounted for 58.7 % of the

sample population and this as indicated in (Table 5) signifies a higher reproductive potential, that seemed to follow the normal age structure of the country.

With regard to the sex structure, the overall sex ratio, that is the population of total Females to total males in the population is 104.5 female per hundred males, which indicates a slightly excess of female population in the study area.

Table,5 .Distribution of sample population age category

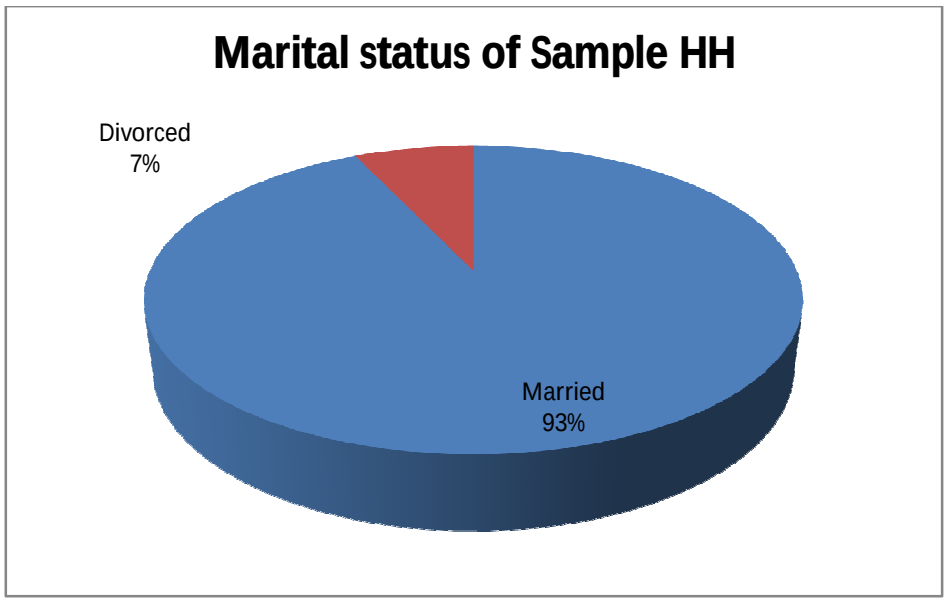
Age group	Food secure		Food insecure		Total		
	No	Percent	No	Percent	No	Percent	DEP.Ratio
0-14	58	39	202	40	260	40	68
15-64	87	59	294	59	381	58.7	
Above 64	2	1	6	1	8	1.2	2

Source: Own Survey 2015

4.2.2. Marital status

The majority of the respondents (93%) were married, (7%)were divorced. Unfortunately there was no single and widowedrespondent among sample HH. Figure 4 indicate the percentage of marital status

Figure:4 Marital status of sample Household.



Source, Own Survey 2015

4.2.3. Family size and dependency ratio

The average family size of the sample households was 5.58 with a range from 1 to 14 persons and standard deviation of 2.06 The majority of the sample farmers (87.6) had more than four members. The average family size of sample farmers was higher than the national average of 5 for the country and 4.3 for Amhara(CSA, 2010) With respect to the specific characteristics of food secure and food insecure households, family size was hypothesized to have a negative impact on the state of food security, in such a way that households with large family size tend to be food insecure than those with small numbers which is 5.4 for food secure and 5.6 for food insecure households, respectively.The mean household size of the food secure and insecure households was 1.97 and 2.24, AE, respectively, whereas the overall mean is 2.17 AE. Higher the adult equivalent would not necessarily mean that a household has sufficient adults to perform economic activities and escape from food insecurity. Rather, the higher the family sizes

in AE, the larger the amount of food is required. This is depicted in the survey result (Table 6).

Table 6. Distribution of sample households by family size (% of AE)

Family Size Range (AE)	Food Secured (N=31)	Food Insecure (N=90)	Total (N=121)
≤ 3	16.1	15.6	15.7
3.00-5.50	71	51.1	56.2
5.51-7.50	12.9	26.7	23.1
≥ 7.50	0	6.7	5
Mean	1.97	2.24	2.17
St. Dev.	0.55	0.80	0.75

Source: Own survey

4.2.4. Educational level

The educational status of sample household heads was very low. Out of 121 respondents, 51 (42 %)were illiterate, and about 38(31%) were could only read and write without formal schooling (Table 7). Most of the sample farmers have learnt only through non-formal education. About 51.6 of the food secure households and 17.8 of food insecure households had formal education of grade 1-8, respectively.This implies that education has a positive impact on food security.

Table 7. Literacy level of sample household

Educational status	Food secure		Food Insecure		Total cases	
	No	%	No	%	No	%
Illiterate	13	42	38	42	51	42
Read and writing	2	6.5	36	40	38	31
1-4	10	32	10	11	20	17
5-8	6	19.4	6	7	12	10
9-12	-	-	-	-	-	-
>12	-	-	-	-	-	-

Source: Own Survey (2015)

4.3. Land Holding and its Physical Features

Land size is considered as a critical production factor that determines the type of crops grown and the amount of crop harvest. About 80% of the growth in the agricultural outputs in Africa has been attained through the expansion of cultivated land (Degefa, 2002). Moreover, the availability of pastureland is an important factor for livestock rearing. Therefore, under subsistence agriculture, landholding size is expected to play a significant role in influencing farm households' food security. Thus, the discussion of one of the basic resources particularly farmland, farming and its contribution to household food security is given below.

The landholding of the sample farmers ranged from 0.25 to 3.0 ha with an average of 1.07 ha. Sizes of holdings also show variation between the sample farmers. Relatively the scarcity of land holding is observed in mid highland agro ecology zones of the study area/district. This could be due to heavy population pressure in mid-highland area. The survey results show that about 57 % of the respondents have a land size of 1 hectare or less while 36 % had relatively higher size, which ranged between 1 and 2 ha. On the other hand, only 7% of sample farmers hold more than 2 ha of land. It was also

observed that 58%, of the food secure households and 38% of food insecure households hold greater than 1 ha of land. The average land holding in both cases is 1.47 and 0.94 ha respectively (Table 8). Hence size of land holding has a significant influence on food security status

Table 8. Distribution of sample farmers by land holding (%)

Land area (ha)	Food secure (N = 31)		Food insecure (N = 90)		Total (N = 121)	
	No	%	No	%	No	%
<0.5	1	3	20	22	21	17
0.5-1.0	12	39	36	40	48	40
1.01-2.0	12	39	32	36	44	36
≥2.01	6	19	2	2	8	7
Minimum	0.5		0.25		0.25	
Maximum	3		2.13		3	
Mean	1.47		0.94		1.07	
St.Dev	0.73		0.43		0.57	

Source: Own Survey (2015)

4.4. Crop Production

4.4.1. Major crops

Even though many types of crops grow in the study area, the most commonly grown ones are wheat,teff,barley, maize and peas. These crops are grown as staple and cash crops in the district. The average farm sizes of the above crop type operated by food secure were 0.32, 0.43, 0.31, 0.11, and 0.30. Whereas 0.21,0.26,0.13,0.06, and 0.27, for food insecure respondents respectively. As it was explained from the survey datathe average farm size allotted to main crop was less than half ha, which is how much farm land size was a chronic problem for sampled farmers. (See Table 9).

Table 9. Land allocation to major crops grown (%)

Farm size per hectar	Food Secure (N = 31)					Food insecure (N= 90)				
	Whe at	Teff	Barely	Maize	pea	Wheat	Teff	Barely	Maize	pea
<0.5	5.38	4.81	7.31	1.73	3.27	12.12	10.96	9.23	3.08	15.96
0.51-1.0	3	3.08	0	0.96	3.85	2.69	7.31	0	1.15	2.5
>1.0	0	22.3	0	0	0	0	0	0	0	0
Min	0	0	0	0	0	0	0	0	0	0
Max	0.75	1.5	0.5	0.62	1	1	1	0.5	0.75	1
Mean	0.32	0.43	0.31	0.11	0.30	0.21	0.26	0.13	0.06	0.27
St. Dev.	0.25	0.42	0.18	0.20	0.33	0.24	0.26	0.16	0.15	0.22

Source: Own Survey (2015)

4.5 Livestock holding

Animal husbandry forms another important source of livelihood for the rural households. Livestock contributes to household's economy in different ways i.e., as a source of draught power, source of cash income, source of nutrition and means of transport. Besides, livestock are considered as a means of saving and means of coping mechanism during crop failure and other calamities. In view of this, an inventory of livestock holding of the sample households was taken. Table 10 shows the average number of animals per household, and their distribution. The types of animals reared in Ebinat district include cattle, sheep, goats, and donkeys. Small ruminates and chickens are reared for home consumption and for sale. Moreover, they are the first to be sold to purchase food when farmers face food shortage. In order to make comparison of the animal size between the farmers groups, the herd size was converted into livestock unit (TLU) based on Storck *et al.* (1991) (Appendix I Table 2).

Food secured households own relatively larger number of cows than insecure households i.e compared to 1.42 and 0.64 for the two groups. The former have

relatively larger number of oxen than those of the food insecure that is 1.71 and 0.96. In general, the food secure group of households own larger average size of livestock in terms of total TLU/AE (i.e., 1.31 TLU/AE as compared to 0.54 TLU/AE for food insecure group). About none of food secured and 14 % of food in secured farm households do not own any animals (See Table 10). Moreover, about 26.6 % of food in secured households own one or less TLU per household and none of the food secure households own one or less TLU per household. The size of livestock indicates the wealth of the households and it can indicate the level of vulnerability of the households to food insecurity. The food secure has mean TLU of 5.55 which is significantly different from that of the food insecure group which is 2.6. Hence, the TLU/AE may serve as an indicator of how large resource endowment is available in the household to support adult equivalent. The TLU/AE ranges from 0 to 5 and it is higher for the food secured households. It was concluded that farmers with large livestock size or TLU/AE would be more likely to be food secure.(Figure 5 indicates the distribution of livestock holding in food secure and food insecure households).

Oxen ownership is an important variable for farmers of Ebinat district, who almost entirely rely on traditional farming methods. Thus, farm oxen possession would be a critical production factor. Due to shortage of grazing land and animal feed in the study area, the respondents underlined the problem of raising livestock. As a result, oxen supply for crop cultivation is a principal constraint to farming that limited the capacity of farmers to cope with the problem of crop failure. The study findings on farm oxen ownership showed that about 12.9 % of foods secure and 35.6 % of food insecure households were without oxen while 35.5 % of food secures and 71.2 % of food insecure households were also 1 to 2 oxen. Very few were above 2 especiallythe secured one.(Indicated in Table 11). Hence the above data indicates that food secured

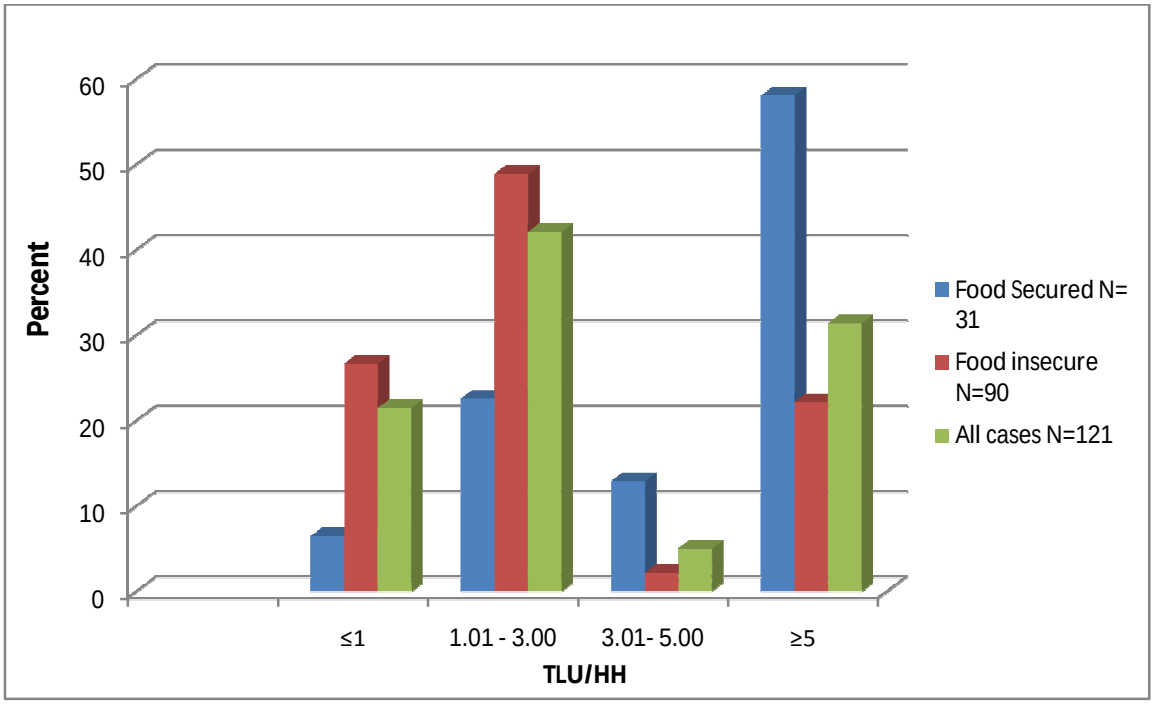
households own larger number of oxen than the food insecure ones do andit was significant factor that distinguishes food secured from food insecure households.

Table 10-Average number of livestock holding by sample households (TLU)

Animal Type	Food Secure (N = 31)	Food Insecure (N = 90)	Total cases (N = 121.)
Oxen	1.71	0.96	1.15
Cows	1.42	0.64	0.84
Heifers	0.63	0.18	0.30
Calves	0.21	0.06	0.10
Sheep	0.39	0.18	0.24
Goats	0.32	0.21	0.23
Donkey	0.77	0.37	0.47
Mean	5.55	2.6	3.33
St. Dev	3.69	2.33	3.00
Total LU/AE	1.31	0.54	0.72
% HH with 0 LU	0	14	14

Source: Own survey 2015

Figure :5. Distribution of livestock holding by Sample households



Source: Own Survey Result, 2015

Table 11. Number of ox owned by sample household (%)

No of oxen	Food secure		Food Insecure		Total Cases	
	No	%	No	%	No	%
0	4	12.9	32	35.6	36	29.8
1	7	22.6	32	35.6	39	32.2
2	16	51.6	24	26.7	40	33.1
3	2	6.5	2	2.2	4	3.3
4 and above	2	6.5	0	0.00	2	1.7
Min	0		0		0	
Max	4		3		4	
Mean	1.71		0.96		1.15	
St. dev	1.01		0.85		0.95	

Source: Own Survey 2015

4.6. Agricultural Inputs and Extension Services

Various studies in Ethiopia have proven that appropriate application of modern farm inputs such as chemical fertilizers; improved seeds and herbicides increase crop yield and productivity (Degefa, 2002). Because of this fact, Ethiopian farmers have been encouraged to adopt utilization of modern farm inputs. The importance of inputs becomes more significant in highly eroded soils and fragile environments such as in Ebinat District to improve land productivity and to boost overall production. Therefore, utilization of modern farm inputs is expected to enhance farm households' food security. The sample farmers were asked whether they use modern farm inputs to increase yields of their crops. As shown in Table 12, the proportion of farm households using improved inputs is low. Particularly food insecure farmers are less user than food secure farmers.

Chemical fertilizers

About 59.5 % of the sample farmers reported that they used chemical fertilizers (70.9% and 55.5% for food secure and insecure respectively). The difference between the food secure and food insecure farmers in terms of using chemical fertilizer, is significant hence it implies food security and fertilizer utilization associated positively.(table12)

Improved seeds

The introduction of improved seeds that can withstand the problem of erratic rain distribution seems an important issue to the district under investigation. The field survey showed that only 44%(77.4 % for food secure and 22.2% for food insecure) of the sample farmers adopted the improved seeds. The main constraints against utilization of this input among the farmers were high interest and high prices. The burden inclined to food insecure household, because of their financial background is weak.(table 12)

Herbicides

Utilization of herbicides by the sample farmers in Ebinat District was found to be low with only 8.2 % reporting to have used them. A large number of farmers used hand weeding to remove weeds from maize and other field crops. Farmers have shown their concern that the herbicides were not effective to kill weeds growing under maize as well as good quality herbicides were not available in the market. The figure seems very low compared to other inputs. Moreover, weeds are considered as an important source of feed for livestock, contributing to overcoming shortage of pasture. As a result, the farmers are reluctant to use chemicals.(see the status of farmers in terms of herbicides utilization)

Pesticides

There was a problem of pests, particularly during erratic-rainfall years. However, due to technology scarcity and high price very few farmers (11.5%) apply pesticides to prevent their farm produce from pest attacks. (Table 12)

Extension services

In a country such as Ethiopia, where the majority of the farmers are illiterate, agricultural extension plays a significant role in assisting them by identifying and analyzing their production problems and by making them aware of opportunities for improvement. Hence, the effectiveness of the other inputs in production partly relies upon the availability of sound agricultural extension services at community levels.

The traditional and widely used means of conveying new information to farmers is through the public extension services. In Ethiopia, including the study area, extension personnel trained in agricultural sciences are assigned in each district at rural kebele level based on their profession difference. The current agricultural policy gives emphasis to the development of private enterprise including development of

smallholders' agriculture. The extension program requires farmers to use package of new varieties, chemical fertilizer, farm credit etc. However, only 63.6 % of the sample farm households identified themselves to be beneficiaries of extension services. The percentage of food secure farmers with access to extension services is relatively higher than the percentage of food insecure farmers. This could be because that food secure farmers have more frequency of contact with the extension agents. (see table 12)

Table: 12 Farm Inputs and Extension Service in 2013/14 crop season(%)**.**

Service Category	Food secure (N=…)		Food insecure (N=…)		Total Cases (N=……)	
	Users	%	Users	%	User	%
Fertilizer user	22	70.9	50	55.5	72	59.5
Improved seed users	24	77.4	20	22.2	44	36.3
Extension service	27	87.1	52	57.7	77	63.6
Herbicides	3	9.6	7	7.7	10	8.2
pesticides	5	16.1	9	10	14	11.5

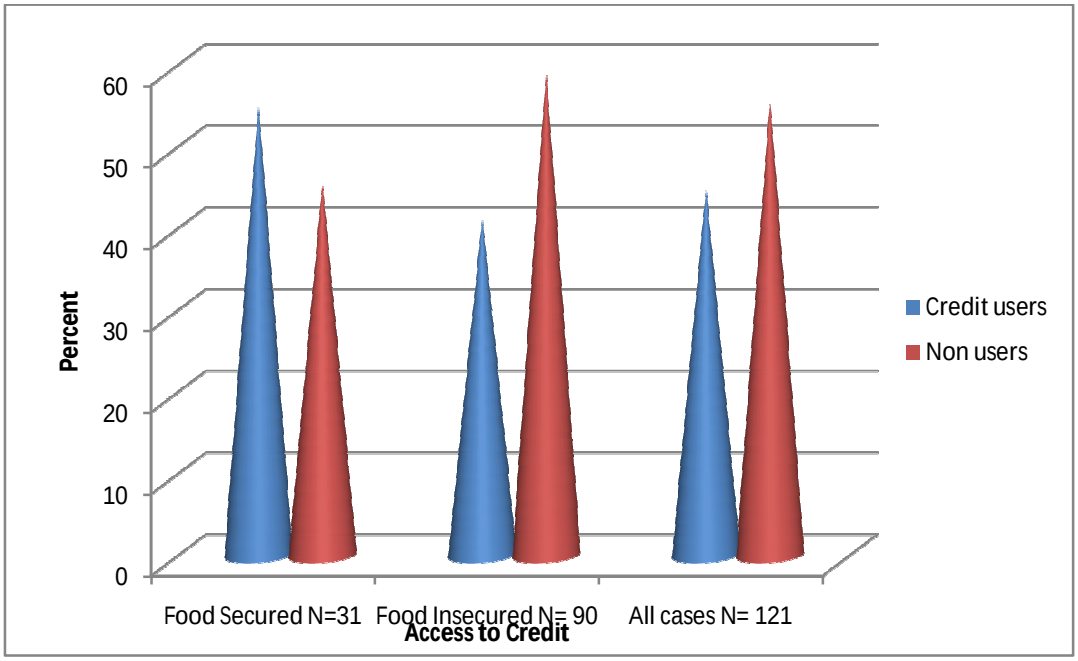
Source: Survey Result, 2015

Farm credit

Credit is very important to resource poor farmers who cannot finance agricultural input purchase from their own savings (Techane, 2002). The availability of agricultural credit to subsistence farmers who have little or no capital or savings to invest in farming is important component of small farm development programs. It is a source of cash for purchasing. In line with this, an attempt was made to assess the number of households who had benefitted from farm credit.Figure 6; shows that 44.7 % of the sample farm households had access to farm credit. However, this farm credit was related with chemical fertilizer distributes through service cooperatives but very few have had access to Amhara saving and credit institute for other development interventions. The proportion of farm households that

received credit was 54.8% for food secure and 41% food insecure respectively. The survey result indicated that the proportions of farmers who have access to credit were much less than no accessed. The reason behind was fear of inability to pay; high interest rate and problem of collateral particularly for food insecure households.

Figure:6. Farm credit utilization trends 2013/2014/ crop year in (%)



Irrigation

The fact that the largest part of the district is characterized by dry low land would clearly indicate that the extent of demand for irrigation practices is unquestionable. The achievement so far, however, seems discouraging as only 4.9 % of the respondents were found to practice crop cultivation under small-scale irrigation. The percentage of food secure farmers using irrigation was 12.9%, while only 2.2 % of the food insecure respondents reported the use of irrigation. Even though the potentiality of water

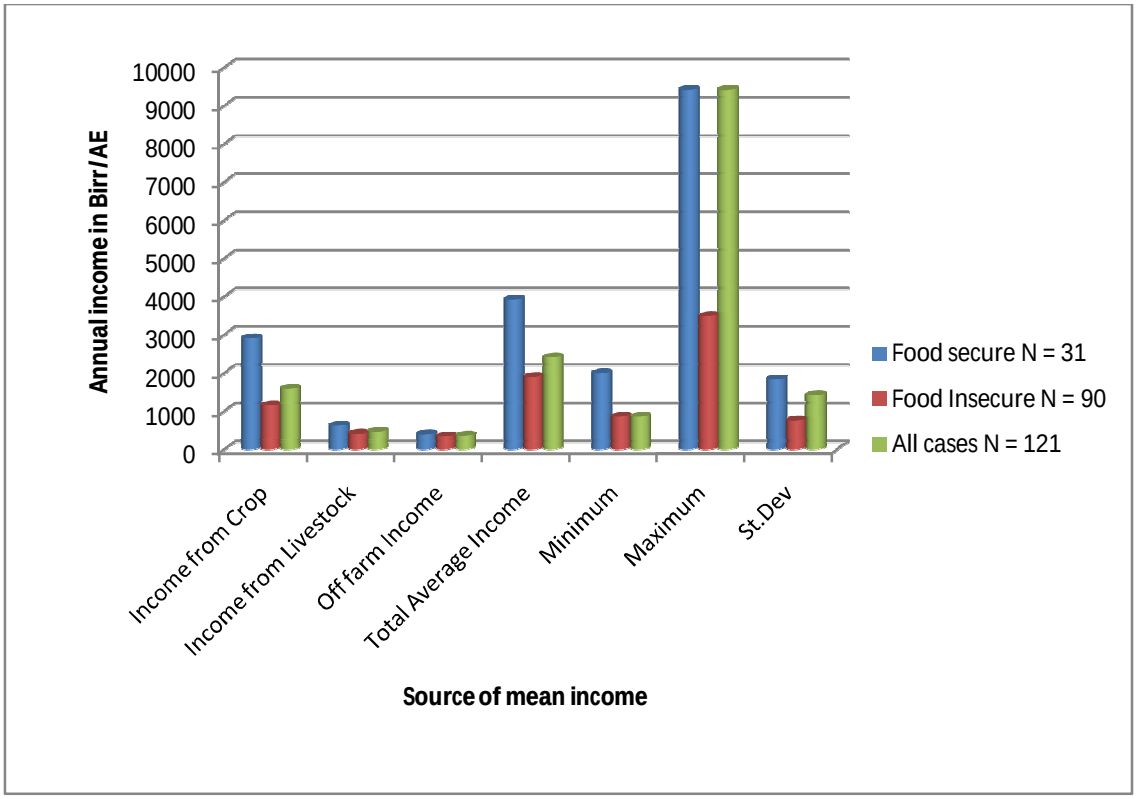
resource and area to be irrigable is more than 3970 ha; it was only 13 % of the irrigable land thatcultivated under small scale irrigationtraditionally.

4.7. Income Analysis

The Major income sources for the households in the study area include crops, livestock and their products and off-farm activities. Income earned by the households from different sources was computed per AE. This would help to relate the income earned to the subsistence requirement. It was observed from the survey that crop production is the most important source of income in the study area followed by livestock production and off-farm activities, respectively. The annual average total incomes per AE earned by sample respondents was about Birr 2409.05 with maximum earnings of up to Birr 9412.6 /AE and a minimum of Birr 852.71/AE. The average total income of the food secure households was Birr 3484.84 /AE, while that of food insecure household was of Birr 852.71/AE in the year 2013/14 crop year.

The income of the sample household was generated from crop, animal and off farm activity. All of the sampled households generate income from crop production. But it was only 24.7 %that could generate minimum subsistence level of income from crop (Birr 1800 /AE).In case of livestock from the sample household 28.9% could not generate any income from animal and animal product. It was only 2.3% that could generate the minimum subsistence level of income from live stock. From the survey data it was only 2 % that reared improved breed of livestock; all the others reared the local breed with low out of animal product.

Figure 7: Source of Mean income in 2013/2014 in Birr per AE per year



In the area like Ebinat District where drought- induced famine and food insecurity chronically persist and wide spread, livestock production and crop production alone is not enough to fulfill household's food security. However, with such limited conditions off-farm activities are needed as alternatives to improve the level of food security in the area.It was assumed that households use the off-farm income for the purpose of agricultural input and purchasing of food items this may lead to an increase in productivity and help in improving households' food security. Regarding this, the survey results further indicated that income from off-farm activity is insignificant, from the total respondents only 54.5% that could generate income from petty trade, selling fire wood, working as daily laborer and other nonfarm activities. But only 0.03% that meets the minimum subsistence level for food consumption from off-farm intervention

excluding the other options. On average, the off-farm income during 2013/2014 production year was Birr 357/AE ranging from zero to Birr 1828/AE. The average off-farm income of food secure is about 395 Birr per AE as compared to birr 337 Birr per/ AE for food insecure farm households which was very minimal and the difference is insignificant.

Table 13 Distribution of sample households by off-farm income /AE in 2013/2014 (%)

Income category	Food secure	Food Insecure	All cases
< 1000	80.6	91	88
1001-1985	19.4	6.6	10
1986- 2500	0	2.2	1.6
>2501	0	0	0
Minimum	0	0	0
Maximum	1543.2	1828.5	1828.48
Mean	395.3	336.6	357.51
St.Dev	591.5	463.8	498.68

Source: Own survey 2015

4.8. Agricultural Constraints

As responded and perceived by sample farmers, there were different reasons given concerning the declining trend of production in the study area. The responses of sample farmers on the major reasons for the declining trend of crop production showed that 57% of them reported poor soil fertility or poor quality of land. Soil fertility problem is one of the physical and important factors affecting crop production. Soil fertility has negative impact on crop production performance, and caused food shortage in the household. Shortages of oxen, insect and pest problems were found to be other important factors as mentioned by 28.4% and 8.6% of the farmers, respectively.

4.8.1. Causes of household food shortage

In order to identify the major perceived causes of food shortages, the sample farmers were asked to respond to each question set for this purpose by rating as first, second and third causes of food deficit. Regardless of the differences in perceived magnitude of their influence, in the different ecologies, the farmers rated Shortage of land (78 %) Soil infertility(Poor quality of land) (76%), erratic rainfall patterns (69.00%) as the most influential of all factors under consideration (Table14). In general, the traditional farming practice, poor quality and shortage of land that have greatly affected the sustainability of production and productivity coupled with the shortage and erratic rainfall have made the study area more vulnerable and food insecure. Shortage of oxen, Insect and pest infestation are another important biological factor that have been negatively affecting and limiting agricultural production in the study area.

The proportion of farm households with problem of shortage of land, poor fertility of land, those affected by erratic rain fall incidence, shortage of oxen and insect and pest infestation have haddifferent intensity among secured and insecure households.Accordingly, 55 % of food secure farm households and 86 % of food insecure farm households reported to have shortage of land, 58 % of food secure and 82 % of food insecureHH reported to a problem of soil infertility, 51% and 75 %, of HH shortage of rain fall,36% and 71 % , shortage of oxen sequentially.

As it was stated in the previous sections, the largest portion (55%) of the study area located in the low altitude of agro-ecologic zone. This determines the type and level of production. The low land area is usually characterized by low amount and erratic distribution of rainfall and vulnerable to drought. Furthermore, the lowland part has usually one cropping season contrary to mid and high altitude (i.e. with two seasons).

Group discussion made clear that households in the lowland ecological zone face severe food shortage more frequently than those in the mid highland area.

Table:14, Proportion of farmers with major causes of food insecurity

Types of response given	Food secure, N= 31		Food insecure, N = 90		All Cases, N= 121	
	N	%	N	%	N	%
Shortage of rain fall	16	51.61	68	75.56	84	69.42
Poor quality of land	18	58.06	74	82.22	92	76.03
Shortage of cultivated land	17	54.84	78	86.67	95	78.51
Animal disease	4	12.9	16	17.78	20	16.53
Low farm input	4	12.9	16	17.78	20	16.53
Shortage of oxen	11	35.48	64	71.11	75	61.98
Insect and pest	8	25.8	38	42.2	46	38

4.9. Coping Strategies

Farm households in a vulnerable area like Ebinat district engage in several activities in order to avoid food insecurity or to reduce its impacts. In the literature, several coping strategies to maintain normal consumption have been identified (Frehiwot, 2007; Tilaye, 2004; Wodeamanuel, 2009). These include livestock sales,agricultural employment and certain types of off-farm employment, migration to other area,requesting grain loans,sale of wood or charcoal,small scale trading,selling cow dung, sale of crop reside,reduction of consumption reliance on relief assistance. In this research several coping strategies to smooth consumption were identified. Farmers were asked about how they manage food shortage and how they can cope with food insecurity. This section describes the results of the interview and relates the response to the farmers' actual activities.

The local coping strategies, which have been practiced during food crisis by groups of sample farmers in Ebinat,are presented in Table 15. The principal strategies used by the sample respondents to mitigate food supply shortage include:Involve in off farm activity, Reducing size and number of meals, sales of animals to meet purchase of grain involve in on farm activity, sales of fire wood and charcoal, receive gifts and loans from other friends and relatives, and sale of cowdung and other animal byproducts,temporary migration to other area for labor work, engage on petty trade and borrowing from neighbors/relatives. Even though, there was limited access to off-farm work opportunity in the district, resource poor farmers' work in handcrafts, petty trades, and other labor worksetc to generate income to meet food necessity. Moreover they engaged farms of better off farmers for wage earned in kind or cash. Their representation from the respondent is 80% of which 68% for secure and 84% for insecure groups, reduction of consumption in terms of both the number of meals per day and amount of food per meal was identified as means of coping for the largest proportion (68%) of the respondents, 3% of the food secure and 91% of the food insecure sample households during short supply.Livestock, besides their complimentary relationship with crop production, provide hedging against risk of food insecurity. As a result, when food produced is fully consumed and or no cash reserve is available to purchase more of it, animal products and live animals are sold as ways of getting access to cash income and to buy food for the household. Accordingly, about 61% of all households, 77% of the food secures and 56% of the food insecure households were involved in the sales of animals (mostly small ruminants) to acquire food whenever there is shortfall in food supply. Sales of animals were common for the two groups and this shows that the farm households keep animals as principal assets to manage the shortage. Sales of animals to purchase food grains during supply shortage have considerable effects on farmers' economy mainly

because of sharp decline in livestock prices. The proportion of food secure and food insecure households who practiced on farm activities on different pattern during food supply shortage were 71% and 53%, respectively. About 39% of all cases, 12.9% of the food secures and 48% of the food insecure households reported that they overcome food shortage by sale of firewood and charcoal. These and other less frequently mentioned and practiced coping strategies are shown in Table 15.

The survey results further revealed that food insecure households in the study area practiced borrowing of food grain from neighbors/relatives when an incidence of food deficit, sale of cow dung; rented out farm land; received gifts and remittances; migrate to other areas,. These categories were reported and practiced as a last resort by fewer sample respondents. The analyses of the coping mechanism of the sample farmers have shown that, coping mechanisms have different patterns. All farmers were not equally vulnerable to drought or food insecurity; they responded in different ways. Some households implement some coping strategies after all other options have been pursued and exhausted. As the food crisis persist, households are increasingly forced into a greater commitment of resources, just as the household exhaust the strategies that are available in the early stages of food crisis, they begin to dispose key productive assets such as draft oxen and rent out land. Other households (especially those who are easily vulnerable) often collapse immediately and thus engage in unusual activities such sales fuel wood and cow dung. As drought and crisis persist in the area finally they decide to out migrate to cope with food supply shortfall. About 22% of all cases, 6% of the food secure and 28% of the food insecure sample households reported migration within their own areas for search of other options to generate income. With respect to the period of severe food shortage that the farm households practice these coping mechanisms, more than 92 % of the households encountered severe food shortages during the months of

July, August and September. In the study area almost all households face severe food shortage during August. As observed through group discussions, the farm households in the lowland ecological zone face severe food shortage more frequently than those in the mid highlands. With increasing vulnerability, farmers shift to the consumption of the cheapest and less quality of food. November, December and January, are the months when the majority of the respondents households do not face any kind of food shortage. On the other hand more than 95 % of the household sale its crop product during harvesting season to refund different debits and to pay land tax. At this period because of in bulk provision of agricultural product in the market the price of product declined extremely. To meet loan obligations the farmers are forced to sale more product during this periodand finally exposed to food deficit during summer seasons.

In general, the proportion of households with local coping strategies implies the extent to which most of the Ebinat district's farmers are vulnerable and how food insecurity is serious. Hence, factors like poor marketing infrastructure lack of off-farm job opportunities, and lack of credit facilities aggravated food insecurity and made households more vulnerable. (See table 15)

Table:15 Types of coping strategy and proportion of farmers participating them in(%)

S/n	Strategies practiced	Food secure N= 31		Food insecure N= 90		All cases N= 121	
		No	%	No	%	No	%
1	Sale of animals to meet purchase of grain	24	77.4	50	55.6	74	61.2
2	Involve in on farm activity	22	71.0	48	53.3	70	57.9
3	Involve in off farm activity	21	67.7	76	84.4	97	80.2
4	Reducing meal size and no of meals	1	3	82	91.1	83	68
5	Sales fire wood and charcoal	4	12.9	44	48.9	48	39.7
6	Temporary migration	2	6	25	27.7	27	22
7	Receiving gifts and remittance,	4	12.9	40	44.4	44	36.4
8	Borrowing cash or grains from others	0	0.0	18	20.0	18	14.9

5. SUMMARY AND POLICY IMPLICATIONS

5.1. Summary

Ebinat District is one of chronically food insecure and vulnerable district in the Regional State of Amhara. The area is designated as famine prone zone. 100 % of the district rural kebelesexperiences frequent crop failure and usually is vulnerable to food shortage. Drought induced food insecurity and depletion of soil fertility has been recurrent phenomenon exacerbating the vulnerability of the resource poor farming households in the district. The major objectives of the study were to assess the major causes of food insecurity and to identify local coping strategies at household level and to identify policy options in the Ebinat district of South Gondar zone, Amhara region. The data used in this research were collected mainly from primary sources of rural households located in three rural kebeleadministrations ofEbinat district. Regarding sampling techniques purposive, cluster and random sampling methods were employed to select specific sampling sites. Selection of the study district was purposive based on the researcher's prior knowledge of the area. The specific rural kebeleadministration (RKAs) - the lowest tiers in the administrative structure of the country was selected in a cluster sampling approach. All the RKAs in the district were clustered into the three major traditional agro-ecological zones (*Dega,Woina-Dega*and *Kolla)* and then three RKAs in each location was selected in a random sampling procedure. Accordingly, 121 farm households were selected as sample farmers and primary data were collected using structured questionnaire. Besides, focus group discussions and personal observation was made to collect more general information. Focus group discussions were made with selected farmers from each sampled ruralkebeleadministrations.

The secondary data were obtained from published and unpublished sources at regional, zonal and district level offices and other government and nongovernment organizations basically to identify and analyze the major causes of food insecurity and to measure the status of household food security, and collected a large corpus of data about biophysical, demographic and socioeconomic variables. The results of the study showed that about 26.2% and 73.8% of sample households were found to be food secure and food insecure, respectively. The analysis of actual household food expenditure per AE in the study area during the 2013/2014 cropping season has shown prevalence of food shortages that the households' did not meet the average minimum subsistence requirement.

The mount of household food expenditure vary among sample households, but the minimum amount of cash to meet the calorie intake of per person per day which is 2100 kcal /AE orequivalent amount of grain(225Kg per AE per year) Birr 1800.00/annum/AE is required in the current grain market price of the study area. Thus, those households beyond this thresholds level will be deemed to be food secured otherwise not food secured.

Food secure groups are characterized by small family size, larger livestock size, andnumber of oxen compared to the food insecure groups. Food secure groups produce relatively larger share of food and earn larger annual income per AE than the food insecure groups. Similarly, food secure groups earned larger off-farm income per AE, using more of fertilizer and have more access to farm credit than the food insecure groups.Age of the household, has no significant influence on food security level but there is a slight variation on dependency level. The percentage of dependents on food secure households is less than that of insecure.

The study suggested also that absence of market and marketing infrastructure facilities are one of the problems of food security. Farmers close to major roads and settlements and market centers are better encouraged to intensify production for their own consumption as well as to produce high value crops for sale. Therefore, in order to solve the problem of farmers in remote areas, attention should be given to the impact of factors like poor marketing infrastructure and transport facilities. More over most of the farmers are requested to reimburse different credit obligations and to pay tax, at crop harvesting season, which is a period that the price of farm product is highly decline. Hence it needs special attention on the period of reimbursement of loan obligations.

The other key problem in the study area is depletion of soil fertility, to resolve this problem participatory soil conservation measures should be taken at all level. Water resources in the district are yet not explored and schemes of small scale irrigation are at infant stage. Other water conservation measures are not practiced in the study area. The farming system is only depending on seasonal rains, which is not sufficient even in Meher(mean cropping) seasons. Irrigation coverage is insignificant in the district.The family size of the study area is above the national and regional average. As it was explored from the survey data,farm land holding is a key challenge to insure food security,

The coping strategies of the households mostly practiced in the study area showed that about 80% of households were involved in off farm activities to meet food needs. The next coping strategy was reducing size and number of meals which was practiced by 68% of sample households. Sales of animals, mostly goats, and sheep ranked as third important coping strategies for about 61% of the households followed by involving on farm activities, that is changing the pattern of farming(58%), and sales of fire wood and charcoal , which account 38% and, receive gifts and loans from other friends and

relatives, and sale of cow dung and other animal byproducts, temporary migration to other area for labor work, engage on petty trade and borrowing from neighbors/relatives are among the coping strategies practiced by the household of study area.

The coping strategies and factors affecting the food security status give clue about policy options regarding interventions to reduce household's vulnerability to food insecurity.

5.2. Policy Implications

This study has some implications for policy making concerning the enhancement of the coping capacity of the farm households. Some of these intervention options are of long-term concern, whereas others are of immediate concern to reduce the prevailing food insecurity in the district. There are multitudes of factors causing food insecurity. These may call for an integrated approach of dealing with problems of rural development. Accordingly, to improve the households' food security status in the district; the following may be the major areas of interventions and policy options. The highly degraded part of the area should be rehabilitated and the existing land resources should be protected. Accordingly, soil and water conservation activities, such as gully treatments, establishment of nurseries and a forestation/reforestation are highly recommended.

Promoting environmental awareness among the people of the study areas highly contributes to land resource conservation. Enhancing farmers for better management of their land and investment on land improvement measures, which; could help improving the productivity of land in the short run. These efforts should aim at increasing the range and quantity of food crops production and productivity. Regarding, the soil and water conservation intervention, which helps sustain and increase crop production through improved land management practice, should be implemented. This may help in

solving food insecurity and ensure food security in the short run as well as in the long run. The regional government should seek ways and options through which the carrying capacity of land is improved to balance the population size. The following can be among options that could contribute to increasing productivity and through which food security can be increased.

i) Promoting and increasing crop diversification to reduce crop failure that was happening due to shortage rainfall. Hence, seeds of different variety resistance to moisture stress, pests and adaptability that can increase productivity and yield of crops should be introduced.

ii) Enhancing and expanding rural credits to subsistence farmers in the district should be one of the primary areas of intervention and policy options. Rural credit service can help farmers in solving capital problem to buy farm oxen, modern farm inputs, use for trade, off-farm activities, and further enhancing use of technologies etc.

iii) Improving land under cultivation by enhancing and promoting soil and water conservation measures, growth of food, cash, fodder and tree crops, introduce agro-forestry, fruit trees, multipurpose grass/shrubs trees and horticultural crops, wherever possible.

The fact that the climate of the district is dominantly semi-arid and the existence of a serious problem of frequent crop failure caused by drought and erratic rains clearly suggest that one of the intervention options is introducing small-scale irrigation to enhance food security at household level.

iv)Promoting off-farm and non-farm employment opportunities, such as animal fatting and rearing activities to help to shift some proportions of farmers from direct reliance on land for their livelihoods and enhancing use of technologies. To meet this goal

human capacity development through training on agricultural business and expanding off-farm activities is imperative.

RESEARCH PROPOSAL

INDRA GANDHI NATIONAL OPEN UNIVERSITY SCHOOL OF CONTINUING EDUCATION

PROFORMA FOR SUBMISSION OF M.A. (RD) PROPOSAL FOR APPROVAL

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Name of Study Centre: St. Mary's University
Name of Guide : ----------

TITLE OF THE PROJECT*: THE CAUSE OF RURAL HOUSEHOLD FOOD INSECURITY AND COPING STRATRGY. IN THE CASE OF EBINAT DISTRICT, SOUTH GONDAR ZONE;AMHARA REGIONAL STATE.*

Signature of the Student : ----------
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January, 2015
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INDIRA GANDI NATIONAL OPEN UNIVESITY

SCHOOL OF CONTINUING EDUCATION

THESIS PROPOSAL ON THE CAUSE OF RURAL HOUSEHOLD FOOD INSECURITY AND COPING STRATEGIES. AMHRA REGIONAL STATE, ETHIOPIA: THE CASE OF EBINAT WOREDA, SOUTH GONDAR ZONE.

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List of Abbreviations

ACP African Caribbean pacific

CSA Central Statistics Authority

DA Development Agent

ESFR Ethiopian Strategic Food Reserve

FAO Food and Agricultural

FDRE Federal Democratic Republic of Ethiopia

FFSS Federal Food Security Strategy

FSS Food Security Strategy

GDP Gross Domestic Product

RKA Rural Kebele Adminstration

MGD Millennium Development Goals

MoFED Ministry of Finance and Economic Development

NGO Non-Governmental Organization

NPP National population Policy

SDPRP Sustainable Development and Poverty Reduction Program

SPSS Statistical Package for Social Science

UNCDF United Nations Capital Development Fund

UNDP United Nations Development Program

US United States

USD United States Dollar

WFP World Food Program

CHAPTER ONE: Introduction

1.1 Back ground of the study

Lack of food is a more pervasive and persistent problem in Africa than in any other continent today. A large proportion of the African population is increasingly subject to extreme food shortages and chronic food insecurity. In sub-Saharan Africa the number of people living on less than US$1 per day almost doubled between 1981 and 2001, rising from 164 million to 313 million people. Consequently, the proportion of the population subsisting below the poverty line of US$1 a day remained almost unchanged at about 46 percent (UNCDF, 2007).

Smallholder agriculture is the most important sector of Ethiopia's economy. More than 80 percent of the populations live in rural areas, and their main source of income is agriculture. According to the 2009 Human Development Report of the United Nations Development Program, Ethiopia ranked 171st out of 177 countries in the human development index, with a GDP per capita adjusted with the Purchasing Power Parity of only USD 779 compared to almost USD 2000 average for Sub-Saharan countries (FAO, 2010).

The total population of the country is estimated in 2011 by World Bank (2012) is 84,734,262. The average population growth rate of the country is 2.6 per cent per annum (CSA, 2007). Government and international sources reveal; agricultural production had been sluggish during the last 20 years, with an average annual growth rate of only 0.6 percent for major food grains. Compared to high population growth rate of about 2.6 percent per annum there was an annual decline of 2.3 per capita in food grain availability from domestic production. This suggests that the country was not self-sufficient in food (MoFED, 2010) as cited in Tatek 2012.

Chronic food insecurity has been a defining feature of the poverty that has affected millions of Ethiopians for decades. The vast majority of these extraordinarily poor households live in rural areas that are heavily reliant on rain fed agriculture; thus, in years of poor rainfall, the threat of widespread starvation is high. The number of people who face food shortage and affected by famine merely in 2002/03 reached as high as 14.3 million, nearly a quarter of the country's population (Beyene, 2008). Same source indicated the country in the last three decades has never been sufficient to enable the rural population to be food secure. Given the current rapid population growth (2.6 percent), food production has to increase at 5 to 6 percent per annum to meet the ever growing food demand of the country estimated at 2100 kcal per day per adult equivalent or 225 Kg of food grain per adult equivalent per year, Tatek (2012).

Cutting world hunger by half by the year 2015 is top global priorities as set out by the Millennium Development Goals (MDGs) of the United Nations (UNDP, 2007). For this achieving national food security depends on appropriate policies that will ensure availability of adequate food either through local production or through an increase in the volume of international trade. Designing and implementing appropriate food security policies however remain a challenge in developing countries (Suresh, 2009).

According to the latest Household Income, Consumption and Expenditure Survey by the Central Statistical Authority (CSA), the incidence of national poverty declined from 44.2 percent in 1999/00 to 38.7 percent in 2004/05 (WFP, 2010). The National Bank of Ethiopia estimates real GDP growth in 2006/7, 2007/8, 2008/09 was 11.5, 11.6 and at 11.2 percent respectively (MoFED, 2010). as cited in Tatek (2012. Poverty headcount declined from 44 percent in 2000/01 to 36 percent in 2005/06 and has likely continued to fall given the high levels of growth (FAO/WFP, 2010). Nonetheless, the per capita income is US$159, which is still too low to ensure food security. Insufferably,

considerable numbers of population live in a situation so characterized by what is termed as absolute poverty.

In order to address the challenges, the Ethiopian Government issued Ethiopia's Food Security Strategy' in November 1996 and updated it in January 2002. The strategy document highlights the government's plan to address problems of food insecurity in the country.

The overall objective of the strategy is to raise the level of food self-reliance nationally and to ensure household food security in the long-term (FDRE, 2002). However, what is needed to realize the strategy at household level is to comprehensively address the problem of food insecurity in the country. Nearly about 14 million people are food insecure or live in what is defined as "absolute" poverty in Ethiopia. Hence, there is a pressing and urgent need to assist farmers to be able to achieve food security through rapid increase in food productivity and production on economically and environmentally sustainable basis (Gezahen Ayele et al., 2003).

1.2. Statement of the Problem

Ethiopia's economy has grown substantially over the last five years but the country still remains one of the world's poorest countries in the world (WFP, 2012). The history is slowly but surely changing that a significant segment of the population have suffered from food insecurity and poverty related problems like malnutrition and disease for a very long period of time. (Samuel, 2003).

A number of factors aggravated growing problem of food insecurity in Ethiopia. Adverse climatic changes (drought) combined with high human population pressure, natural resources degradation, technological and institutional factors have led to a decline in the size of per capita land holding. This was exacerbated by policy-induced stagnation of agriculture and internal conflict and instability in the past resulting in the

widening of the food gap for more than two decades, which had to be bridged by food aid (Degefa, 2002).

Such problem has a wide coverage in the country and there are research findings on the topic in different part of our country, but the cause of Ebinat is yet explored. In Ebinat district the 35 rural kebele's entire are categorized as food insecure. Hence the researcher has intended to assess the features of the food insecure households, their demographic and socioeconomic characteristics and identify the major causes of food insecurity. Besides their potentials to overcome the problem and assessing of the local coping strategies of the households will have a significant importance. Hence, the research will be conducted to examine major causes of house hold food insecurity and coping strategies and investigate policy options available for farm households in Ebinat district of the Amhara Region.

1.3. Objectives of the Study

1.3.1 General objective: The study aims at examining the major causes and coping strategies of food insecurity in Food insecure rural households and investigate possible policy options that the government implement to minimizing the problem in the study area.

1.3.2 The specific objectives of the study are:

1. To assess the major causes for food insecurity at household level in the area
2. To assess the coping strategies of the farm households to overcome food insecurity
3. To investigate the policy options that the government implement to minimizing farm household food insecurity in the study area

1.4. Research questions of the study

The overriding queries in this research are:

1. What are the causes for food insecurity that farm households encounter in the area?

2. How do different socio-economic variables affect household livelihood?

3. What coping mechanisms do the households practice to deal with food shortage?

4. What interventions and policy options are needed to mitigate the problem of insecurity?

1.5 Significance of the Study

A clear understanding of the major causes of food insecurity has practical implications at the micro level to help policy makers and planners in the formulation of new policies that ensure food security. Moreover, the disaster prevention and preparedness and Food Security Coordination Commission of Amhara, Bureau of Agriculture, and other non-governmental organizations which operate in the study area will plan a household centered food security packages so as to seek a satisfactory balance between community project and household asset building packages. The study gives insight to researchers and students interested in the topic to stimulate further investigations of the problems in other areas.

1.6 Limitation of the study

The study will be undertaken in Ebinat district of South Gondar Zone of the Regional State of Amhara. The study will cover only three of the thirty-five rural kebeles of the district from which a total sample of 121 food insure households will be drawn. Therefore, the study will be limited due to limited resources in terms of time, budget, and other facilities. However, the result of the study can be used for the study area and other areas where there are similar socio-economic circumstances.

CAPTER TWO: LITERATURE REVIEW

2.1. Concepts of Food Security

Food insecurity is the lack of access to sufficient food, either chronically or transitorily, that leads to poor health, reduced energy, and other physical and physiological deterioration. Chronic food insecurity is due to the unavailability of food or lack, of resources to acquire it. Transitory food insecurity is a temporary decline in a household's food supply due to instability in food production, prices or market availability, or household incomes. Food security is sometimes equated with food self-sufficiency, either at household or national levels.

Generally, definitions of food security have some common themes although they vary depending on the way the definitions are initially derived. In the majority of the food-security definitions, themes such as sufficiency, access, security and time are the key defining characteristics of the concept of food security. Three definitions of food security that were put forward by Edie (1986), Calkins (1986) and the World Bank (1986) will be briefly reviewed below.

According to Edie (1986) "Food insecurity is when the viability of the household as a productive and reproductive unit is threatened by food shortage" This definition emphasizes the importance of the household as a productive and reproductive unit, and that its viability can be threatened by food insecurity.

On the other hand, Calkins (1986) defines food security as the capacity of a population to produce or to buy enough food, even in the worst years, to satisfy its basic needs. This definition begins with recognition of the capacity of the people as a determinant for food insecurity. The definition emphasized the need for both production and purchasing capacities of the people to achieve food security. The difference between the

above two definitions is only the level of aggregation that is 'household versus population'.

The other definitions of food security is the one forwarded by the World Bank (1986), which states food security as access by all people at all times to enough food for an active and healthy life.

The USAID (1992) defines food security as: "when all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life." Food security is a broad and complex concept that is determined by agro physical, socioeconomic and biological factors (von Braun, et al. 1992). According, to this definition, food security has three fundamental elements.

Food availability is achieved when sufficient quantities of food are consistently available to all individuals within a country. Such food can be supplied through household production, other domestic output, or commercial imports or food donation.

Food access is ensured when households and members of the household have adequate resources to obtain appropriate food for a nutritious diet. Access depends on income available to the household, on the distribution of income within the household, and on the price of food.

Food utilization is the proper biological use of food, requiring a diet proving sufficient energy and essential nutrients, potable water and adequate sanitation. This aspect thus focuses more on nutrition, and in this it differs from the normative definition by the World Bank (1986).

At the 1996 World Food Summit, food security was defined as „Food security exists when all people, at all times, have physical, social and economic access to sufficient food which meets their dietary needs and food preferences for an active and healthy life" (FAO, 2012). This definition is well accepted and widely used (Suresh C, 2009). On the other hand, food

insecurity exists when people are undernourished because of the physical unavailability of food, lack of social or economic access to adequate food, inadequate food utilization and availability, accessibility and utilization irregularity. Household food insecurity results when food is not available, cannot be accessed in socially acceptable ways, or is not utilized completely (Frongillo and Nanama, 2004). Food-insecure people are those individuals whose food intake falls below their minimum calorie (energy) requirements, as well as those who exhibit physical symptoms caused by energy and nutrient deficiencies resulting from an inadequate or unbalanced diet or from the body's inability to use food effectively because of infection or disease (FIVIMS, 2006, cited in Tadesse, 2008). At household level food insecurity refers to either a household's temporary failure to acquire enough food (transitory food insecurity) or permanent failure to acquire enough food (chronic food insecurity) or cyclical food shortage (cyclical food insecurity) caused by factors such as weather (Maxwel & Frankenberger, 1992 as cited in Tatek, 2012).

Finally, the concept and definition of food security were developed and clearly expanded based on the growing hunger, food insecurity and malnutrition scenarios in developing countries. From the above definitions of food security, slight variations were observed. However, the overall basic principles and definitions of food security, that is, "availability and access" were stressed in the definitions cited above. Therefore, for the purpose of this study, the definition put forward by FAO 2012 was taken as a working definition of food security and the household level is considered as the key unit of food security analysis.

2.2. Sources of Food Insecurity

Rural households faced a variety of risks, which may vary from natural to manmade factors (Debebe, 1995). Drought (climate) could be considered as a major cause of famine. Hansen (1986) provided a purely scientific, meteorological definition of

drought and a definition that relates drought to human activities." With widespread crop failures, natural or other disasters as well as the risk of fluctuation in production are some of the risk condition contributing to food entitlement failure. Moreover, variability in food supply, market and price variability, risks in employment and wages, and risks in health and morbidity, and conflict are also an increasingly common source of risk to food entitlements (Table 1).

Table 1. Sources of risks of food insecurity and the affected population groups

Risks	Households and people at risk of food insecurity
Crop production risks (pests, drought, and others)	Smallholders with little income diversification and limited access to improved technology, such as improved seeds, fertilizer, irrigation, and pest control
Agricultural trade risks (disruption of exports or imports)	Landless farm laborers smallholders who are highly specialized in an exported food Urban poor
Food price rises (large, sudden price rises)	Poor, net food-purchasing households
Unemployment risks	Wage-earning households and informal-sector employees (that is, in poor urban areas and when there is sudden crop production failure, in rural areas)
Health risks (Infectious diseases, for example, resulting in labor productivity decline)	Entire communities, but especially households that can -not afford preventive or curative care and vulnerable members of these households
Political and policy failure risks	Households in war zones and areas of civil unrest Households in low potential areas that are not connected to growth centers via infrastructure
Demographic risks (Individual risk affecting large groups)	Women, especially when they have no access to education Female-headed households Children at weaning age The aged

Source: von Braun *et al.* (1992: 17) as sited by Tesfaye in 2005

2.3. Food Security: Measurement and Indicators

2.3.1. Food security Indicators

Measuring the required food for an active and healthy life and the degree of food security attained is a question to be addressed in a food security study. Given the multiple dimensions of food insecurity, there can be no single indicator for measuring it. For this purpose different indicators are needed to capture the various dimensions at the country, household and individual levels, for example, three sets of indictors are often used to identify possible collapses in food security. These include food supply indicators (rainfall, area planted, yield forecasts and estimates of production); social stress indicators (market prices, availability of produce in the market, labor patterns, wages and migration) and individual stress (which indicate nutritional status, diseases and mortality) (RRC, 1990).as cited in Mulugeta 2002. These indicators are very important to make decisions on the possible interventions and timely responses

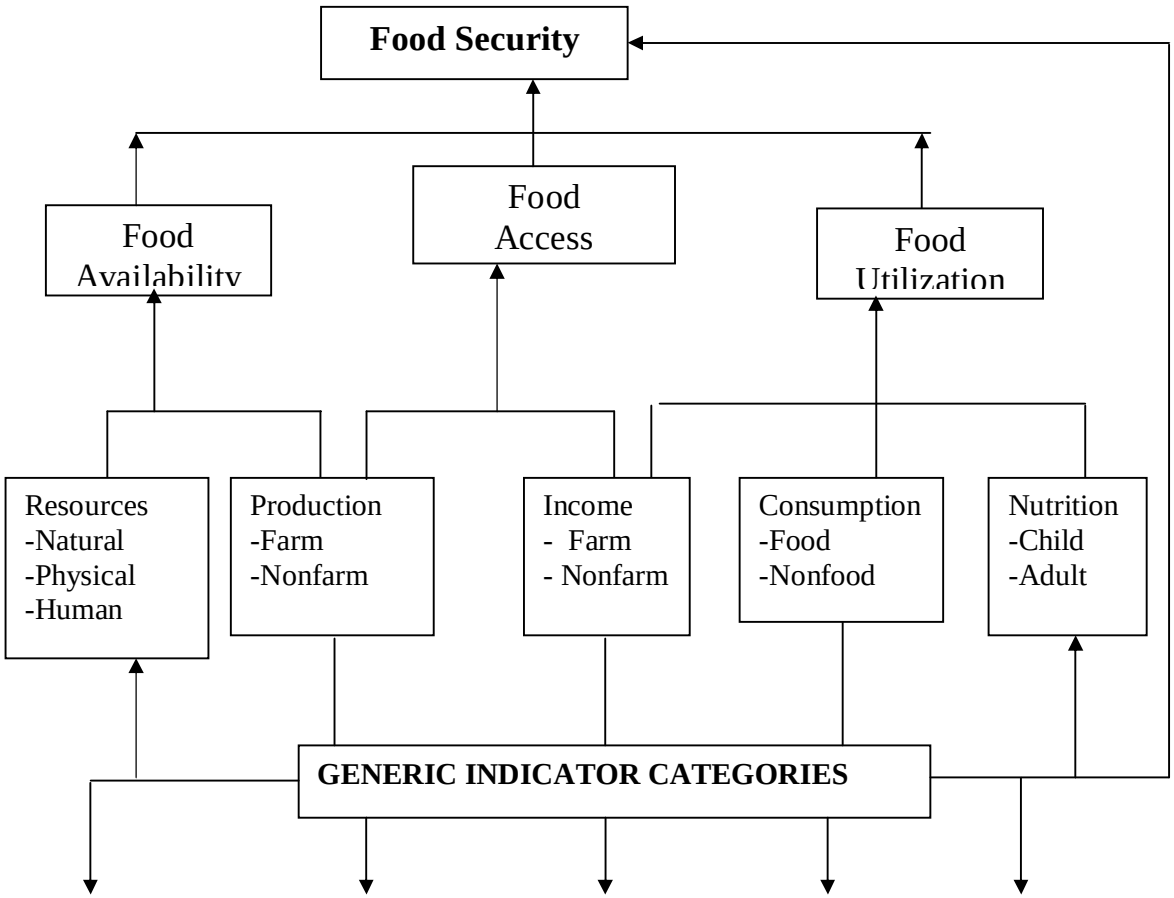
According to Frankenberger (1992), as cited in Aschalew 2006, household food security indicators are divided in to process, access and outcome indicators.

However, Frankenberger (1992) ultimately classified these indicators in to two main categories, process and outcome indicators. The former provides an estimate of food supply and food access situation and the latter serves as proxies for food consumption.

Another important indicator for food security is a coping strategy, which is related to food access indicators. According to Davies(1993) as cited by Mulugeta 2002 coping strategies developed by households and the sequential responses through which people used to pass at times of decline in food availability is one indicator of food security; the responses vary from commitment of low domestic resource to distress migration depending on the intensity of crises.

Chung et al. (1997) as cited by Mulugeta 2002, identified and proposed two types of indicators at individual and household levels. First, generic indicators are those that can be collected in a number of different settings and are derived from a well-defined conceptual framework of food security. Second, location specific indicators are those indicators typically carried only within a particular study area because of unique agro climatic, cultural, or socioeconomic factors. Generic indicators associated with each link in the food security causal chain are given in Figure 2 below.

Figure 1: A conceptual frame work of food security and generic indicators categories.



Resources

Natural
Rainfall levels, stability
Soil quality
Water availability
Forest resource access

Physical
Livestock ownership
Infrastructure access
Farm implement ownership
Land ownership, access
Other physical assets

Human
Gender of household head
Dependency ratio
Education literacy levels
Household size
Age of household head

Production
Total area cultivated
Irrigated area
Area in fallow
Access to and use of inputs
Number of cropping seasons
Crop diversity
Crop yields
Food production
Cash crop production
Number of sources of non farm income
Cottage industry production

Income
Total income
Crop income
Livestock income
wage income
Self-employment
Producer prices
Market, road access
Migrant income

Consumption
Total expenditure
Food expenditure
Nonfood expenditure
Consumer prices
Dietary intake
Food frequencies

Nutrition
Anthropometry
Serum micronutrient levels
Morbidity
Mortality
Fertility
Access to health Services
Access to clean Water source
Access to sanitation

Source: Adapted from Chung et al. (1997:6) Webb and Von Braun (1994), Cited inMulugeta 2002.

2.3.2. Measuring food security

The measurement of food insecurity at different levels was described by Von Braun *et al* (1992) as follows:

Country level: Food security at the country level can be monitored in terms of demand and supply indicators; that is, the quantity of available food versus needs, and net imports needed versus import capacity.

Household level: Food security at household level is best measured by direct surveys of dietary intake in comparison with appropriate adequacy norm. However, it measures existing situation and not the down side risks that may occur. The level of, and changes in, socio economic and demographic variables such as real wage rates, employment, price ratio, and migration properly analyzed, can serve as proxies to indicate the status of and changes in food security.

Individual level: Anthropometric information can be a useful complement because measurements are taken at the individual level. Yet such information is the outcome of change in the above indicators and of the health and sanitation environment and other factors.

2.2. Households Strategies of Coping with Food Insecurity

Coping strategy; could be defined as a mechanism by which households or community members meet their relief and recovery needs, and adjust to future disaster-related risks by themselves without outside support (Dagnew,1993). According to Davies (1994), coping strategies are the bundle of poor people's responses to declining food availability and entitlement in abnormal seasons or years.

Farm households respond to the problems caused by seasonal and disaster (mainly drought) related food insecurity in different ways. Various coping mechanisms that are identified by different authors (e.g., Messer, 1989; Dagnew, 1994) can be put under

three broad categories. These are production-based responses (expansion of production and improving productivity); market-based responses (food grain purchase through mainly sales of livestock) and non-market-based responses (including institutional and societal income transfer systems such as gift and relief food distribution).

Coping mechanisms used by farm households in rural Ethiopia include livestock sales, agricultural employment, certain types of off-farm employment and migration to other areas, requesting grain loans, sale of wood or charcoal, small scale trading, selling cow dung and crop residues, reduction of food consumption, consumption of meat from their livestock, consumption of wild plants, reliance on relief assistance, relying on remittances from relatives, selling of clothes, and dismantling of parts of their houses for sale. Some of them are likely to be implemented only after the possibilities of certain other options have been pursued (Cutler 1984; Dessalegn,1991.

All households are not equally vulnerable to food shortages and do not respond to it in the same way. Deprived households are more vulnerable to disasters than relatively better off households. The destitute are often forced to immediately collapse and get engaged in unusual and marginal kinds of economic activities (such as sales of grass, wood, leaves, and eating wild food and at the end migration). Since the country is dependent on agriculture, crop failure usually leads to household food deficit. The absence of off farm income opportunities, and delayed food aid assistance, leads to asset depletion and increasing levels of destitution at household level. As it was discussed before, farm households in different vulnerable areas of the country use different coping mechanisms against food insecurity.

2.3. Food Security Strategy of Ethiopia-

In order to improve the food security situation of the country, successive national food security strategies have been designed in 1996,2002 and 2003/04. However in spite of

all the effort put by the government and donors to ensure the food security of rural households in the country, it continuous to raise and a large proportion of the population faces chronic food insecurity and their livelihood are at risk (Belayneh 2005). That is why both chronic and transitory food security perpetuates in the rural poor.

The major components of food security program involves: improving productivity and production of rural household, developing the contribution of the livestock sector in food security, expanding and strengthening irrigation schemes, implement sustainable land use practices, build-up human and institutional capacity, improve the provision of clean drinking water, expand rural credit services, expand rural market services, expand and strengthen off-farm employment opportunities and implement resettlement program. (Adugnaw 2010)

2.3. Empirical Studies on Food Insecurity

A study by Ashimogo and Hella (2000) as cited in Tesfaye 2005. In Iringa, Tanzania revealed that household food security was positively influenced by total household asset disposal and income. On the other, hand the study revealed that the transition to commercial agriculture has had negative influence on food security. Deterioration in the ecological conditions of production has also been seen as cause of hunger or food shortage in several African nations. Closely associated with this, Ogbu (1973) as cited in Tesfaye (2005) noted insufficient farmland; low yields on farmers and high storage losses as the principal causes of food shortage in Nigeria.

According to a study by Toulmin (1986) as cited in Tesfaye (2005), the people of Bambara Village of Kala in Mali faced food shortages that were mainly induced by two principal factors. One of the factors was climatic, specifically low and highly variable rainfall making the people very vulnerable to crop failure. The second class of risk was

demographic, consisting of high level of mortality, varying levels of fertility and vulnerability of all producers to sickness and disability (Toulmin, 1986).

Land-use competition between pastoralists and farmer has also become the cause of food shortages in some Sub-Saharan African countries.

The situation in Ethiopia is not much different from the conditions in other developing regions. Mesfin (1991) studied food security in north central Ethiopia and found out that most farmers could not produce enough food to meet the annual requirements, from both the farmers' annual requirement perceptions .Seasonal food insecurity exists even in surplus producing area (Degefa, 1996). The result shows 'variations between households practicing double cropping system (during meher and belg seasons) and those relying on a single harvest (meher) were the proportion of farmers practicing double cropping who reported to have faced seasonal food deficit was smaller than those engaged in single harvest. Food security at household level is affected by a number of interrelated factors. It is determined by household assets ownership, occupation, demographic factors such as gender and age composition of households, educational level, socio-cultural factors, access to credit and inputs, and climatic factors like variability and shortage of rainfall and drought in general (Andersen, 1997).

Some of the general factors that cause household food-insecurity in rural area are poor agricultural growth, unequal distribution of productive resources and income, and rapid population growth. They result in chronic food-insecurity and poverty, whereas, seasonal rainfall variations, lack of draught oxen, inadequate farm size, and shortage of farm inputs are factors responsible for seasonal shortfall of food. Moreover, additional causal factors for transitory food insecurity in the rural area are outbreaks of human and animal diseases, outbreaks of crop pests, hailstorm and flood hazards leading to serious harvest failure, drought, sharp grain price increases coupled with sharp decrease in

livestock prices, food availability, decline and lack of labor demand during crises situations (Dagnew, 1995).

In Ethiopia, Getachew (1995) conducted a study in six rural areas on famine and food security at the household level. According to his study, determinants of household food security/insecurity are level of output, family size, farming systems (agro ecology), land size, livestock, and fertilizer use. The result of logit model analysis revealed that households who have established access to larger land size are better off than those with smaller land size. Moreover, livestock ownership was found to be serving as insurance against food insecurity in normal years. Drought, as noted by Dagnew (1997), was also considered as the major immediate cause of alarming level of food insecurity in many parts of Ethiopia.

Food security document of Ethiopia also recognizes a combination of short-term and long-term causal factors explaining the trend of the increasing food insecurity at household level (FDRE, 2002). Long-term factors, such as the interaction between environments, high population growth, diminishing land-holdings, and a lack of on-farm technological innovation have led to a significant decline in land productivity per household. Ayalneh (2002) describes the food insecure groups of households as those who live on the edge of subsistence often located in remote areas far from markets. They usually work in an insecure and low productivity occupation. Another determinant of food insecurity is gender orientation. Subordination of women in society, their over-burdening and the greater difficulties faced by female-headed households contribute to food insecurity (Haddad , 1997).

According to Hoddinott (2001) household food security issues cannot be seen in isolation from border factors. He viewed these factors as physical, policy and social environment. And he argued that the physical factor plays a larger role in determining

the type of activities that can be undertaken by rural households. Government policies toward the agricultural sector on the other hand will have a strong effect on the design and implementation of household food security interventions. Likewise, the presence of social conflict, expressed in terms of mistrust of other social groups or even out right violence, is also an important factor.

Abebaw (2003), from a case study of DireDawa, investigated that family size, annual income, amount of credit received, irrigation use, age of household head, status of education, cultivated land size, livestock ownership and number of ox owned to be the most determinants of food insecurity.

The work of Tesfaye (2005) from Oromia has shown family size, number of oxen owned, use of chemical fertilizer, size of cultivated land, farm credit use, total annual income per adult equivalent, food consumption expenditure, livestock owned, and off-farm income per adult equivalent to be the major causes of food insecurity.

Shumete (2009) also summarized the causes of food insecurity as, population growth and scarcity of resources, small landholding, low level of farmers education, lack of good-governance, participation and empowerment; in appropriate production systems and marketing services, drought and variability of rainfall, politics and ethnic conflicts: urban expansion, lack of access to credit services and income opportunities, lack of access to health services, and cultural factors.

Haile, et al 2005,in Oromia region shows that An increase in land holding size, increase in ox ownership, decrease in family size, increase in per capita production, increase in fertilizer use, and an increase in education level of food insecure households have the potential to increase the number of food secure households in the study area. For example, increase in the availability of fertilizer to food insecure households will increase the probability of food security by 10%. Similarly, improvements in the

education level of food insecure household heads and reduction of family size of food insecure households will increase the probability of food security by 5% and 6% respectively. It is therefore recommended that introducing institutions which foster agricultural research and extension, family planning, efficient use of land use, and schools, should receive priority attention in policy making.

Endale et al. BMC Research Notes 2014, Indicate that Households headed by females were about three times more likely to be food insecure than households headed by males. Even when they had an adequate number of oxen and farm land, female headed households were still more likely to be food insecure as women could not plow their land as men could do in a timely manner. Plowing land is also traditionally given only to males. As a result, women need men's labor to plow their land in exchange for other expenses such as cash and crops. This consequently reduced their income and compromised their status of food security.

Endale et al. BMC Research Notes, 2014, Food insecurity in Farta district of Amhara region indicates that,A high proportion (67.6%) of the heads of the households had worries about the availability of enough food for their family. Similar proportions of the household heads (68.3%) reported the absence of the preferred food to eat and 66.7% of respondents reported that they consumed a limited variety of food. The overall prevalence of food insecurity was 70.7%.

Therefore, the review made so far is quite useful and relevant to this study. It helps develop clear understanding of variables to be selected; factors determine food security status and major causes of food insecurity. It is also important in assessing and identifying coping strategies and policy options at household level.

CHAPTER THREE: Research methodology

3.1 Universe (Description of the study data)

3.1.1 Location

Ebinate district is one of the 10 districts in South Gondar Zone, Amhara Regional State which found in North –West Ethiopia. Its capital Ebinat is 698 km. from Addis Ababa, 122 km from Bahir Dar, capital of Amhara Region, and 109km away from the zonal capital Debre Tabor. Ebinat is bordered by Belesa district on the north, Farta district on the south, Bugna and Dahina disrict on the east Lai Gaint and Libo Kemkem disrict on the west. The district covers a total land area of 2494.27sq.km with altitude ranges from 1800-2150m above sea-level.

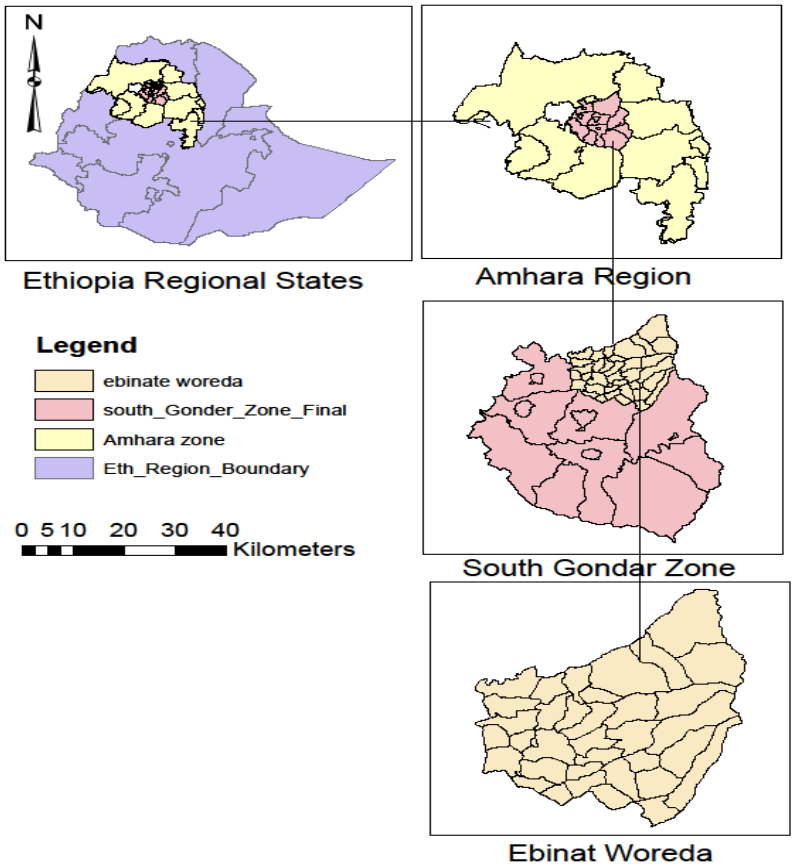


Figure1. Location of the study area

3.1.2 Demography and Structure

Ebinat district is structured with 37 Kebeles. Two of them are urban and the remaining 35 are rural. About 93% of the local people lived in rural areas. The total population of the district is 242,787 (Central Statistics Agency 2007). The total household of the woreda is 50550, which is 45525 Male and 5025 Female. From a total of 50550 HH's, 11543 HH's are identified as food insecure.(Ebinat woreda Agriculture and rural development office 2014)

3.1.3 Infrastructure

Roads:-there are two all season roads, from Addis Zemen-Ebnat-Belesa with 84 Km. There are also seasonal roads, that joins 18 kebele of the district. Recently 7 kebeles are connected by all-weather roads in URRAP (Universal Rural Road Access Program).

Electricity:-The district town and other five rural kebele centers have an access to 24 hour electric power.

Water supply:-Regarding water supply the district town has tap water access and some of the rural kebeles have potable water supply through HDW and shallow well which were constructed by Government and non-government organization even the demand is yet not satisfied.

In terms of education there are only two kindergartens in the woreda capital, 32 primary school (grade 1 to 4), 62 upper primary school(Grade 5 to 8), 2 secondary school (Grade 9 to 10), 2 secondary and preparatory school jointly (Grade 9 to 12) and one technical collage all over the woreda. Amhara credit and saving association is the dominantly used credit and saving center in the district

Health facilities:-Regarding Health care service providing centers there are 43 extension centers, 10 health centers, and 12 veterinary centers.

Market Access:-There are 13 small markets around the offices of some Kebeles. The major market is at the district town, Ebinat only.

3.1.4 Landscape and Agro-Ecology

Topographically, 45% of the district is mountainous, 35% hilly, 15% plain and 5% is valley. The study area encompasses three distinctive agro-ecological zones namely kola (lowland), woin dega (mid-altitude) and dega (highland). Accordingly, the proportion of the three altitude ranges is 50%, 35% and 15% respectively. Moreover, the average annual rainfall is 500- 1300mm and the average minimum and maximum temperature is 23^0 and 30^0c respectively. (Ebinat Woreda Agriculture Office,2013).

3.1.3 Land use pattern

The total land area of the district is estimated to be about 249,427 sq.km of which 169,784.1 sq.km cultivable; 37,846 sq. km is grazing area; 11,224.4 sq.km covered by forest; 5,509.8 sq.km covered by bush; 4,714 sq.km covered by water bodies; 20,348.8 sq.km covered with housing & other infrastructures.(Source Ebinat District Agriculture office 2013)

The main stay of economy is agriculture mainly producing crop and rearing of animals

With regard to the farming system, mixed farming of crop and livestock is a common practice in Ebinat woreda. The district's people earn their lives mainly by producing crop and cattle rearing. From the total cultivable land of 70730 ha, 9661 ha Wheat, 9041 ha barley,23200 teff, and the remaining is covered by maize, sorghum, and pulses, pea, bean and other associated crops. Crop production is carried out in meher seasons only. The expected cattle populations are Sheep 43194, Goat 90727, cattle 208747, hen 363566, equines 31811, and Bee colony 21200. The agricultural extension works are supported by 148 development agents who are based in each kebele center.

3.2. Research design

To achieve the defined objective of the study, the researcher will look for qualitative and quantitative information from primary and secondary sources. Primary data will be collected from sample household selected from survey RKA's (Kebeles). Secondary data will also be checked in order to triangulate the result obtained by qualitative and quantitative methods. The following section will give insight in to how the research project will be carried out. It outlined sampling size and techniques: data collection tools and procedures; and methods of data analysis.

3.2.1 Sampling (Size and Technique);

The study will employ purposive, cluster and random sampling methods to select specific sampling sites. Selection of the study district is purposive based on the researcher's prior knowledge of the area that the woreda as a whole are categorized as food insecure and no any investigation that was made on food security issue, even though the problem is Sevier. The specific rural *kebele* administrations (RKAs) - the lowest tiers in the administrative structure of the country will be selected in a cluster sampling approach. All the RKAs in the district will be first clustered into the three major traditional agro-ecological zones (*Dega,Woina-Dega* and *Kolla)* and then three RKAs will be selected one each from the three zones in a random sampling procedure. The assumption is in similar agro-ecological zones the households share similar opportunity to secure their livelihoods.

The sampling size is determined based on the formula derived from the binomial theorem[2]. Thus the minimum sample size, N for a given confidence level and precision is calculated as

$$N = \frac{Z^2 \times P(1-P)D}{E^2}$$

Where

- N = Minimum sample size
- Z = Z value (Z score) is derived from the anticipated confidence level for this study. The confidential level is 95 % which has Z score of 1.96.
- P = Anticipated proportion that is to be measured. This is the estimated value of what is the researcher is going to measure (The hypothesis that is going to be tested) using the sample. Since the research anticipates to study the extent of food insecurity, thus by taking a reasonable guess based on other studies, in Ethiopia, according to the 2010/2011 HICES, the proportion of poor people(Poverty head count index) in the country is estimated to be 29.6%(which is 30.4 in rural areas and 25.7 in urban areas). Therefore, P for this study is taken at 30%, (0.3).
- [2]D = Design effect. This reflects the sample design with D at 1 for simple random sampling. For social rating, it is recommended that D= 1.5 for random sampling.
- E = Precision (or margin of error). E is the precision with which the researcher wants to measure something. In most statistical study E is kept at 10% particularly for poverty assessment studies it is recommended using E=10%.
- Therefore to calculate the sample size for this study, let us use the above value

$$N = \frac{Z^2 x P\ x(1-P) x\ D}{E^2}$$

$$N = \frac{1.96^2 x 0.3 x(1-0.30 x 1.5}{0.1^2}$$

[2] Levine,David M, Timothy C,krehbiel, Mark L, Berenson, Business Statistics: A First Course, Pearson Education, 2005

$$N = \frac{1.210104}{0.01}$$

$$N = 121.0104$$

$$= 121$$

Thus, a total of 121 households will be sampled for the questionnaire survey from the three RKAs using proportional systematic random sampling technique from the list of rural households which are available at each kebele office.

3.2.2. Data collection tool and procedure

Both primarily and secondary type of data will be used. The primary data sources will be obviously the sampled household heads. The secondary data sources will be government woreda, zonal or regional offices like agriculture and rural development, food security and disaster prevention, health, education offices reports, from NGOs and libraries and Internet sources. Primary data collection will be conducted using survey by means of structured interview schedule for the quantitative part of the data. The interview schedule was pre-tested among the non-sampled respondents of matching characteristics and depending on the results of the pre-test; it will revised in the lights of suggestions received. The interview schedule shall contain close-ended questions will also be accompany the individual survey. Key informant interview and focus group discussion may be employed if necessary.

3.2.3 Data analysis method

The unit of analysis will be a household. The data will be analyzed using descriptive statistics like mean, standard deviation, percentage and frequency distribution, column-graph and pi-chart. The researcher will also use qualitative methods to understand the level of food insecurity, and also the coping mechanisms that the household exercise.

For descriptive analysis of the study,the data will be analyzed using statistical software, particularly SPSS, Version 16.

4. Chapter Plan

This thesis will have five chapters.

Chapter One:- Discusses about the introduction of the subject matter, statement of the problem, research objectives, scope and limitation of the research study.

Chapter two :-Reviews theoretical framework of food security and some of the relevant empirical studies made elsewhere in the world and in the country.

Chapter three:- Starts by presenting and illustrating the study area and methodology of the research.

Chapter Four:- The research result will be discussed in detail.

Chapter five:- Is the last chapter of the thesis and pertinent findings of the investigation, conclusions and useful policy and intervention recommendations will be given

5. Work and Financial plan

5.1 work plan:

s/n	Activities	Months of the year 2015				
		Jan	Feb	March	April	May
1	Preparation of thesis proposal	xxx				
2	Detailed literature survey	xxx	xxx	xxx	xxx	
3	Questioner development and pretesting		xxx			
4	Data collection		xxx	x		
5	Data clearing, coding and entering			xx	x	
6	Data analysis and interpretation				xxx	
7	Completion and submission of 1st draft report				xx	x
8	Submission of final research paper version					xxx

5.2 Financial plan

S/n	Activity type	Unit of measurement	amount	Unit cost	Total cost
1	Daily allowance for enumerators	No of questioner	121	30	3630
2	Periderm for researcher	No of days	15	300	4500
3	Transport cost	No trip	5	200	1000
4	Coffee, tea and water while discussion conducted	Birr			1500
5	Secretarial services like Stationary, Printing, binding	Birr			2500
6	Communication cost like mobile card Internet service, and postage	birr			1000
	Total cost	Birr			14100

APPENDICES

Appendix I. List of Tables in the Appendix

Appendix Table 1.Conversion factors used to estimate Tropical Livestock Unit (TLU)

S/n	Livestock Type	TLU	S/n	Livestock type	TLU
1	Cow/Ox	1	7	Chicken	0.013
2	Calf	0.25	8	Donkey (young)	0.35
3	Weaned calf	0.34	9	Donkey (adult)	0.7
4	Heifer	0.75	10	Hours	1.10
5	Shoat (young)	0.06			
6	Shoat(Adult)	0.13			

Source: Storcket, *et a*l., (1991)

Appendix Table: 2.Conversion factors use to compute adult-equivalent

Age group(years)	Male	Female
<10	0.60	0.60
10-13	0.90	0.80
14-16	1.00	0.75
17-50	1.00	0.75
>50	1.00	0.75

Source: Storck, *et al.*, (1991)

Appendix Tabel 3.Crop yield and nutrient composition of Major crops grown

Food item	Energy(kcal)	Food item	Energy(Kcal)
Teff	1620	Sorghum	2360
Barely	2020	Sweet potato	1370
Wheat	2020	Irish Potato	840
Maize	3450	Coffee	1103
Field pea	2071	Salt	1700
Faba bean	2759		

Source: Tilahun*et al.*, (2004); EHNRI, (2000)

Appendix II. List of Figures in the appendix

Appendix figure:1.A conceptual frame work of food security and generic indicators categories.

Appendix figure:2 Location of the study area

Appendix figure: 3 Total annual consumption expenditure 2013/14

Expenditure	Food secure	Food Insecure	All cases
Food consumption	2797.35	1087.28	1506.22
Non Food consumption	636.96	527.48	559.37
Both case Minimum	1970.59	639.53	639.53
Maximum	5785.37	3872.41	5985.37
Mean	3434.31	1614.77	2065.59
St.Dev	888.73	570.78	1015.60

Source: Own Survey 2015

Appendix figure: 4 marital statuses of sample household heads in %

Marital status	Food secure, N= 31		Food Insecure, N=90		Total, N=121	
	No	percent	No	percent	No	Percent
Married	28	90	84	93	112	93
Divorced	3	10	6	7	9	7
Single	0	0	0	0	0	0

Source, Own Survey 2015

Appendix figure:5 Distribution of livestock holding by Sample households(%)

TLU/HH	Food secure, N=31	Food insecure, N=90	All case, N=121
≤1.00	6	27	21
1.01 – 3.00	23	49	42
3.01 – 5.00	13	2	5
≥5.01	58	22	31

Source: Own Survey 2015

Appendix figure:6 Farm credit utilization trends 2013/2014/ crop year in (%)

Credit access	Food secure (N= 31)		Food insecure (N= 90)		Total Cases (N= 121)	
	No	%	No	%	No	%
Credit users	9	0.29	14	0.16	23	0.19
Non users	22	0.71	76	0.84	98	0.81

Source: Own Survey 2015

Appendix figure 7, Source of Mean income in 2013/2014 in Birr per AE per year

Source of income	Food secure N = 31	Food Insecure N = 90	All cases N = 121
Income from Crop	2908.54	1150.33	1588.83
Income from Livestock	617.41	407.97	462.72
Off farm Income	395.29	336.55	357.51
Total Average Income	3921.24	1894.85	2409.05
Minimum	1994.68	852.71	852.71
Maximum	9412.6	3486.84	9412.06
St.Dev	1833.41	752.78	1423.30

Source: Own Survey 2015

Appendix III: Survey Questioner

Survey Questionnaire

Serial number of the questionnaire---------- Interviewers name _____ Date of interview_____ signature _____

Entry: -

- Good morning/ afternoon sir/madam? My name is_____ I am happy that I met you
- Thank you very much for your commitment to meet me respecting our appointments.
- The objective of this interview is all about academic. It has no any administrative values and/
- or will not use for decisions that might affect your personal life. Thus, fill free and open in your responses
- In answering to the following questions, please, stop me at any point for more clarity if need arises

Part 1.Identification Particulars.

1.1 . Region_____Zone_____

1.2 .District_____.

1.3 .Peasant Association (PA) _____.

1.4. Serial number of the questionnaire_____ .

1.5. Name of the Household head _____ .

1.6. Enumerator's name. _____. Signature_____.

Part 2.Demographic, Economic and Social Characteristics of the Household

2.1 Household information

2.1.1. Sex 0 =Male 1 =Female

2.1.2 Age_____.

2.1.3. Marital status

1) Married 2) Single 3) Divorced 4) widowed 5) others specify_____.

2.1.4. Household family size (Total number of family memebers including household heads)

Male _____ Female_____Total_____.

2.1.5. Level of education (circle one of the following)

1) Illiterate 2) Read & Write 3) Grade 1-4 4) Grade 5-8

5) Grade 9-12 6) Certificate 7) Diploma and above

2.1.6. Ethnicity (Circle one of the following)

1. Oromo 2. Amhara 3.Tigrie 4. Agew 5. Other (Specify) _____

2.1.7. Language

1. Amharic 2.Tigrigna 3. Oromifa. 4. Agewgna/Hemtegna. 5. Other (Specify)_____

2.1.8. Main occupation (Circle one of the following)

1) Farming. 2) Petty trade. 3) Day laborer. 4) Hand craft. 5) other (specify_____

2.1.9. Family information of the household

Serial No.	Name of the household members	Sex M=1 F=2	Age (Years)	Marital status	Relationship to the household head	Education level	Health status	Main occupation (activity)
01								
02								
03								

Note

Codes for marital status; 1) un married 2) Married 3) Divorced 4) Widowed 5) below marriage age

Codes for relationship. = 1.wife/husband 3. Son/daughter 4.Parent 5.Grandchild 6. Brother/sister 7. Other relatives 8. Not related

Codes for educational level = 1) Illiterate 2) W&R) Read & write 3) If attending School, write the grade 4) Leave blank for children below 8 years

Codes for health. 1) ok 2) sick

Codes for occupation = 1) Farming 2) Merchant 3) Household work 4) Schooling 5) Other specify

2.2. Since the last five years, how is the change in your household size?

(Circle) 1) Increased 2) Decreased 3) Not changed.

2.3. If there is change, describe the reasons.

1) Increased birth rate 2) Relatives returned from other places

3) Marriage and extended family 4) Labor migration 5) others

2.4 Has any member of your family ever migrated out during food crises?

1) Yes 2) No

2.5. If yes: 1. Who 1) HH 2) Son 3) Spouse 4) Daughter 5) Other, specify_____

2. Where 1) Ebinat town 2) Other bigger towns 3) In the village 4) Other specify

_____

3. Which year? _____4. Which season of the year _____

5. For how long _____

2.6. If children, aged 6 years and above, are not attending school, why?

1) School too far 2) No money 3) Disabled 4) Needed for work/labor

5) Enough attending 6) Lack of interest 7) others, specify _____

2.7. Labor force status (for those ten years and above): Have you engaged in productive work

in most of the last 12 months? 1) Yes 2) No

2.8. If no what are the reason? _____

1) Disabled 2) Didn't want 3) No job/No one employs me/No employment

4) Scarcity of agricultural land 5) Sick 6) Old 7) others (specify)_____

Part III. Land Resources

3.1 Do you have your own land?_____1. Yes 2. No

3.2. If yes, what is the total size of your land holding?_____in "timad" or hectare

1. Cultivated area_____ 2. Grazing area_____

3. Fallow area_____ 4 Forest area _____5. Others (specify)_____

3.3 What is the total area of land you cultivated last year (2006 EC)?___in" timad" or hectare

1. Owned _____ 2 Rented in _____

3. Share cropped _____ 4 Received as a gift_____5. Others (specify)_____

3.4 Do you think that your piece of land is enough to support your family?_____1. Yes 2. No

3.5 If no state your reasons_____1. Infertility of land. 2. Small size of land 3. Lack of

agricultural inputs to increase productivity 4. Large family size 5. Others (specify)_____

3.6. What proportion of your cultivated land is allotted to?_____ in 'timad'or hectare

1. annual crops _____ 2. Perennials_____

3.7 List the type of crops you cultivated and their average production (including garden crops)

for the last two years.

Type of crops	2005 EC		2006 EC	
	Area (timad)	Production (Qt)	Area (timad)	Production (Qt)
Annual crops				
1.				
2.				
3.				
4.				
Perennial crops				
1				
2.				
3.				

3.8 Is what you produce last year enough for your family?_____1. Yes 2. No

3.9 If yes what amount of grain stock was transferred to this year?_____Qts

3.10 If no for how long does it last?_____months.

3.11 What do you think are the main causes of food deficit in order of importance? _____

1. Absence of adequate rainfall____ 2. Insect or pest infestation_____3. Shortage of

cultivated land_____ 4. Poor quality of land _____ 5.Too much rain____6. Animal

disease _____7. Poor health situation of the farmers_____ 8. Others (specify)

3.12 During which months is food shortage sever? _____month(s)

3.13 How did you cover (cope) the deficit?_____ 1. Purchased food on cash 2. Sale of animals

3. Relief food aid 4. Borrow from neighbors 5. Income from off-farm work in the locality 6. Received gifts or remittance 7. Eating wild food 8. Migration to other areas

3.14 If relief food is a means to cover the deficit for how long have you been getting food aid?_

3.15 Indicate the amount of food aid your household received in the past two years? If any.

Type of food	Unit	2005	2006
1_____	_____	_____	_____
2_____	_____	_____	_____

3.16 Describe the problems you encountered in your farm operation in order of importance.

1. Shortage of oxen_____ 2. Shortage of labor _____3. Shortage of livestock feed____

4. Shortage of seed _____5. Shortage of fertilizer_____6 Poor transportation _____

7. Weeds and pest problem_____9. Shortage of rain_____

10. Low price for the produce_____

3.17 Do you use any irrigation scheme? _____1. Yes 2. No

3.18 If yes what type of it?_____1. Modern 2. Traditional 3. Both

3.19 If yes what types of crops did you produce using irrigation?

Type of crops	2005		2006	
	Area(timad or ha)	Prod.(Qt)	Area (timad or ha)	Prod.(Qt)
1.				
2.				
3.				
4.				
5.				

Part IV. Use of Modern Agricultural Inputs

4.1. Do you use chemical fertilizers? 1) Yes 2) No

4.2. If no state your reasons _____

1) Not necessary for cultivated crops 2) Too expensive 3) Harmful to the soil

4) Land is fertile 5) Not available 6) other specify

4.3. If yes for how many years have you been using fertilizer? _____years.

Indicate the amount of fertilizer used in the last two years 2005 EC and 2006 EC

Type of crops	2005		2006	
	Fertilizer (Qt)	Area (timad or ha)	Fertilizer (Qt)	Area (timad or ha)
1.				
2.				
3.				
4.				

4.4. Do you use improved seed on your farm? _____ 1) Yes 2) No

4.5. If no state your reasons: _____

1) Not heard about it 2) Not available (no supply) _____

3) Too expensive 4) other reasons (specify)_____

4.6 Have lost your crop during the last year?_____ 1. Yes 2. No

4.7 If yes, what were the causes?__1. Diseases 2.Pest 3.Weeds 4.Flood 5.Drought 6. Others

4.8 If yes to question number 4.6, specify the type of crops lost along with extent lost?___-

Type of crops	Area (timad or ha)	Causes of loss	Amount of loss(Qt)
1			
2			
3			

4.12 Do you apply chemicals on your crops?_____1. Yes 2. No

4.13 If no, why?_____1. Does not help 2. No problem of weed or pest 3. Too expensive

4. Not available 5. Not heard about it 6. Others (specify)

Part V. Livestock Ownership

5.1 Do you own livestock?_____1. Yes 2. No

5.2 If yes, indicate the number of livestock owned:

No	Type of Livestock	Number Owned
1		
2		

5.3 Do you use oxen for your farm operation?_____1. Yes 2. No

5.4 If yes, are your oxen enough for your farm operations?_____1. Yes 2. No

5.5 If you do not have enough oxen, how do you get additional oxen you need?

1) Hire from someone 2) Coupling with other farmers 3) Borrow from friends

4) By contributing labor to a person who has oxen 5) others (specify)

5.6. Did you sell any of your animals in the past two years? 1) Yes 2) No

If yes fill the following table

Type of animals	Number sold		Reasons for sale*		Time (month) of sale	
	In 2005	In 2006	In 2005	In 2006	In 2005	In 2006
1.						
2.						
3.						

Possible reasons for sale of animals (to be filled in above table)

1) To purchase agricultural inputs 2) To pay taxes and other debts 3) To purchase food

4) To purchase clothes 5) Social obligations 6) to purchase farm oxen

7) To cover enough feed for your animals? 8) Others (specify)

5.7. What are the sources for your animals feed? (Multiple answers possible).

1) Own grazing land 2) Communal grazing land 3) Crop by products

4) Others (specify)_____

5.8. Do you have enough feed for your animals? 1) Yes 2) No

5.9. If no how do you cover the shortage? 1) Purchase of pasture land 2) Give out the Livestock temporarily to relatives 3) Do nothing 4) others (specify)

5.10. Do you have exotic animal breeds? 1) Yes 2) No

5.11. If you had milking cows in 2006,

No	Type	No. of animals milked	Lactation period months	Milk yield Per day lit.	Sales price for lit. Milk	Expenses for animal feed & medicines
1	Local					
2	Cross breed					

5.12. Is animals' disease a problem to you? 1) Yes 2) No

5.13. If yes, do you get enough drugs to treat your animals? 1) Yes 2) No

5.14. If yes, from where do you get the drugs? (Multiple answers possible)

1) Veterinary clinic 2) Open markets/shops 3) Community based health workers

4) Others (specify)_____

5.15. How far or how long do you travel to the nearest animal Health post /clinic? ___ hr.

5.16. Have you lost any of your animals to death in the last year? 1) Yes 2) No

5.17.If yes state the reasons and numbers of animals you lost

No	Reasons	Number of lost	Reasons	Number of lost
1	Disease		Drought	
2	Lack of feed		Accidental death	
3	Wild animal attack		Others (specify)	

5.18. Give the first four most important problems of animal production

1)_____ 2_____ 3)_____ 4)_____

Part VI. Agricultural Extension Services

6.1. Is there development agent in your RKAs? ____ 1) Yes 2) No

6.2. If yes, how far is it from your house? ____ km. (Hours of walk?)

6. 3. Has your household received any type of extension service from any government and

Non-government organizations? ____ 1) Yes 2) No

6.4. For how long DA has visited your farm during the year 2006.

6.5. What were the purpose of this visits ___ (Multiple answer is possible).

1) To give advice on crop production 2) To give advice on animal production

1) To give advice on soil conservation 4) To collect taxes 5) To collect other debts

6) Other (specify)_____

6.6. Have you participated in the agricultural extension package program? _____

1) Yes 2) No

6.7. If yes for how long? _____

6.8. Is there extension service for women? __ 1) Yes 2) No

6.9. Could your spouse get this service? __ 1) Yes 2) No 3) What type_____

Part VII. Marketing and Credit Services

7.1 Have you received any type of credit in 2006?_____1. Yes 2. No

7.2 If yes, for what purpose (s)? _____(multiple answers possible)

1. purchase of seeds 2. Purchase of fertilizer 3 Purchase of chemicals 4. Purchase of oxen 5. Purchase of farm implements 6. For family consumption 7. For social obligation

7.3 At what time do you usually take credit? During_____months

7.4 What are the Sources of credit? (In order of importance)_____

1. Service cooperative 2.Amhara credit and saving institute 3. Commercial banks

4. Development bank 5. Friends and relatives 6. Local money lenders 7.NGOs 8. Others

7.5 If no why? (multiple answers possible)_____

1. Fear of inability to pay 2.Lack of asset for collateral 3. No one to give credit 4. High interest rate. 5. No need for credit 6. Others (specify)_____

7.6 Where do you sell your farm products?_____ (multiple answers possible)

1. On farm (local assembler) 2.Taking to the local market 3.Through service cooperatives 4. Others (specify)_____

7.7 What is the nearest distance to the main market?_____

7.8 What means of transport do you use to transport your produce to the market?_____

1. Trucks 2. Animal power 3.Human power 4. Others

7.9 When do you sell most part of your produce?_____ months

7.10 Do you get reasonable price for your produce at this particular time?_____1. Yes 2. No

7.11 If no, what are the reasons ? (multiple answers possible)_____

1. No (demand) for the produce 2. More supply of the produce 3. Lack of access to potential market 4. Others (specify)_____

7.12Why did you sell at that particular time of lower (unreasonable) price?_____

1. To settle debts 2. To pay tax 3.Social obligations (weeding, funeral, iddir, etc.) 4. To meet family requirements 5. Others (specify)

7.13. What do you think should be done to solve this problem? _____.

Part VIII. Access to various services

8.1.How far do you travel to get the services of primary school? _____ Km*

8.2.How far do you travel to get the services of secondary school? _____ Km

8.3.How far do you travel to get the services of clinic/health post? _____ Km

8.4.How far do you travel to get the services of health center _____ Km

8.5.How far do you travel to get the service of hospital? _____ Km

8.6.How far do you travel to get the services of grain mill? _____ Km

8.7.How far do you travel to get the services of telephone? _____ Km

8.8.How far do you travel to get the services post office? _____ Km

8.9.How far do you travel to get the services of all-weather road_____ Km

8.10.How far do you travel to get the drinking potable water _____ Km

8.11.How far do you travel to get firewood? _____ Km

*If Km is not known use walking hours

*If payment were made in kind, convert them to Birr at price prevailing at time

Part IX. Household Income

9.1. Do you or any member of your family have off-farm job? 1) Yes 2) No

9.2. If yes, indicate the type of work and annual income.

Family member	Types of job* (see below)	Annual income (Birr)*
1		
2		
3		

1) Milling 2) Handcrafts (pottery, metal works, etc) 3) Weaving (spinning) 4) Livestock

trade 5) Sale of local drinks 6) Agricultural employment, wage work, 7) Employment, paid on monthly basis 8) Pity trade (grain, vegetables, fruits, etc.) 9) Sell of firewood and Grass10) others (specify)

9.3. Have the household received any other income (such as remittances, gifts, aid or other

transfers) in 2006? 1) Yes 2) No

9.4. If yes, specify the type and amount received?

Types of receipt	Person who receive income	Amount received (Birr)
Total		

9.5 Would you please state how the household has eared annually from the following income

sources (in 2006)

Source of income	Unit	Quantity	Total sale (Birr)
1. Crop sales (by type) 2. Animal sales (by type) 3. Sales of animal products 4. Honey 5.Wage income 6. Others (specify)			
Total income			

Note: Crop sales include 1. Cereals 2.Pulses 3.Oil seeds 4.Vegetable 5. Fruits

6.Other(Specify)__

Animals sale include 1. Cows 2.Oxen 3.Heifers and bulls 4.Equines 5.Poultry 6. Sheep

Animals product include 1.Milk 2.Butter 3 Egg 4. Hides and skins 5. Honey

Part X. Household Expenditures

10.1. Indicate the type and amount of expenditures of your family for the year 2006.

Food type (own produced and consumed by family) (Food items like crops, animal products, sugar, salt, cooking, oil, etc)	Amount in (Birr)
1.Food expenditure, own produce and consumed (utilized) by family member -Crop by its type -Livestock and its products 2. Nonfood expenditure; Clothing, Medical expenses School fee, tax, etc Total expenditure	

Notice*

Expenditures of own produced Consumed included such as, Crops by type 1.Cerials 2.Pulses 3.Oil seeds 4.Fruits 5.Vegetables 6.others (specify).

Expenditures on Livestock and Livestock Products (Animals slaughtered, other products honey.*Nonfood expenditure of the Household* such as Clothing, Medical expenses, Education, Farm implements, Farm inputs (fertilizer, seeds, chemicals and others). Different Taxes, Social obligation, Household Utensils, Labor cost, Rents, Fuel Expenses, Transportation Costs, Marketing Costs, Farm oxen, Breeding, miscellaneous

- Frequency of going to market annually _____.
- Amount bought at each market & Value _____.

Health related

1. No of persons sick in 2006 _____.
2. If visited health center /Hospital expenses for treatment_____.
3. Have you (your household) have access to family planning? 1) Yes 2) No
4. If yes, what type? _____.
5. If no why? 1) Not heard about it 2) Due to religion 3) Lack of interest 4) Other specify.

Part XI. Household Assets

11.1. Household farming implements

No.	Type	Quantity	Since year purchased	Value (Total expenditure on buying the asset).
1				
2				
3				
4				

1. Does any of the household currently own any of the following items? If yes complete: (tick).

a) Grain storage facility_____. b) House type corrugated iron roof

c) Beds (wooden/metal) _____. d) Tables and chair._____

d) Lumps/gas stove _____. e) Television _____.

f) Radio. _____.

Part XII. Household coping strategies

12.1. How do you (your household) used to cope during minor and major crop failures coping strategies.

Stages of the problem	During minor crop failure	During major crop failure	
	Rank	Rank	
1. 2. 3.			

Note*some coping strategies

1.Sale of livestock 2. Reduce number of meals 3. Reduce size of meals 4. Ask for help 5.Browed from others 6. Sell firewood and Charcoal 7. Sell of animals 8. Sell (rent out land). 9 Wage employments 10.Petty trade 11. Handcraft works 12.Eat wild fruit or leaves . 13. Migration 14. Other strategies/explain_____

How often do they face food shortage (Crop failure during the last 10 years). _____

Part XIII Governments intervention to alleviate Food deficit

13.1.If you (your house hold member) have received food aid during the last 12 month (2006) Please indicate the type and amount received.

No	Type of aid items received	Amount received by months											
		Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug
1	Grain (Kg);												
2	Edible oil (lit)												
3	Others, specify												

13.2. Since when did you use to receive food aid (if you have received food aid)? Since 19_ E.C.

13.3. The amount of aid given is the same in all years? 1) Increasing 2) Decreasing 3) No change

13.4. Did receiving food aid useful? 1) Yes 2) No

13.5. If yes, for question number 13.4 how it is useful?

1) Giving relief 2) To sell or buy other farm inputs (seed, Fertilizer)

3) Other specify _____

13.6. If no, for question number 13.4 why it is not useful?

1) It makes dependent 2) It makes lazier 3) It does not reach on time

13.7. Has the household ever been involved in food/ cash for work programs in the area, during the last couple of years? 1) Yes 2) Not at all

13.8. If yes, what amount of grain/ edible oil do you receive per year?_____

Awareness towards erosion and erosion potential

14.1 Is your farm prone to erosion? 1) Yes 2) No

14.2. What portion of your farmland is affected by erosion? Timad or ha _____

14.3. Has erosion affected your farm severely before? 1) Yes 2) No

14.4. How do you see the level of erosion on your farming plots since you started farming?

a) Very sever b) Severe c) Minor d) No problem

14.5. Have you observed a decrease in soil depth of your farm? 1) Yes 2) No

14.6. How serious is the decline in soil fertility, on your main plot, since you started farming?

a) Very severe b) Severe c) Minor d) No problem

14.7. Do you think that soil erosion will affect your farm in the future if situations remain

Unchanged? 1) Yes 2) No

14.8. If Yes, what measures have been taken against erosion?

1) Farm tracing is done 2) Tree is planted 3) Fallowing techniques is employed 4. Other specify…….

Thank you very much for your cooperation

The Cause of Rural household food insecurity and coping strategies.

In the Case of Ebinat district, Amhara Regional State

Focus Group Discussion (FGD) questionnaire

1. Are communities in your locality are exposed to food deficit
2. What do think that the major cause of food deficit in the area
3. How do you evaluate the extent of soil erosion in your locality?
4. What measures are taken to control soil depletion?
5. What efforts are made to increase crop production in the last five years?
6. What are the major challenges that you face on livestock production
7. How to resolve the challenge
8. What coping mechanisms do you implement at household level when facing food deficitProblem
9. What majors are taken by the government to increase production and productivity in the agricultural sector in general
10. What possible solutions you recommend to alleviate food insecurity in general

Thank you very much for your cooperation

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