2019-09-06

INVESTIGATION OF LAND MANAGEMENT PRACTICES IN SELECTED DISTRICTS OF NORTH WESTERN ETHIOPIA

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BAHIR DAR UNIVERSITY

INSTITUTE OF DISASTER RISK MANAGEMENT AND FOOD SECURITY STUDIES
GRADUATE PROGRAM

DIMENSIONS AND DETERMINANTS OF PROVETY IN AGRO-PASTORAL HOUSEHOLDS OF DAMBAL DISTRICT, SITTI ZONE, ETHIOPIAN SOMALI REGION.

BY

ABDINASIR SHUKRI MOHAMUD

June, 2018

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ATHESIS SUBMITTED TO SCHOOL OF GRADUATE STUDIES, BAHIR DAR UNIVERSITY FOR PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN DISASTER RISK MANAGEMENT AND SUSTAINABLE DEVELOPMENT

June, 2018

Bahir Dar

THESIS APPROVAL SHEET

As members of the Examiners of the Master of science(M.Sc). Thesis open defence examination, we certify that we have read and evaluated this thesis prepared by: **ABDINASIR SHUKRI MOHAMUD** Entitled **DIMENSIONS AND DETERMINANTS OF POVERTY IN AGRO-PASTORAL HOUSEHOLDS OF DAMBAL DISTRICT, SITTI ZONE OF SOMALI REGION OF ETHIOPIA** . We hereby ceritify that, the Thesis is accepted as fulfilling the requirement for the award of the Degree of Master of science (M. Sc) **in Disaster Risk Management and Sustainable Development.**

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STATEMENT OF THE AUTHOR

First I hereby, I declare That this thesis which is **DIMENSIONS AND DETERMINANTS OF PROVERTY IN AGRO-PASTORALI HOUSEHOLDS OF DAMBAL DISTRICT, IN SITTI ZONE OF ETHIOPIAN SOMALI REGION: THE CASE OF DAMBAL WOREDA** is my own work and that all sources of materials for this thesis have been duly acknowledged. This thesis has been submitted to the **Institute of Disaster Risk Management and Food Security Studies Disaster Risk Management and Sustainable Development Department** in partial fulfillment of the requirements of the Degree of Masters of Science in Disaster Risk management and sustainable development at the Bahir dar University and is deposited at the University Library to be made available to borrowers under rules of the Library. I solemnly declare that this thesis is not submitted to any institution anywhere for the award of any academic degree, diploma, or certificate.

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Date of Submission: 28 MAY 2018

DECLARATION

This is to cerify that this thesis entitled **"DIMENSIONS AND DETERMINANTS OF POVERTY IN AGRO-PASTORAL HOUSEHOLD OF DAMBAL DISTRICT OF SITTI ZONE OF ETHIOPAIN SOMALI REGION : THE CASE OF DAMBAL WOREDA"** Submitted in partial fulfillment of the requirements for the award of the degree of master of science in " **DISASTER RISK MANAGENT AND SUSTAINBALE DEVELOPMENT**" Bahir dar University by **Abdinasir Shukri Mohamud** with **I.D BDU0805596PR** is an authentic work carried out by him under our guidance. The matter embodied in this project work has not submitted for award of any degree of diploma to best of our knowledge and bleif.

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ACKNOWLEDGMENT

Genuine gratitude of the author goes to my advisor Dr. **Belachew Getnet,** Ethiopian Bahirdar Dar University for his constant, unlimited encouragement and advice from the very beginning of this work, providing the continued guidance in the process of the thesis work. The author would also like to extend his great appreciation to all the respondent agro-pastureland the enumerators for their patience throughout the challenging data collection process and provide all the necessary and relevant information, without which this document could have not been written.

I extend my special thanks to my brother Mr. Nasteh Shukri for his encouragement, giving much financial support during the course and research work is unforgettable and deserves a special consideration. More than anything he has done for me.

Especial thanks goes to my Coordinator Dr. Mossa Endris.

ACRONYMS

ADLI	Agriculture Development Led Industrialization
AE	Adult Equivalent
BOFED	Bureau of Finace and Economic Development
CSA	Central Statistical Authority
CBN	Cost of Basic Needs
CPI	Consumer price index,
FEI	Food Energy Intake
FGT	Foster, Greer, and Thorbecke
FAO	Food and Agriculture Organization
FDRE	Federal Democratic Republic of Ethiopia
GTP	Growth and Transformation Plan
HH	Household
HIPC	Highly Indebted poor countries
HDI	Human Development Index
HDR	Human Development Report
HICES	Household Income and Consumption Expenditure Survey
IFAD	International Fund for Agricultural Development
KCal	Kilo Calorie
LPM	Linear Probability Model
LDCs	Least Developed Countries
MDGs	Millennium Development Goals
MLE	Maximum Likelihood Estimator
MOFED	Ministry of Finance and Economic Development
TLU	Livestock Tropical Unit
UN	United Nation
UNDP	United Nations Development Program
VIF	Variance Inflation Factor
PRSP	Poverty Reduction Strategic Paper

ABTRACT

In all contemporary developing nations across the globe, fighting poverty is the fundamental objective of all decision makers. This study is thus aimed to assess the dimensions and determinants of poverty in agro-pastoral household in Dambal District, in Sitti zone of Ethiopian Somali region. The study employed both qualitative and quantitative research approaches and collected data by using both primary and secondary sources of data. The primary data were collected by using household survey, FGDs, KII and Field observations and the secondary data were obtained from the government relevant bureaus, NGOs and reviewing other related reports and studies. Three stage sampling was employed to select 134 sample households from sample kebele administrations. Consumption expenditure and Cost of Basic Need methods were used to measure poverty and construct poverty line, respectively. Accordingly, the food poverty line was 2255.59 Birr and the total poverty line was 3821.74 Birr per AE per year. The FGT poverty index was employed to examine the extent and severity of poverty. It reveals that nearly 43.75% of the sample households live below poverty line with poverty gap and poverty severity index of 0.1345 and 0.0443, respectively. Fifteen explanatory variables were included in the binary logit model to identify factors influencing household poverty. Among the fifteen explanatory variables included in the empirical model, number of livestock (TLU/AE), oxen ownership, farm size, farm income, non-farm income, income from sell of milk, expenditure on improved seed and expenditure on veterinary service showed theoretically consistent, statistically significant and negatively affecting poverty. Family size (in AE), sex, and dependency ratio have positive and significant effect on poverty. The findings imply that emphasis should be given to the following issues with a view to reduce poverty prevalence in the study area. Accordingly, building basic livelihood assets, improving institutional services (extension, veterinary, market, attitude change on credit utilization), and improving the labor market and gender equality could provide entry points for policymaking an intervention.

Key words: ***Poverty, Agro- pastoral, Dambal***

CHAPTER ONE
INTRODUCTION

1.1. Background of the study

Poverty has registered as one of the most intractable economic and social problems in the twenty-first century. Around the Worldwide, about 20 percent of the population survives on less than a dollar a day. The problem of poverty is much deeper and far more widespread in Sub-Sahara Africa than in other major regions. Half of the population of the continent lives in extreme poverty (ECA, 2009).

Ethiopia is often reported as one of the poorest countries in the Sub-Sahara Africa by all dimensions of poverty. Though the country's economy has been growing at an average rate of 7-11% in recent years, the country remains one of the world's poorest. With a low human development index of 0.383, Ethiopia is ranked 174 out of 187 countries in the UNDP's Human Development report of 2011. The average Gross National Income (GNI) per capita is only US$971, which is far below the average value for sub-Saharan African countries of $1,966.3. The purchasing power of rural households remains weak with almost 40% of the rural population living in poverty, and about 29% of the population living in extreme poverty with an income of less than one dollar per capita per day (Tenna, 2012). According to MoFED (2011), the proportion of poor people in the country is estimated to be 29.6% in 2010/11. Empirical results indicate that incidence of poverty is higher in rural than in urban areas with poverty head count ratio of 45.4 and 36.9 percent, respectively). Following the implementation of the comprehensive poverty reduction strategy, poverty levels have declined steadily reaching 38.7 percent in 2004/05, and are estimated to further decline to 29.2 percent in 2009/10. The headcount index in 2004/05 for rural areas was lower than the levels five years ago, by 13%.

The magnitude of poverty also varies across the geographical areas of the country. As per the reports of MoFED (2013), the Somali Regional State is one of the most vulnerable regions in the country. According to the MOFED (2013), the proportion of poor people (poverty head count index) in the Somali region is estimated to be 32.8% in 2010/11. The study area namely Dambal district of Somali region experiencing the different types of problems that are faced by agro-pastoral farming areas of the region with respect to the poverty situations, food shortage, range land degradation, environmental problems like recurrent drought and its related negative outcomes, and generally poverty has become the picture of the district for the last three decades.

1.2 STATEMENT OF THE PROBLEM

A large number of research works have been done to investigate which factors determine household poverty in rural areas. The determining factors of poverty are varied and complex. The findings of almost all studies show that no single factor determines households' chronic poverty. As per the findings of these studies, structural, geographical and household/individual characteristics determine the poverty level of households such as ***(Jazairy, et al, 1992; White and Killick, 2001; Adeyemi, et al, 2009;Ahmed et al., 2009; Dawling and Fary, 2009; Vijayakumar and Oliga, 2012; Adeyemi, et al., 2009)***.

The Ethiopia's poverty for the last nearly four decades, more specifically of its chronic food Shortage has made the country to depend on external food assistance, about 5 million people are dependent on emergence food aid (IFAD 2011).

Various studies have been in Ethiopia as well on the factors influencing household poverty. The findings of different studies conducted in Ethiopia correspond with the reports of empirical studies done in other developing countries. Single or specific factors alone could not effectively explain the determinants of poverty. A complex set of factors ranging from macro-economic factors to household characteristics are accountable for the remaining of large number of people in state of poverty trap.

Almost all studies that have conducted in Ethiopia such as (***Muhdin Muhammed hussen abdi Determinants of Rural Income Poverty in Ethiopia: Case Study of Villages in Dodola District In the same way, Bogale (2011) also analyzed the extent and determinants of rural household poverty in the eastern highlands of Ethiopia)***. focused on the determinants of household poverty in mixed crop-livestock farming system areas/ regions of the country. The evidence on the magnitude of poverty and the factors that determine household in agro-pasturalist and pasturalist households is scarce.

This study therefore fills this gap by systematically assessing the incidence of household poverty and its determining factors in Dembel District of Somali Regional State, Ethiopia.

1. Objectives of the study

1.2.1 General Objective

The main objective of this study is to assess dimensions and determinants of poverty in agro-pastural households in Dambal woreda in Somali regional state of Ethiopia, and

1.2.2 Specific Objective

The specific objective are to :-

1. Assess the incidence of poverty in the study area such poverty headcount, poverty gap and poverty severity.
2. Assess the socio demographic characteristics of the poor in the study area
3. Analyze the factors that determine poverty in the study area

1.2. Research questions

The study will answer the following research questions:

1. What is the poverty level in terms of head count, poverty gap and poverty severity?
2. What are the characteristics of the poor in the study area?
3. What are the major determinants of poverty in the area?

1.3. Significance of the Study

As indicated above, the country in general and the study area in particular has been facing poverty problem. Identifying and understanding factors that cause and/ or influence the problem as well as its severity at household level deserves rigorous empirical research where poverty has been pronounced and has great importance for policy implications and interventions. The result of the study will provide policy related information that helps to prioritize among the many possibilities depending on the relative extent of influences of its determinants. More specifically, it helps concerned bodies in their effort to formulate policies and develop intervention mechanisms that are tailored to the specific need and reducing poverty of the study area. Furthermore, this study attempts to make further contribution to the previous studies and can be used as a source material for further studies

The main reason for focusing on rural and agro-pastoral households' poverty is that the vast majority of the poor reside in rural areas, where the incidence and intensity of poverty is usually higher than in the urban area and with low physical assets available in rural areas. Furthermore, deficiency in human capital in the form of low education and functional skills, coupled with poor health care, serve as barriers to escaping poverty.

1.4. Scope and Limitations of the Study

The study covered Four kebeles of the Dambal district in the Sitti zone of Somali regional state with a total sample size of 160 households. Nevertheless, the result of the study could be used for other areas which might have similar socio-economic circumstances. Poverty is not a pure economic phenomenon because it is the syndrome of uselessness, landlessness, joblessness, deprivation and helplessness. It has social, cultural, political, historical, and geographical dimensions. The social dimension include lack of livelihood security and food security, hunger, starvation, and vulnerability, lack of shelter, and lack of education, and lack of access to health care. Poverty is losing a child to illness brought about by unclean water. Poverty is powerlessness, lack of representation and freedom.

The dimensions of poverty refer to experiences of people, inherently subjective to nature, lack of security and dignity, etc. In general from its definitional dimension, it has to be restricted to those human needs whose satisfaction depends on economic conditions. Otherwise poverty gets confused with other dimensions of human suffering. This is duet the perceptions dealt on poverty research areas are broad, more focused issues in its necessity from the view point of policymakers, it also needs data intensive work, and hence it requires multidisciplinary research approach. In addition, poverty decomposition by different socio economic groups and village level variables may provide a lot of insight to understand poverty. The study covers only Dambal district of Sitti zone in Somali Regional State. Moreover, the study focused on the agro-pastoral households in the study area. It does not include pastoral households in the study area. But also the vulnerability (exposure to risk or low level of security) and voicelessness (powerlessness) dimensions of poverty are beyond the scope of this study.

1.7 Organization of the Thesis

The thesis organized in to four chapters. The second chapter will deal with literature review that includes the concept and definition poverty, Measurement and Indicators of Poverty, definitions of agro-Pastoralism and related empirical evidences made in the country and elsewhere in the world considering level and determinant of poverty. The third chapter was discussed about the research methodology employed including description of the study area, type and source of the data, sample size technique, and method of data analysis. Chapter four goes on dealing with the data presentation, analysis and interpretation and the fifth chapter will present conclusions and policy recommendations based on the findings of the research.

CHAPTER TWO

LITERATURE REVIEW

2.1. The Definition poverty

For many decades, the concept of poverty has been mostly identified with economic deprivation. People are considered as poor when they lack sufficient purchasing power Economic well-being relates to the Ability of individuals to acquire a basic level of consumption or human welfare Akindola (2010) defined poverty as deprivation of economic resources that are required to meet the food, shelter and clothing needs necessary for physical well-being. Similarly, the World Bank (1992) states that people are considered as poor if their standard of living falls below the poverty line, that is, the amount of income (or consumption) associated with a minimum acceptable level of nutrition and other necessities of everyday life. These definitions are primarily concerned with income and consumption and generally, presume that poor people only suffer from limited incomes to meet their daily needs.

Different scholars define poverty in different ways. Minot (2002) defined poverty as household lying below the 25th percentile per capita consumption expenditure. Alternatively, poverty could be defined as a scarcity of essential resources in terms of development objectives. Poverty is lack of basic human necessities, a condition arising largely from absence, scarcity, or underdevelopment of requisite resources or attitudes towards the utilization of the resources (Edilegnaw, 1997). The most frequently used definition of poverty, according to Parkin *et al.* (1997) is a state in which household's income is too low for it to be able to buythe quantities of food, shelter, and clothing that are deemed necessary. In line with this, a related benchmark concept for poverty is poverty line,which means a level of income or consumption that can sustain onlya bare minimum standard of living (MEDaC,1999. FAO,2001).

However, evidence abounds that poverty has dimensions that transcend the simplistic and prescriptive definitions. If well-being and quality of life are to be considered, then vulnerability, physical and social isolation, insecurity, lack of self-respect, lack of access to information, distrust of state institutions and powerlessness can be as important to the poor as low income therefore, economic deprivation cannot be the only kind of poverty that impoverishes human lives, In fact, income only represents a means to a more basic end, which gives as the expansion of human capabilities. What this implies is that focusing on income alone in poverty reduction will not overcome all the problems associated with poverty. (Akindola, 2010)

In general, poverty has a multi-dimensional facet and is not characterized only by income status of households or per capita food production but also by other non-monetary social dimensions. It is

characterized by inadequate food and calorie intake and lack of access to health, nutrition, education, domestic water supply, and sanitation. Thus, poverty in general can be defined as to include all dimensions of the hardship people face in different income and employment categories (WorldBank,2000).

The Human Development Report (1997) suggests that economic growth can be a powerful means of reducing poverty, but its benefits are not automatic. Essentially, people must be educated and enjoy relatively good health to contribute and benefit from growth. In this context, individuals need the capabilities to access gainful employment and participate fully in the society to which they belong. Other forms of deprivation, such as lack of access to safe water, sanitation, health care and education which have the potential to undermine longevity, knowledge and basic income for decent living standard, need to be accorded equal attention as low income (UNDP, 2005).

Another important area that continues to generate controversy is whether poverty should be defined in absolute or relative terms The World Bank (2000) considers a person to be in absolute poverty if his or her consumption or income level falls below some minimum level necessary to meet basic needs. It is a situation where people lack access to the basic necessities of life that are critical to maintaining a decent life. Substantial evidence prove that absolute poverty is peculiar to most developing countries where a significant proportion of the population lacks access to health care, education, safe water and sanitation, including opportunities and choices (UNDP, 2005).

A Person who has few assets and no regular source of income, and who struggles to meet his or her basic needs, would normally be considered to be poor. A locality, region or country with a large number of people living in such circumstances should, in turn, also be regarded as poor. Accepting that basic information is required, one then enters a minefield of unclear terminology, conflicting statistics and divergent opinions which reveal the complexity of the issue. The subjective poverty of an individual, family or community within a given society may be plain to see, but, at the more academic level, it is a highly fluid concept which creates difficulties for decision-makers (Lipton & Gaag, 1977) these same sources explained two definitional problems. The first concerns the basic needs essential for survival, failure to meet which is seen as a determinant in establishing the existence of poverty. Related to this is the dichotomy between relative impressions of poverty within a particular society and the more absolute concepts arrived at when examining the phenomenon in a global context. The second involves the information chosen to illustrate the existence of poverty and, more particularly, to differentiate between groups of poor people.

On the other hand, relative poverty occurs when a household's standard of living falls short of what is generally considered normal or decent or acceptable in that culture (Saunders and Tsumori, 2002).

This concerns the living standards of the poor relative to the rest of the society in which they live. Most households in Australia, for example, are expected to have at least a car each. Households that cannot afford a car are considered to be in relative poverty. In view of the characteristics of absolute and relative poverty, there are fundamental distinctions to be drawn between the two concepts. While absolute poverty refers to the subsistence below a minimum socially acceptable living condition, relative poverty is measured by judgment by members of a particular society as to what is considered a reasonable and acceptable standard of living, Relative poverty is most applicable to developed countries, such as Switzerland and Australia, absolute poverty, on the other hand, is more relevant to developing countries like Nigeria and the Philippines (Akindola, 2010)

Although there are different definition of poverty in this poverty is defined as absolute poverty, person to be in absolute poverty if his or her consumption level falls below some minimum level necessary to meet basic needs(2200Kcal).

2.2. Measurement and Indicators of Poverty

According to the existing literature on the subject poverty is said to exist in a given society when one or more persons do not attain a level of material well being deemed to constitute a reasonable minimum by standard of that society. As a result, according to the same source, the starting point in any poverty study is the question of how one measures or assesses well being and based on that at what level of measured well being one classify that a person is poor or Poverty can be measured at national, regional, community and household/individual levels. Poverty at national or regional levels is often the reflection of poverty at the household levels. Despite the problems existed in its measurement, a number of alternative measurements are used in the development literatures (Sowa et al., 2002). As a result, by different measurements of poverty, absolute and relative poverty are commonly used to signify the status of the individuals and households as poor and non-poor by using a poverty line. The poverty line is a cut-off line that reveals the living standard below which a person is classified as poor (World Bank, 2005). Absolute poverty level is the one which is fixed in terms of the living standard being used, and fixed over the entire domain of poverty comparison (Ravallion, 1992), and measured in terms of a minimum calorie intake required for survival while relative poverty is measured in terms of standard of living which is considered to be below a national/international average. This indicates that the conventional way or approach of poverty measurement is estimated by taking the income or consumption expenditure level that can sustain a bare minimum standard of living (Musa, 2001).

According to Thorbecke (2003), there are currently two main methods of setting the poverty line, i.e. the Cost of Basic Needs (CBN) and the Food-Energy-Intake (FEI) methods. The CBN approach has the advantage of ensuring consistency (treating individuals with the same living standards equally)

while the FEI approach has the advantage of specificity reflecting better the actual food consumption behavior of individuals around the caloric threshold given their tastes, preferences and relative prices. The same source indicated that Ravalli and Bidani (1994) have cogently argued that in order to make valid welfare comparisons the reference basket bundle yielding the caloric threshold should remain constant. The monetary poverty line at any point in time is then obtained by multiplying the constant quantitative reference basket by the variable price vector to obtain poverty line at current (nominal) prices and then deflating it by an appropriate price index (often the consumer price index, CPI) to express the line in real terms. That is, using such approaches international agencies and individual countries have endeavored to set the poverty line in terms of the resources needed to purchase the necessities of life. Fields (1993) confirms that although there are difficult issues in determining scientifically what exactly are the necessities of life, poverty lines determined in this way are nonetheless better than the arbitrary reference lines used elsewhere.

On the other hand, though still the widely used, the head count ratio is an unsatisfactory measure of poverty for two important reasons first; it says nothing about how far below the poverty line the income of the average poor person is—the poverty gap. The head count ratio and the poverty gap can easily move in opposite directions. For instance, a study by (Khan, 1977 cited in Ravallion,(1992) for Bangladesh showed that the proportion of the population living below the poverty line had declined; yet the remaining poor were, on average, the poverty gap had increased. Second, a poverty measure should decrease if the poorest receive a transfer from the moderately poor neither the head count ratio nor the poverty gap does so. Therefore, (Foster, Greer, and Thorbecke, (1984) introduced a class of poverty measures that have the desirable properties of additive decomposability and transferability. The Foster, Greer, and Thorbecke (FGT) class of poverty measures, which includes the head count, poverty gap and poverty severity indices is increasingly used and most commonly applied.

The Head Count Index is the most commonly used method of estimating the incidence of poverty, which simply measures the proportion of the population that is counted as poor. this indicator, but does not take into account the depth and severity of poverty amongst the poor themselves where as the poverty gap measures the depth of poverty; that is how far, on average, by which households fall below the poverty line. This measure is the mean proportionate poverty gap in the population (where the non-poor have zero poverty gaps) and poverty severity to measure the severity of poverty that is the degree of inequality amongst the poor themselves, the squared poverty gap is used. This is defined as the average of the weighted sum of the individual poverty gap where the weights are proportionate to poverty gaps themselves (i.e. the square); in other words the poverty gaps are squared. The act of squaring the poverty gap gives greater weight to the poverty gap of the poorest households in view of the fact that their poverty gap is larger.

Similarly, poverty can be approached through methods other than through estimates of income and expenditure. The question of access to public goods and services, for example, can only really be pinpointed usefully by means of social indicators, which are difficult to quantify. A number of essential parameters (life expectancy at birth, infantile and maternal mortality, for example) are also well-being indicators and affect monetary comparisons (Sen,1992; Lipton and Gaag, 1977). However, as Lipton & Gaag(1997) discussed it; there is therefore neither standard profile of the world's poor nor any one solution to the problem of poverty. The situations vary enormously from one region to another and even within different sections of the population in the same country. The main challenge in measuring poverty in the world is to find the right combination of approaches for the individual country. According Ravallion (1992), it is important to identify the poor and desirable to measure the intensity of their poverty. Thus, the measurement of poverty involves two distinct problems: (1) specification of the poverty line—the income level below which one is considered to be poor, and (2) construction of an index to measure the intensity of poverty suffered by those whose income is below that line.

2.3. Empirical Evidences

Studies in the past have identified several factors that explain the causes and determinant of poverty in all over the world using different econometrics techniques. This is with the intention of identifying the poor from the non-poor for success full poverty reduction strategy to be implemented according to Dercon (1999) on Ethiopian poverty assessment study just giving the characteristics of the poor as defined by the consumption poverty head count relative to the non-poor group, acknowledged that the poor nor the non-poor belong to homogenous groups provided evidences dependency ratio (children plus elderly dependants divided by adults) is larger for the poorer households even though there is evidence that children are needed as old age security and labor. Another evidence was on the relationship between female headship and Poverty and quarter of households are female headed in rural Ethiopia were poor. Another evidence come out was Poverty and educational levels men and women are closely linked most men and women do not have any formal education, the percentage of men without education of the poorest quartile is about a quarter higher than that of the richer households. Off-farm activities are quite common as a source of supplementary income of the poor such as food-for-work programs, Collecting and selling fuel wood or dung cakes Crafts such as pottery or working as a blacksmith other important The livelihood of the poor is fundamentally determined by the physical asset base he have including land, livestock, the access to economic and health infrastructure and access to fuel and water.

Another recent study on the determinants of poverty which is Kenya Oyugi (2000), cited in Geda et al (2005) uses both discrete and continuous indicators of poverty as dependent variables and employs

a much larger set of household characteristics as explanatory variables. An important aspect of Oyugi's study is that it analyses poverty both at micro (household) and meso (district) level, based on estimates a profit model The explanatory variables (household characteristics) include: land holding area, livestock unit, the proportion of household members able to read and write, household size, sector of economic activity (agriculture, manufacturing/industrial sector or wholesale/retail trade), source of water for household use, and off-farm employment. The results of the profit analysis show that almost all variables used are important determinants of poverty in rural areas and at the national level.

Using the 1994 Kenyan Welfare Monitoring Survey data, Geda et al (2005) used binomial logit model with four different types of dependent variables: poverty defined on the basis of 1) income per capita and 2) per adult equivalent, and poverty defined on the basis of 3) consumption per capita and 4) per adult equivalent. The results revealed that the likelihood of being poor is smaller in urban than rural areas, people living in households mainly engaged in agricultural activities are more likely to be poor and male-headed households are less likely to be poor. The effects of the variable, level of education are most influential across the four models. The coefficient for household size is almost twice as high in the consumption-based as in the income based models, while the impact of employment and the number of animals owned is insignificant in the consumption-based models. Total holding of land does not seem to be important in any of the specifications. An explanation for this may lie in the importance of the quality of land and the lack of complementary agricultural inputs.

Raga, et, al (2009) studied the poverty determinants in the rain fed traditional farms in western Sudan using logit model. They relied on primary data sets collected during agricultural season 2005/2006, and the results show that the incidence of poverty was higher among the rural households. In addition, they reached at the conclusion that a household depending on farm income alone accounts for a great part of the probability of being poor. The illiterate household-headed are more vulnerable to poverty than the educated ones, and similarly, the female-headed households are poorer than the man-headed households. High incidence of poverty was also linked to poor households not having their own livestock

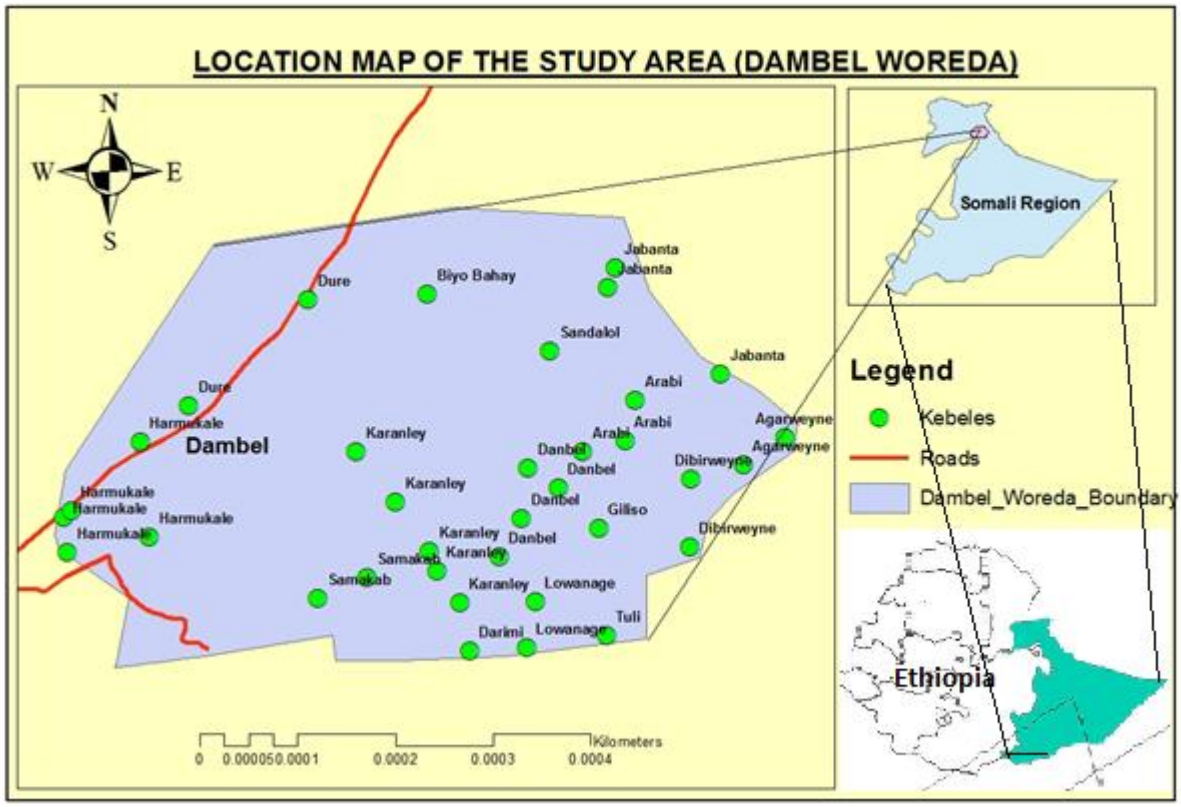
Having looked at different literature most of the studies were based on the analysis of the determinants of poverty in aggregate level at rural and most of these studies gave emphasize on rural sedentary farmers rather than pastoral and agro pastoral studies in addition to that agro pastoral studies are rare or are limited since there is highly a research gap among different scholars .So, this thesis try to narrower this gap. hence this study tried to analyses the level and magnitude of poverty

as well as determinants of poverty at grass root level of the agro pastoral community of Dambal woreda.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Description of the Study Area



Dambal Woreda is located and bounded between 1,054,209m to 1,137,178m UTM North and 778,023m to 860,334m East. The woreda is found in Sitti zone of the Somali Regional State covering a total area of 4,169.324 square Km.Dambal woreda is bordered on the North and North East Hadagala Woreda, on the South Diredawa City Administration, East and West Erer woreda respectively. (SBoFED, 2015).

The woreda receives an average of 500 to 700 mm of rain annually and the annual mean temperature ranges between 22.5 and 32.50C, depending on the location within the zone. There are two rainy seasons, namely the *Diraa'* or *Gu* (short rains) from late-March to late-May and the Karan (long rains) from late-July to late-September. The dry seasons are *Hagaa*, from late-May to late-July, and *Jilaal*, from October to late-March. In recent years, the *karan* showed better reliability There is also short rain (usually 2-5 rainy days) that is locally called *hais.* It occurs between December and January, but it is unreliable. Rainfall amount is relatively higher in the southern foothills and much

lower in the north central plains. In extreme north and northwest, rainfall amount is much below the lowest boundary of this range (SCUK and Care, 2009).

Topographically, the zone consists of undulating hills, stony outcrops interspersed with plains of loose soil covered by bush and woody grasses. The average altitude in the woredais 759 m above sea level.

Based on 2007 census conducted by (CSA), Dambal *Woreda* has total population of 102,574, of whom 56,232 are men and 46,342 women. While 19,799 or 19.3% are urban inhabitants, a further 28,756 or 28.03% are pastoralists and Agro-pastoral.

The farming system in the werada is characterized by agro-pastoral system. The agro-climatic condition of the district is favorable for growing diversified types of crops and different species of animals. Total cropland area in the woreda is estimated 42,580 Ha or 10.43% of the total woreda. The average farmland size per household is 3-9 hectares per family (CACC, 2003). Production in the district is dependent on rain-fed agriculture mainly undertaken by waiting the rainy season that is twice per year. If rain is not sufficient in amount and do not keep its normal cycle farmers in the area often face hazards of drought and consequently food shortage.

Rainy season (Deyr) Cropping calendar for land preparation and planting comes amid March and end May. Both animal and tractor are used for land preparation also men play the role in land preparation. The dry season which locally is called Jilal (December-March) is the time for movement in search of pasture and water for the livestock and rainy season (Gu) commence from October up to December (Dambal ,2017).

Livestock plays a significant role in the agro-pastoral farming system of the study area. Livestock types kept by the farmers include camel, cattle, sheep, donkey and goats. Oxen are kept to provide draft power, cows to provide farm households with milk and butter for consumption and sale, donkeys for transporting goods, while sheep and goats are mainly kept for sale as well as for their meat. The feed sources commonly used for livestock include natural grazing and crop residues.

The contribution of natural pasture as sources of feed is very limited due to the extensive coverage of the land by crops; livestock rearing is a source of income, way of life and their prestige which is closely correlated with the size of their herd. They enlarge their herd when they have surplus money and convert it to cash when they need money. They consider livestock like a bank especially camel. At present, livestock based farming is becoming reduced. On the one hand, due to the ever-increasing trend of population growth, even marginal lands are becoming under cultivation, the other

cause for the reduction of animal population in the area is that farmers use traditional and extensive system of animal production that cannot cope up with the prevailing shortage of grazing land.

One of the preconditions for rapid economic and social development of a given society is the availability of physical infrastructure such as road, water supply, education, health and telephones. These accesses directly and indirectly promote the livelihood of the society. In Dambal, majority of the population obtain drinking water from pond, Berka, shallow well and drilling wells, but some people are located in place that far from water resource. Moreover, the water used for drinking purpose in many areas is not clean due to many factors and causes health hazard both for human and animal.

3.2. Research Methods

3.3. 3.2.1. Research Design

The aim of this study was to undertake an intensive examination on Dimensions and determinants of Poverty in agro-pastoral households with in specific location, descriptive research method is used. In descriptive research method, descriptive questions such as "what", "how and when" most are appropriate and help to connect the detailed and valuable insights and understandings of the topic under study. It is also employed both quantitative and qualitative approach that is more useful to understand the complex level of drought effect to the households and their adaptation strategies which require a detail understandings and processes involved. However, the study employed mixed Methods. obtaining data from different sources helped to harnesses diverse ideas about the same issue and assisted in cross-checking the results, and consequently helps to increase the validity, reliability of the findings and eases data analysis.

3.2.2. Methods of Data Collection

3.2.2.1. Household survey questionnaire

Household sample survey was conducted using semi-structured questionnaire to capture the primary data required to achieve the stated objectives. The questionnaire comprising of open and closed ended questions were administered to heads of households. The questionnaire was pre-tested in order to verify it if it could be understood by respondents and to check if it addressed the issues under investigation. After pre- testing, necessary corrections were made.

3.2.2.2. Focus group discussion

Two focus group discussions were held in each selected Kebele consisted of one separate focus group discussion for males and another one for female groups to avoid females feel shyness and

maintain gender balance within the four kebeles and they freely expressed their ideas, perceptions and experiences regarding the issues under study. Each group was formed of 6 to 12 participants of different wealth and age groups. The discussion was guided by a checklist of questions for discussions to strength the primary data of the sample respondents.

3.2.2.3. Field observation

Field observation was carried out regarding to the current socio-economic challenges (resource endowments), physical condition of the area as well as the people and the existing poverty strategies which the local communities are Practicing.

3.2.2.4 Key informant interview

Key informant interview was conducted with government officials who are found at different levels of government such as Kebele leaders from study kebeles, Woreda, zone and NGOs experts who have good knowledge about the area and the subject matter to get detailed information about the magnitude of the poverty in the woreda and the selected kebeles. The interview and discussions with informants found to be more valuable in providing context at general level, and gave the researcher a wealth of knowledge about the community and an in-depth understanding of the major effects of drought on the livelihood of pastoralists, their adaptation strategies and generally the socio-economic realities of pastoralist households.

3.3 Sampling Design and Sample Size Determination

3.3.1 Sampling Design

Dambal woreda was selected purposively since it is rich of pastoralist livelihood system. Out of the fifteen kebeles in the woreda, four kebeles were selected purposively based on their accessibility and representativeness. Finally, a total of 134 sample households were randomly selected from the four kebeles using probability proportional to sample size techniques using the Starta sampling. Some of the reasons taken into account for choosing this study area can be mentioned here as follows;

3.3.2 Sample Size Determination

The study will apply a simplified formula provided by Yamane (Yamane, 1967 cited in: Indris, 2012) to determine the required sample size at 95% confidence level, degree of variability=0.5 and level of precision= 8% (0.08)

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

Where:

n= is the sample size,

N= is the population size (total household heads size), and

e= is the level of precision.

The above formula produced a minimum of 134 respondents and the study was carried out using 134 respondents.

Name Kebeles	Total population	Sample Size
Arabi	251	25
Sandalol	335	34
Biyo bahaey	300	30
Samakab	451	45
Total	1,337	134

SAMPLING TECHNIQUE

Area	Name/number	Sampling Technique	Justification
Region	Ethiopian Somali	Purposively	is one of the most vulnerable region for poverty
Zone	Sitti	Purposively	The proportion of poor people is high
Woreda	Dambal	Purposively	it is where high number of agro-pastoral households exists in the Zone also where there is high poor people living which affected the recurrent droughts
Kebele	Arabi,Sandalol,Biyo Bahey and Samakaab	Purposively	Because of their accessibility and all them are Agro-pastolists
Household	1337	Randomly	using probability proportional to sample size techniques (Starta Sampling)

3.5 Methods of data analysis

The study used both quantitative and qualitative data which were analyzed in terms of the study objectives already designed. Qualitative analysis was an ongoing process that was conducted right from the field. After collection of data, field notes were prepared and organized into categories which were presented in a narrative way. Analysis was then conducted through descriptive statistics such as percentage, frequency and content analysis with the aim of searching for emerging patterns, themes and consistency of ideas. The data collected from the questionnaires were coded and entered into an excel spreadsheet after which analysis was done using the Statistical Package for the Social Sciences (SPSS).

Quantitative data were then subjected to descriptive statistics,poverty index analysis by using cost basic needs for seeting poverty line. and t-tests after which the results including demographic information, household characteristics, and effects of poverty used by the respondents were summarized in tabular forms.

The analysis was made using binary logistic regression model. In this section, this model was used to see the relative influence of household demographic, socio-economic, and institutional variables on poverty status. Identification of the descriptive and inference statistics alone is not enough to stimulate policy actions unless the relative influence of each factor is known for priority based intervention.

3.5. Definition of variables and hypothesis

To identify the potential explanatory variables and describe their measurements, different variables are expected to affect poverty status in the study area. The major variables that are expected to have influence on the household to be poor or not poor are presented and explained below.

The Dependent Variable of the Model: (POVSTAT).Household poverty status, which is, the dependent variable for the binary logit analysis is a dichotomous variable representing the status of household poverty. It will represent in the model by 1 for poor and 0 for non poor agro pastoralist households or individuals.

The Independent Variables of the model: the independent variables that are expected to have association with poverty status, any exogenous variable having negative coefficient is expected to reduce poverty where as explanatory variable found to be positively related to the poverty status will deteriorate the well being of the households. And the model will be built using the data collected on the following exogenous variables.

Family Size: (FAMSZAE). This is the total number of adult equivalent to represent a total family size that lives together under the same household adjusted to adult equivalent there are two arguments concerning household size. The first argument says that as family size increases the productive force also increases and, in turn, households' probability of escaping from poverty also increases. The second argument runs as the family size increases, especially dependent members-children, elders disabled and pregnant household members will increase, and the probability of falling in to poverty also increases. However, the study will hypothesize based on the second argument. That is household size and poverty has positive relationship that means the probability of being poor is higher for larger household size

Education level of Household head: this is a variable that stands for educational level of the agro pastoralist household head. The agro pastoralist household head is highly influential in decision making process in the pastoralist's family of Somali origin. He is the leader of the family for any sort of business activities that generates income. Hence, his education level has a positive contribution to the welfare of the family so that it is expected to have a negative correlation with poverty.

Livestock Ownership : is the total number of livestock holding of the agro pastoralist Livestock are the source of livelihood of in the lowlands community of Ethiopia Possession of livestock is expected to have a positive impact on households' poverty situation. Since households with more number of livestock obtain more milk, milk products and meat for direct consumption, large size livestock owners are expected to be non poor. Besides, a household with large livestock holding can obtain more cash income from the sale of live animals. Therefore, it is expected that a higher number livestock will increase the probability of the household to be non poor. That is, as livestock increases poverty of the Household reduces.

Herd diversification(HERDDIV): change in herd composition or herd diversification is one important risk minimizing strategy that have been adopted by pastoralist/agro pastoralist community recently in order to develop resilience after sustaining the calamities of the recurrent drought. Therefore, it is will hypothesize that herd diversification is expected to have positive contribution in improving the wellbeing of the agro- pastoralist or negatively affect poverty

Farm size hectare: (FRMSZE);-is the size of the farm land that the family owns and cultivates as a major source of income for the family. The size of the household's farm size has a potential contribution to the wellbeing of the household as it increases the general output of the household. Thus, it is hypothesized that possession of large cultivable farm land negatively affects household's poverty situation as it increases the income of the household. Thus, in the case of this particular study a large farm size tends to increase the output and yield of the farmer. Therefore the more the

household has large farm size the more the household harvests and the greater wellbeing.

Access to agricultural extension services and input (Extension): Currently the government provides different trainings, workshops and seminars on how to improve production and productivity at the woreda and kebele levels through the agricultural and extension workers. It is expected that households attending the seminars will catch up important ideas and knowledge about farming systems and enhance production and productivity. This implies their income will increase and the poverty status will diminish. So we hypothesized that attending the agricultural seminars and the poverty status will have a negative relationships Agricultural input services are fertilizers, improved seeds, pesticides, herbicides, etc that increase productivity. Therefore, a household who use agricultural extension services will improve his/her income, and hence reduce the poverty condition.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the findings of the study, discussions on the dimensions of poverty among agro-pastoral households, poverty indices, descriptive statistical analysis, and econometric model results and findings. Finally, factors and determinants of agro-pastoral household poverty status have been identified.

4.1. General Dimensions of Poverty

The idea of multidimensionality of poverty has become quite common among both academics and practitioners dealing with poverty, it has both income and non-income dimensions of deprivation. The non-income dimension is supposed to include deprivation of such tangible assets such as land, savings and housing, as well as non-tangible assets as health, education dignity and security. The income dimension of poverty, the poverty is defined in terms of income (expenditure) distribution by using minimum standard of income level requirements expressed in terms of monetary terms; the poor are defined as those people/households with an income below a certain threshold level irrespective of their standard of living.

The food poverty line used in this study was then calculated from the collected data taking and is found 2255.59. (Table 1). The non-food expenditure component is also calculated using the average food share of the lowest quartile households. Then, to measure of level of poverty –FGT poverty decomposable measure was used in this study. The result of poverty estimates the head count ratio (P_0) it is the ratio of the number of the poor, to the non poor or shows the percentage of the poor people measured in absolute head count index and is about 37% and is higher than the Somali regional poverty headcount index is 32.8% (MOFED 2012) the headcount indices shows that out of the 134 sampled agro pastoral households of Dambal woreda 37% live below absolute poverty line meaning that 37% of the population are un able to get the minimum calorie requirement (2200 kcal per day per adult) and the poverty gap index (P_1) measures the extent to which the income of the poor lie below the poverty line.

In addition, People living in poverty certainly need opportunities, such as access to decent education, health care, water, and sanitation, and assistance to help them cope with the shocks of everyday life. Poor people need power over their own destinies and over the factors that influence them, such as party politics, the justice system, and the markets for land, labor, and goods and services.

4.1.1. Poverty line and indices

The minimum food poverty line is determined using the minimum level of kilocalorie

consumption which is to be 2,200 kilo calories per adult per day, taking into account the typical food diet of poorest half of the sample households in the study area. Accordingly, the estimated food poverty line provides the minimum food requirement which is calculated from the surveyed data available is found to be Birr 2,255.59 per adult per annum shown in Table

Table 1: The food poverty line obtained has to be translated and incorporate the expenditure required to attain basic non-food needs.

Food type	Gram/ML consumed/day	Kcal/day/Adult	Kcal share (10%)	Mean price/kg (Birr)	Value of food poverty line/year	Expenditure share (%)
Cereal	467.67	1622.8	73.76	5.25	896.17	39.74
Milk	446.5	379.53	17.25	4.9	798.57	35.4
Meat	2.33	4.59	0.21	59.45	50.56	2.24
Edible oil	5.4	43.85	1.99	28.35	55.88	2.48
Sugar and Salt	75.29	134.02	6.10	12.5	343.51	15.23
Fruits and vegetables	13.2	5.87	0.27	3.85	18.55	0.82
Tealeaf	7.85	9.34	0.42	32.23	92.35	4.09
Total		2200	100	146.53	2255.59	100

Source: Own surveyl results, 2017

The total poverty line was obtained after adjusting for non-food expenditure using the average food share of the poorest half of the sampled agro-pastoral households. The food share of the half of the poorest households was 59.023 percent. Dividing the food poverty line of Birr 2,255.59 by 0.6 gives a total poverty line of Birr 3821.74 per adult per year. This is approximately Birr 115 per adult per day.

Based on the poverty line, the poverty indices were calculated using the FGT measures and found out to be 0.4375, 0.1345 and 0.0443 for poverty head count index, poverty gap index

Cost of basic needs criteria is shown in Table 2. The poverty absolute head count index indicates that 43.75% of the sample agro-pastoral households are deemed poor. This index indicates the percentage of the population which was unable to meet the minimum amount of consumption expenditure required to fulfill the minimum calorie for healthy life (i.e., Birr 3821.74 per adult equivalent per year). The comparison of poverty incidences across the Kebeles shows the proportion of agro-pastoral households living in poverty is markedly the highest in Arabi and Sandalol

Table2: Poverty profiles using cost of basic needs method

Name of Kebele	Headcount index(P_0)	Poverty gab index (P_1)	Poverty severity index
Arabi	0.5000	0.0546	0.0182
sandalol	0.4200	0.0432	0.0129
Biyo Bahey	0.3800	0.0386	0.0138
Overall	0.4375	0.1345	0.0443

Source: Own calculation, 2017

The absolute poverty headcount index, simply measures the proportion of the sample population that is counted as poor and it does not indicate how poor the poor are, and hence does not change if people below the poverty line become poorer.

Poverty gap index (depth of poverty) estimates the total resources needed to bring all the poor to the level of the poverty line and also cover the extent to which individual expenditure falls below poverty line. According to the household survey results, the depth of poverty is higher in Arabi, followed by Arabi and Sandalol kebeles, implying that more resource is required to bring the poor households out of poverty in Arabi than Sandalol . The overall poverty depth of 0.1345 means that if resources are mobilized equal to 13.45% of the poverty line (Birr 514.02) from non-poor individuals and transferred to the poor is the amount needed so as to bring each individual up to the poverty line, then at least in principle, poverty could be eliminated.

Likewise, poverty severity index of 4.43% fall below the povertyline implies severe inequality among the poorest households of the sample. Thus, it can be inferred that there is a high degree of inequality among the poorest agro-pastoralist population. The results also show the existence of sever inequality in Arabi kebele even if there is less concentration of the poor households relatively to Sandalol. Nevertheless, all these indices are consistent to the already available poverty profile reports which showed a head count index of 0.3208, poverty gap index of 0.090, poverty severity index of 0.035, and food poverty line of Birr 1985in2010/11forSomali region rural areas (MoFED,2010/11).

Consumption expenditure of the agro-pastoral households per annum

The majority of the agro-pastoral households in Dambal district depend almost entirely on livestock-crop type mixed farming to earn their livelihoods. Most of the agro-pastoral households' annual income and consumption expenditure is basically derived from sales of livestock and livestock by-product, which is the most important source of income. Sheep and goats are the most frequently sold for cash or exchanged for food items as deemed necessary. Most of the sheep and goats are usually

sold in the dry season for family consumption requirement purposes. Cattle and rarely camel are usually sold during the dry season if the households do not have sheep and goats to sell. This is because in the dry season there would be more purchase of cereals for home consumption. In the study area almost all of Agro- pastoral households' own crop production is mainly used for subsistence home consumption which is not enough to sustain the lives of household throughout the year unless they purchase additional food items.

The result of the survey indicates that the overall mean consumption expenditure per year for the sample agro-pastoral households is Birr 18, 634.38. The mean consumption expenditure for the poor and non-poor groups is Birr 13,115.64 and 22,926.73, respectively with the significant mean difference (t=7.778) across poverty categories at less than 1% significance level. The minimum and maximum consumption expenditure per annum of agro-pastoralists was Birr 5,035 and 59,960 Birr, respectively. The statistical correlation analysis between consumption expenditure per annum and poverty status illustrates that there is negatively and highly significant (r = -0.5262, p=0.000) (Table 4). This ascertains that agro pastoralists who have small consumption expenditure per annum were poorer than their counterparts in the study area.

4.1.3. Consumption expenditure per AE per annum

There is significant mean difference between poor and non-poor households with regard to consumption expenditure per AE/year (t=13.60, p=.000). The average consumption expenditure per AE/year for the sample households was 3260.592 Birr with standard deviation of 1464.706. The average consumption expenditure per AE/year of poor groups was 2044.876 Birr while that of non-poor was 4206.15 Birr. With regard to the direction of relationship, the correlation result substantiate the existence of negative and highly significant relationship (r = -0.73) between consumption expenditure per AE/year and poverty and intensity of poverty at less than 1% significance level. This gave a strong ground to study sample agro-pastoral households poverty in terms of this variable rather than per capita consumption.

The average per capita food and per capita non-food consumption expenditure of the sample households were Birr 2873.52 and 815.65 respectively. The minimum and maximum per capita food consumption expenditures of agro-pastoralists were Birr 503.5 and 11992 respectively. Similarly, the minimum and maximum per capita non-food consumption expenditures were Birr 199.38 and 2787, likewise. As the results shown in Table 4, on average poor households had lower per capita food and non-food consumption expenditure as compared to non-poor households. Statistical analysis of mean difference had also indicated that there was significant mean difference in the food and non-food per

capita consumption parameters

The correlation statistical analysis was also conducted to see the strength and direction of relationship between these two variables and poverty. Accordingly, the food and non-food per capita consumption expenditures were negatively and significantly related with poverty and intensity of poverty at less than 5% level (r= -0.58 and r= -0.52, respectively) To summarize the implications of the above statistical analysis, the agro-pastoralists, who incur more on consumption, will be more likely to be non-poor. On the contrary, sometimes the reverse might have happened. This suggests the need to increase productivity and support resource poor agro-pastoralists through food for work, cash for work and even direct support to fulfill their minimum calories requirement and enhance poverty reduction efforts.

Descriptive Statistical Analysis of Variables Affecting Poverty

In this study, STATA statistical software package version 10 was employed to analyze the household data. Among the 134 sampled agro-pastoralists, 57 (43%) were poor while 77 (57%) were non-poor. Based on the literature review on past research findings, experts and authors' knowledge about poverty situation of the study area, the important determinants of agro-pastoral household poverty situation were identified. The identified agro-pastoral households poverty determinants thought to have relationship with poverty were grouped as households' demographic variables, household's socio-economic variables and institutional variables.

4.2.1. Demographic characteristics of agro-pastoral households

The demographic variables of agro-pastoral households are critical and important in analysis of the of poverty status determination and these demographic variables are directly or indirectly affect the household characteristics in terms of income, consumption expenditure, and asset and wealth status. Indicators of household size and structure are important in that they show a possible correlation between the level of poverty and household composition. Household composition, in terms of the size of the household and characteristics of its members (such as age and sex), is often quite different for poor and non-poor households. These variables are presented as follows:

4.2.1.1. Sex of the household head

Sex of the household head was one of the demographic characteristics hypothesized to influence poverty in such a way that female-headed households were expected to be poor and male headed households are less likely to be poor. The proportions of female headed households were lower within the non-poor group (16.67%) than within poor groups (35.71%). On the other hand, out of the

total female respondents the majority (62.5%) were poor. Regarding its relationship with poverty, correlation test using Pearson chi-square

Pointed out significant relationship ($\chi 2$ =8.68, DF=1, Phi =0.23,P =0.003)(Table5).

Table 3: Relationship between sex, education of the household head and the poverty status

Variables		Poverty Categories			t-values	p-values
		Non-Poor (77)	Poor (57)	total		
Sex of Household Head	Male	75	45	120	8.68	0.003
	Female	15	25	40		
Educational status of Household head	Literate	27	10	37	5.47	0.019
	Illiterate	63	60	123		

Source: Owncomputation,2017, ***and**,significant at less than1%and5%%probability level respectively.

4.2.1.2. Educational status of the household head

Various literatures have indicated that educational status is one of the potential explanatory variables that influence poverty by improving information processing capability of agro- pastoral community. In this study, informal (including Qur'anic schools) and formal education were hypothesized to influence the poverty status. As depicted in Table 5 presented, among the total respondents' illiterate house hold heads are76.88%, the rest 23.12% were literate. The proportions of literate household heads were high within the non-poor households (30%) than within poor households (14.29%). On the other hand, out of the poor respondents the majority (85.71%) were illiterate. Moreover, the result of chi-square test revealed negative and significant relationship of literacy with poverty status ($\chi 2$=5.47, p =0.019, Phi =-0.18)(Table5).

4.2.1.3. Age of the household head

The mean age of agro-pastoralist household heads in the study area was found to be 46.77 years with standard deviation of 12.78. The younger age of the household head was 21 whereas the older age is 85 years. According to the survey result, non-poor households are headed by elder persons compared to the poor ones which was lead by relatively young aged persons. Besides, the mean age of poor households was 41.77 and that of non poor was 50.66 years with standard deviations of 13.70 and 9.45, respectively. It was hypothesized that the age of the household head and poverty status is negatively related in the study area. Therefore, according to the results illustrated in Table 6, there is significant mean difference between poor and non-poor with regard to age of household heads (t=4.64, P = 0.000) across poverty categories at 5% significance level.

4.2.1.4. Family size in adult equivalent

It was hypothesized that an agro-pastoral household with large family size in terms of AE will have positive association with poverty and will have greater depth of poverty because of an imbalance between production and consumption of the household. The minimum and maximum family size in terms of AE was 2.35 and 13.75, correspondingly. According to the results shown in Table 6, the average mean family size (AE) of the sample households was 5.64 with standard deviations of 2.17. The average family size (AE) of poor households was 6.14 while that of non-poor households was 5.24 explaining significant mean difference (t= - 2.66, p = 0.009) between the poverty categories. With regard to the direction and association, the correlation result showed that family size in terms of adult equivalent had positive and highly significant relationship (r=0.50, P =0.000) with poverty status.

Table 4: Relationship between age of household head, family size adult equivalent, household dependency ratio and the poverty status

Variables		Poverty Categories		total	t-values	p-values
		Non-Poor (77)	Poor (57)			
Age	Mean	50.66	41.76	46.77	4.64	0.000***
	St, dev	13.69	9.46	12.78		
Family size	Mean	5.24	6.14	5.64	-2.66	0.009***
	St, dev	1.38	1.63	2.17		
Dependency ratio	Mean	0.39	0.52	0.44	-5.84	0.000***
	St, dev	0.12	0.13	0.14		

Source: Own computation,2017, ***and**,significant at less than1%and5%%probability level respectively

4.2.2. Socio-economic characteristics of agro-pastoral households

Apart from income or consumption – which is typically used to define whether a household is poor – there are a number of other economic characteristics that correlate with poverty, most notably household employment and the property and other assets owned by the household. There are also several social indicators that are correlated with poverty and household living standards. The most widely used are measures of health, education and shelter.

Majority of agro-pastoralists in Dambal district livelihood is a more diversified livelihood system than pure pastoralist, and the average agro-pastoral household pursues three livelihood activities – rearing livestock (especially cattle, sheep and goats, but also camels, especially in the drier eastern and southern parts of the district), crop farming, as well as a minor income-earning activity like

charcoal burning, petty trading and drinking tea making shop, or collecting firewood or construction materials for sale. Apart from growing cereals,
Some farmers mainly in Arabi and Sandalol kebeles also cultivate vegetables, *khat*,and some Root crops.

4.2.2.1. Possession of household assets and sources of livelihood

Ownership of assets is one of the indicators of economic wellbeing of the households. The loss or acquisition of these assets could be a manifestation of either deteriorating or improving conditions in the households' economy. Based on data and information collected from sample households the major assets are land and other assets such as livestock, agricultural implements (farming equipment), and other household durable items. The major income sources for the households in the study area include livestock and their by products, crop and some non-farm activities. It was observed from the survey results of the study that livestock and some crop production is the most important source of income followed bynon- farm activities another sources, i.e., about 88.25%,9.25%and2.5%percents respectively.

4.2.2.2. Land holding

Land size is considered as a critical production factor that determines the type of crops grown
And the amount of crops harvested per season/year. Moreover, the availability of grazing land is an important factor for livestock rearing. Therefore, under subsistence agriculture, land holding size is expected to play a significant role in influencing agro-pastoral households' living standard. Accordingly, the land holding of the sampled households ranged from 0.47 to 27.65 hectares with an average of 5.27 hectares with standard deviations of 4.79. The average farm size of poor groups was 3.36 while that of non-poor groups was 6.76 explaining significant mean difference (t= 4.75, p = 0.00) between the poverty categories. With regard to the direction and association, the correlation result showed that farm size in terms of hectare had negative and highly significant relationship (r = -0.35, P = 0.00) with poverty status and intensity of poverty. In addition, the landholding sizes also show some variation between sampled Kebeles. Relatively the scarcity of land and variation in holding size is observed in Arabi areas of the study sites due to their population density.

In relation to this, farm size and overall production perspectives, there was also a group discussion on sufficiency of own crop production as well as wealth ranking conditions with informants and sampled households. Out of the total sampled households about 56.8 percent indicated that their current year crop production could only last utmost for 5-6 months in feeding the households. On the

other hand, almost 40 percent have reported that their current year crop production only lasts up to four to three months and only about 3.2 percent of the households reported that their crop production could take them at least up to 8 months. In addition, about 52 percent of the sampled households reported that their living standard turned for the worse, 28 percent experienced better and improving living conditions and about 20 percent had not come across any change (constant) in their living conditions over the surveyed period.

4.2.2.3. Livestock owned per adult equivalent

The livestock ownership is an indicator of household's wealth and social status in agro- pastoral community. Besides, it is the main source of food, income, draft power, live asset, social security and means of livelihood diversification (coping mechanism during drought and hardship seasons) for agro-pastoralists. Based on the aforementioned premises, livestock ownership was hypothesized to have negative and significant relationship with poverty status and intensity of poverty.

The data on livestock ownership measured using TLU per AE shows the average TLU per AE for sample agro-pastoral households was 7.22 with standard deviation of 6.34. The mean TLU per AE of non-poor group was higher than the poor by 5.88. The mean difference was highly significant at 1% probability level between poverty categories. The strength and direction of relationship between livestock ownership and poverty status was negative and significant (r=-0.23,p=.004)(Table7).

4.2.2.4. Income generated in sale of milk

In agro-pastoral households livestock production is the main source of income. Milk is one of the main diets of agro-pastoral societies in Ethiopia. For agro-pastoralists sell of milk is very important and crucial source of income and livelihood. Some of the households in the study area earn their income from sale of milk. Milk is sold in local markets, in exchange the agro- pastoral buy basic food (such as cereals, sugar, salt, tea leaf etc) and sometimes nonfood household requirements. If this sale is significantly high, it is expected that the probability of being poor will decrease. Hence, it was hypothesized that income from sale of milk will put negative influence on poverty.

The data on income from sale of measured in annual milk income per adult equivalent. The average annual milk income per AE of the sample agro-pastoral households was 296.13 with the standard deviation of 283.85. The non-poor household annual mean of milk income was higher than the poor household's by183.96. The mean difference was highly significant at 1% probability level between poverty categories. The strength and direction of relationship between livestock ownership and poverty status was negative and significant (r = -0.22, p =. 0.005) (Table7).

4.2.2.5. Oxen ownership

Number of Oxen possession helps to undertake farm activities easily, on time and also allow in managing other farm activities. Besides, well ploughed farm could produce better and secures family food requirement. Ownership of oxen has been anticipated to have negative effect on household's poverty, holding other things constant. The data from field survey (Table 7) illustrates that the average number of oxen holding of the sampled 1.09 with standard deviation of 0.89. The average number of non-poor household was 1.255556 while the poor household was 0.87. The mean difference was highly significant at 1% probability level between poverty categories. The correlation of the poverty status with the households' number of oxen holding shows the existence of significant and negative relationship (r = -0.23, p=0.006) throughout poverty categories.

Table 5: Relationship between livestock holding, income generated per year in sale of milk, farm income, non-farm income and poverty status

Variables		Poverty Categories		*t*-values	*p*-values
		Non-Poor (77)	Poor (57)		
Tropical Livestock Unit	Mean	9.79	3.91	6.54	0.004
	St.dev	6.92	3.34		
Milk Income	Mean	376.61	296.13	4.28	0.000
	St.dev	344.42	296.13		
Oxen ownership	Mean	1.26	0.87	2.75	0.0006
	St.dev	0.98	0.72		
Farm Income	Mean	2068	1588	4.78	0.004
	St.dev	1902.57	1429.04		
Non-Income	Mean	502.13	395.3	7.38	0.000
	St.dev	209.25	239.89		

Source: Own survey, 2017

4.2.2.6. Farm income per adult equivalent excluding milk income

In this study, livestock rearing, maize and sorghum production are the major source of income. The average annual on-farm income per AE of the sample respondents was 1558.99 Birr with standard deviation of 1429.04. The minimum and maximum on-farm income per AE of the same was birr 118.64andbirr13246.22, respectively. Households whose income is very small did not sell on-farm products rather use it for home consumption. Relatively speaking, on average non-poor group had higher on-farm income per AE (2068.32 Birr) as compared to poor group (904.15 Birr). Analysis of mean comparison has confirmed the existence of significant mean difference between non-poor and poor sample respondents in their on-farm income per AE (t=4.78, p=0.000) at less than1%probabilitylevel. The result of correlation analysis shows the negative and significant relation between on-farm income per AE and poverty status and intensity of poverty (r = -0.23, p = 0.004) at

1% probability level.

4.2.2.7. Non-farm income per adult equivalent

Non-farm income per AE was expected to affect poverty status and intensity of poverty negatively. In the study area, livestock trading, gift and charcoal making and some very small salary employment were found to be the major non-farm activities that sample respondents engaged in. In Table 9, the average non-farm income per AE for the sample households was 395.30 Birr with standard deviation of 239.99. The minimum and maximum non-farm income was found to be 0 and 983.13Birr.

Mean comparison, on average non-poor households had better non-farm income per AE than poor households. The figures in Table 7 has revealed that there was significant mean difference between non-poor and poor (t= 7.38, p= 0.000) throughout the poverty categories at less than 1% probability level (Table 7). With regards to the correlation analysis it shows the negative and significant relation between non-farm income per AE and poverty status and intensity of poverty (r= -0.3802,p=0.000)at less than1%probabilitylevel (Table7).

4.2.2.8. Total expenditure on use of fertilizer

In agro-pastoral society, crop cultivation is source of the livelihood and income diversification mechanism to sustain the lives of the household members. Land is one of the most important factors of the production in any agricultural production. Use of fertilizer improves the soil fertility and hence enhances production and productivity of farm land. Expenditure on use of fertilizer per hectare in AE was hypothesized that the use of fertilizer negatively influences poverty status, consequently, it has been hypothesized that the larger the use of fertilizer and the less be the chance to be poor, other things being constant.

In this study, the average expenditure use of fertilizer per year was Birr 10.25 with the standard deviation of Birr 5.05. The minimum and maximum used expenditure was birr 0 and birr 16.45, respectively. Extent of inorganic fertilizer use on farm land was very small in sampled households due high fertility of the land and soil (especially in Sandalol kebele). Relatively speaking, on average non-poor households had higher expenditure on use of fertilizer per year was Birr12.24as compared to poor households Birr 4.20. Analysis of mean comparison has confirmed the existence of significant mean difference between non-poor and poor sample respondents in their expenditure on use of fertilizer per hectare per AE (t= 3.14, p=0.000) at less than1% probability level.

The result of correlation analysis shows the negative and significant relation between

expenditure on use of fertilizer per hectare per AE and poverty status and intensity of poverty (r=-0.17, p =0.000) at 1%probabilitylevel (Table8).

4.2.2.9. Expenditure on use of improved seed

In crop cultivation, high levels of yield/harvest are achieved by the choice and combination of appropriate agricultural variable inputs such use of new and improved seeds; fertilizers and irrigation water that are complementary inputs, simultaneous increase of all these variable inputs in their correct proportions is needed to harvest the yield. The use of high yielding varieties can remarkably improve farm output and thereby increase food supply and income of the household. It was hypothesized that the use of improved seeds will negatively influence poverty that means that higher the expenditure on use of improved seed in AE increases production and productivity given a fixed plot of land, other things being constant.

According to the data of the survey, the average expenditure use of improved seed per year was Birr 20.21 with the standard deviation of Birr 8. 37. The minimum and maximum used expenditure was birr 0 and birr 44.44, respectively. Relatively speaking, on average non-poor households had higher expenditure on use of improved seed per year Birr 24.53 as compared to poor households Birr 12.41.

Analysis of mean comparison has confirmed the existence of significant mean difference between non-poor and poor sample respondents in their expenditure use on improved seed per year per AE (t= 3.51, p = 0.000) at less than 1% probability level. The result of correlation analysis shows the negative and significant relation between expenditure use on improved seed per hectare per AE and poverty status and intensity of poverty (r = -0.28, p= 0.000) at 5%probabilitylevel

4.2.2.10. Expenditure made on veterinary medicines and services

Since the majority of the agro-pastoral households have both livestock and crop farming agricultural practices and mainly depends on the livestock rearing and production system. Despite the importance of livestock to the larger sector of the population and the economy of the agro-pastoralist society, the sub-sector has remained untapped and productivities are extremely low. Prevalence of livestock diseases, shortage of feed and their interaction constitute important constraints to livestock production of the agro-pastoralists. There are some common livestock diseases in the Dambal district that directly or indirectly affects the production and productivity of the livestock.

These common livestock diseases are categorized based on causes of the diseases into viral, bacteria, fungi and parasites etc. the public veterinary service facility available to the community has been

very poor both in terms of coverage and quantity/quality. It was hypothesized that existence of animal disease incidences will decrease the livelihood of the agro-pastoralists and it will have positive impact in aggravating poverty and higher the expenditure on veterinary medicines and services will improves the production and productivity of livestock which reduces the poverty level of the households.

The field survey data indicates that the average expenditure made on veterinary medicines and services per TLU of sampled agro-pastoralists was Birr 6.19 with the standard deviation of Birr 17.76. The minimum and maximum used expenditure was birr 0 and birr 115.25, respectively. Relatively speaking, on average non-poor group had higher expenditure made on veterinary medicines and services per TLU Birr 10.19 as compared to poor group Birr 1.04.

Analysis of mean comparison has confirmed the existence of significant mean difference between non-poor and poor sample respondents in their expenditure made on veterinary medicines and services per TLU (t= 3.34, p = 0.001) at less than 1% probability level. The result of correlation analysis shows the negative and significant relation between expenditure use made on veterinary medicines and services per TLU and poverty status and intensity of poverty (r =-0.15,p=0.057)at 5%probabilitylevel (Table8).

Table 6: Relationship between expenditure on use of fertilizer, improved seed, veterinary medicines and services and poverty status

Variables		Poverty Categories		t-values	p-values
Purchasing of fertilizers	Mean	Non-Poor (77)	Poor (57)	3.14	0.000***
	St.dev	12.24	4.2		
Purchasing of improved seed	Mean	3.46	2.14	4.41	0.001***
	St.dev	24.53	12.41		
Expenditure of Vt services	Mean	10.19	1.04	3.34	0.000***
	St.dev	22.83	2.58		

Source: own computation,2017, ***and**, significant at less than1%and5%%probability level respectively.

4.2.2.11. Access to education services

It is a basic social service where by human capital could be developed, which is a necessary resource for livelihood improvement and poverty reduction. The district has school services which range from elementary (including ABE) schools to colleges/university. The access to these services was measured against proximity and utilization. The findings indicate that 65.5% of the households have

sent their school age children to schools while 34.5% did not for various socio-economic problems of their own. This indicates that slight majority of school age children are at school which in the long-run could contribute to poverty reduction. The access to school services between poor and non-poor was seen in terms of the average distance travelled to the nearest school. Proximity to school within the standard of ministry of education was considered as a measurement to access. Accordingly, it was found out that the mean distance travelled to the nearest school is only 5.75 Km. At an average the poor travel 6.65 Km while the non-poor travel 3.9 Km. The maximum distance travelled is 6 Km which can be seen accessible by national standards.

4.2.2.12. Access to health services

The district is providing a range of health services ranging from primary health care to hospital level health services. According to the Ministry of health, village level services are provided through health posts and district level through health centers. The majority of these services in the study area are provided through these facilities. To analyze the contribution of health services towards poverty reduction they are seen from accessibility to the health facilities, and mortality cases faced by households. Access to health services in the study area, which is seen from distance traveled to the nearest health facility indicates that the mean distance traveled is 10.25 Kms. The longest distance traveled is 20 Kms which is for Sandalol and Amadle. The mean distance travelled to get these services indicate that the poor travel at an average10.89Km while it is 9.34 Km for the non-poor.

The occurrence of disease incidence indicates that the incidence of sick person was 45.9% of the poor and 35.33% of the non-poor. The mean person per household who were sick during the study period is also found higher in poor families. Mortality cases among the poor indicate that the poor have lost higher number of family members than the non-poor, the mean being 0.20 and 0.11 respectively which is a statistically significant result at less than 5% probability level.

4.2.2.13. Access to water and sanitation services

Potable pure water coverage of the district is so far low that the access to it is determined by coverage. Quantity of water fetched and proximity to these services was analyzed. The average water usage by the households is 60.89 liters per day which is not sufficient for household use. Moreover, the mean distance traveled to water sources is 8.81 Km. the sources of water are Traditional well, Reservoirs (*birka),*hand dug wells, ponds and rivers.

The access to clean water and the average daily consumption is also crucial for health, sanitation, productivity and hence run out of poverty. It is found out that the poor travel at an average 8.6 Km to

the nearest protected water sources while it is 6.9 Km by non-poor. Both groups have not access to water sources at national standard. However, the daily average water consumption per AE is higher for the non-poor. The mean difference which is statistically significant at 1% indicates the poor consume less which is 11.62 liters/day while it is 16.15 liters for the non-poor. The poor are found to consume below national standards which is 15liters/day/Adult equivalents.

4.2.2.14. Access to communication services

Dambal district has no a well-developed rural infrastructure that interlinks and connects different parts of the district or that creates communication access to the neighboring and adjoining regions/districts. . But this means of transport is inaccessible to most of the agro-pastoral communities for the reason that agro-pastoralists are residing at the remote areas far from kebele centers, where there is farm and grazing land as well as water for their livestock. These roads are serving as the routes to the main market outlets allowing cross border trade of export and imports items for the eastern part of the country at large and Somali region in particular, but not accessible for the majority of the agro-pastoralists. In addition, the Jijiga/Diredawa Cities has Ethiopian airline means of transportation, which is start from Addis to Dire Dawa, jigjiga, Kebridehar and Gode for five/seven days per week, but this means of transportation is very expensive and has limited flights that hinder accessibility of services by agro-pastoralists. Except the above-mentioned outlets there is no other means of transportation that permits movement and communication to facilitate market integration. As a result, people and animal trek long distances to reach social service centers and markets. Until recently, all Kebeles have no telecommunication centers and telephone services. People have to travel up to 20.5 km on average in order to get telephone services. In the agro-pastoralist community, the postal service is totally missing and absent in agro-pastoral community of the district.

4.2.3. Institutional characteristics

The main function of an economic institution is to provide signals that will guide self- interested economic agents/entities to act in the interest of the larger community. The main task of any nation-state is to create institutional arrangements that provide the needed signals to individual economic entities. Markets provide such signals efficiently, so long as they operate with low transaction costs. Non-market mechanisms, such as government agencies and non-governmental organizations, can also provide such signals.

In general, institutions and organizations are important aids to development. They may affect agricultural and rural development in many different ways, including provision of production inputs and services, reduction of transaction costs, enhancement of bargaining power of agro- pastoralist

vis-à-vis those to whom they sell their produce and from whom they buy production inputs and services, influencing investments and savings that expected to reduce the extent of poverty level in the society.

4.2.3.1. Extension contacts

For an agrarian and developing economy like the one in the study area, Extension is expected to play vital role in promoting agricultural production and productivity. The most important source of extension service and information in the study area was provided by government through Development Agents (DAs). Accordingly, extension contact hypothesized to decrease the probability of being poor. As the survey result, the numbers of sample agro- pastoralists who have contact with DAs were 62.67% but the remaining 37.33% did not have contact. From the total sample households who have been visited by DAs, 51.42% were found to be non-poor while the remaining 48.58% were poor.

4.2.3.2. Access to credit services

Credit institutions play a vital role in the livelihood of rural dwellers by providing loans so that poor households boost their economic performance. The available utilized sources of finance in the study area were friends or neighbors (34.69%), relatives (50.38%) and merchants (14.93%). The credit service is rendered both in cash and kind (agricultural inputs). Credit is important to resource-poor agro-pastoralists who cannot finance agricultural inputs to purchase at early stages of technology adoption. Nonetheless, the reality in the ground (in the study area) was that most agricultural inputs such as improved varieties and agricultural implements were delivered subsidized low price by the regional government, research institutes, and NGOs. Thus, agro-pastoralists took credit to solve their immediate food shortage, other family needs and social obligations, not to purchase inputs. Therefore, the more the credit the sample agro-pastoralists took, it shows their being in foods hortage.

4.2.3.3. Distance to market place

Markets play a vital role in rural communities for they are a source for inputs and a place for sale of outputs. If the input-output market is closer, agro-pastoralists can have access to information, reduce cost of production and transaction, can easily purchase improved agricultural inputs, and display their output at fair price with good margin. The district has many small livestock markets at some kebele level and one common (large) livestock market at Shiniile town which was constructed by the Pastoralist Livelihoods Initiative Livestock Marketing (PLI-LM) project which is funded by USAID and implemented by save the children UK.

In the study area, agro-pastoralists used to go a minimum and a maximum of 5 km and 20km from their residence to reach the nearest market center, respectively. On average, they have to travel 8 km to reach the nearest market center to sell their products and/or buy others. Non- poor and poor groups travelled on average 13.89 km and 22.56 km, respectively. Similarly, the mean time required to reach the nearest market center was found to be 160.18minutes.

4.3. Econometric Model Results Determinants of poverty

As specified in the methodology part of this research, the analysis was made using binary logistic regression model. In this section, this model was used to see the relative influence of household demographic, socio-economic, and institutional variables on poverty status. Identification of the descriptive and inference statistics alone is not enough to stimulate policy actions unless the relative influence of each factor is known for priority based intervention. Before discussing about the econometric model results, the model specification and data fitting should be made.

4.3.1. Diagnostics of the econometric model

Before running the model, the data was checked whether heteroscedasticity problems exist or not by using different diagnostic methods. To overcome the heteroscedasticity problems white's General test of heteroscedasticity technique was applied.

4.3.3. Determinants of agro-pastoral household poverty

This section presents and discusses empirical findings of econometric model analysis. Estimates of the parameters of the variables expected to determine the agro-pastoral poverty are displayed in Table 10. The goodness-of-fit was tested by the Log likelihood ratio (LR) test. The result shows the chi-square of 180.14 with 15 df and p-value of zero. This means that $\chi 2$ is statistically significant and the model displays a good fit. The Pseudo R2 of the model is also 82.14%. This verifies that the model has a good fit to the data and explained significant non-zero variations in factors influencing poverty.

Among the total fifteen explanatory variables included in the model, eleven variables were found to be statistically significant in influence poverty status while the remaining four explanatory variables were statistically insignificant on the poverty status of agro-pastoralists in the study area at the conventional level of significance (*i.e.* $0.01< P < 0.1$). Among factors which had significant influence on poverty livestock owned in Tropical livestock unit, Dependency ratio, farm holding size, sex of head of household, and family size, were statistically significant at 1% probability level;

oxen holding, income from sale of milk, off on-farm income, and expenditure made on veterinary medicine and services were statistically significant at 5% probability level; farm income, and expenditure on use of improved seed were significant at 10%probabilitylevel.

Table 7: Maximum likelihood estimates of binary logistic model

Variables	Coefficients Marginal effect	Standard error	P-Value
Sex	0.53	0.05	0.001
Education	-0.08	0.86	0.296
Family size	0.08	0.05	0.001
Age	-0.01	0.08	0.0334
Farm size	-0.03	0.06	0.003
Purchasing of improved seed	-0.01	0.088	0.052
Prob>chi2			0.000
Log likelihood			19.581
PseudoR2			0.8214

Source: Own srvey,2017. Note: ***, **and*significant at 1%, 5%and 10%, respectively

Family size (in AE) : Family size is demographic variable that has strong explanatory power with regards to poverty status analysis at household level. It has affected agro-pastoralists poverty status positively at 1% probability level. The marginal effect of family size indicated that as the number of family members increase by one AE, the poverty the probability of being into poverty increases by 0.08. Thus, poverty of the household increase as the family size increases. This could be because of the pressure that large family size has on consumption than production which leads to resource sharing and depletion at household level.

Number of livestock owned (TLU_AE): The region has potentials for livestock development. Owning livestock was negatively and significantly associated with poverty status at 1% significance level. According to the model result, one TLU_AE increase in livestock holding decreases the probability of poverty status by 0.08.This is obvious that livestock means a backbone for agro-pastoralists livelihood. They are source of food, means of income, social security, means of coping mechanism, means of purchasing power, draft power, etc. More importantly, shock-absorbing ability of agro-pastoralists depends on livestock holding. Thus, those who own more livestock (adjusted in AE) might be non-poor than otherwise .

Oxen holding : As prior theoretical expected, this variable was found to have negative and significant effect on the dependent variable (at 5% probability level). The marginal effect of oxen ownership is-.103showingthat oxen ownership decreases the probability of the poverty status by0.103(increase in one ox ownership leads decrease of the probability falling intopovertyby0.103).This implies that relative to households that have oxen, the level of poverty will

be high for those who have not oxen. Since agro-pastoralists in the study area were not accustomed to manage crops properly; proper land preparation could reduce the yield loss due to weed and by pass it enables to perform land preparation on time, and to produce enough food for the family. Having oxen will easily facilitate the well preparation and ploughing of the land which increases the land production and productivity per cultivated plot of land.

Sex of household head (HHHSEX): Sex of the household head is found to have a significant (at 1% probability) and positively association with poverty status of the household. This implies that female headed households are in a worse off position in escaping out of poverty than the male headed ones. The positive marginal effect of 0.53 indicates that other factors being constant, the probability of poverty status increases for female headed households by a factor of 0.53. The possible explanation is that social position of female in the society is less powerful as compared to the male to access social capitals and command over productive resources.

Income from non-Farm Activities (NON_FARMINC~AE): It was hypothesized that this variable has a significant contribution to household income hence negatively associated with poverty status. The finding indicates that the variable, as expected is negatively and significantly related to poverty status. The significant negative direction of influence with the coefficient -.001 is significant at 10%. Households with non-farm income sources have a better chance of escaping out of poverty and an additional one-birr income from these sources minimize the probability of falling into poverty by a factor of 0.001.

Dependency Ratio (DR): This variable is found to be significant at less than 1% probability level in determining the household poverty. The result shows that the variable is found to have positive impact on the probability of being poor in the study area. This means, the probability that a household being poor increases as the household size increases due to an increase in the number of dependents. The marginal effect of DR 0.84 implies that, ceterisparibus, the probability of falling into poor group increases by a factor of 0.84 as dependency increases by one unit. The possible explanation can be that those households with many dependent family members could be poor because of high dependency burden. This shows that those agro-pastoralist households with large economically on-active members tend to be poorer than those households with economically active household members. Most of the dependency ratio is explained by a large number of children under the age of 15; and due to low life expectancy,the relative number of people overtheageof65is small.

Size of Cultivated Land (HHFrmsize) : Size of cultivated land of the household, which

insignificant at 1% probability level, has negative influence on the probability of agro- pastoralist household's poverty level. It implies that the probability of being non-poor increases with cultivated farm size. This agrees with the hypothesis that agro-pastoralist who have larger farm land holding would be non-poor than those with smaller land size, due to the fact that, larger agro-pastoralists are associated with higher possibility to produce more food. With greater wealth and income which increases availability of capital that could increase the probability of investment in purchase of farm inputs which increases food production and hence ensuring better living status of agro-pastoralist households. The marginal effect of-0.03for the total cultivated farm size implies that other things kept constant, the marginal effect in favor of being poor decreases by a factor of 0.03 as the total cultivated farm size increases by one hectare.

Sale of Milk (MILK _INCOME): Traditionally, milk & milk by-products, meat and sorghum grain constitutes the staple diet of agro-pastoral societies in Somali region. Camel, cattle, sheep and goats milk is consumed by the agro-pastoral community as part of own production consumed at home and agro-pastoralists residing near main villages and towns sell milk to earn income. The econometric model results show that sale of milk has a negative association with poverty of the household and it is significant at a probability level of less than 5%. That is, poverty level of the agro-pastoral households may get reduced if they can derive income from sales of milk. The marginal effect indicated that, other things being constant, the probability of the households to be poor decreases as sales of milk increases by a factor of -0.001. Conversely, this means the probability of the household to be poor diminishes by a factor of 0.001 as the household enhances milk selling.

The above relation shows that access to markets for sale of milk will be important in order to reduce the poverty of the agro-pastoralist households. This indicates that there should be a mechanism to create access to markets to enhance the agro-pastoralists' integration in to the markets.

Expenditure on use of improved seeds (EXP_IMSEED): The use of high yielding varieties can remarkably improve farm output and thereby increase food supply and income of the household. It is an important source of increased productivity that makes a difference in the poverty status of farm households. Those households who use productivity enhancing seeds are less likely to be poor. Therefore, as it was hypothesized that the use of improved seeds has negatively influence poverty status, other things being constant. One Birr expenditure increase in use of improved seed decreases the probability of poverty status by 0.01. This implies that more expenditure on improved seed leads eventually increased the production and productivity from the same plot of land which is expected to enhance the income and earnings of agro-pastoralist by reducing the poverty level.

Expenditure made on veterinary medicines and services (EXP_VET_TLUAE): This variable was continuous and represents the total expenditure on total number of livestock units (TLU) per adult equivalent per year as a consequence of disease occurrences. Almost in all areas of agro-pastoralists inhabited localities it is thought that there is high prevalence of animal diseases with Veterinary services and facilities are very limited. The existence of animal disease incidences decreases number of livestock units' agro-pastoralists and it has positive impact in poverty status. To control this catastrophic event, the agro-pastoralists spend expenditures. Those agro-pastoralists who spent more on vaccinating, treating and taking cares of their livestock are expected to become more wealth through increase number of livestock, income, production and food. As expected the model result shows negative effect on poverty status. One Birr spent on veterinary medicines and services decreases the probability of poverty status by 0.012.

Farm income excluding Milk Income (FARIN_AE): The farm income refers to total annual earnings of the family from sale of agricultural produce per adult equivalent. Total annual farm income earnings from sale of crops and their byproducts, livestock and their byproducts excluding milk income. This was expected to be used to purchase consumable goods (like cloth, sugar, and others), some agricultural inputs, and also to fulfill social financial obligations. Thus, generating higher farm income per adult equivalent might reduce the probability of being poor. It was measured by the amount of Birr obtained from sale of crop produce, livestock and livestock products. As expected, the model result shows (significant at of probability) negative impact on poverty status of the households. One Birr increase infirm income reduces the probability of falling into poverty by 0.001.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusion

Poverty being the primary concern of developing nations and hence Ethiopia, it has got attention both by governments, humanitarian organizations and international agencies. As a multidimensional phenomenon, it requires a holistic and through understanding of its multidimensional facet. The research study was conducted in Four Kebeles (Arabi, Sandalol,Biyobahey and Samkaab) of Dambal district of Somali National Regional State. It focused on agro-pastoral households who are overwhelmingly exposed to multidimensional poverty. The objectives of the study were to determine prevalence, poverty status among agro-pastoral households, and to identify the determinants of poverty at household level.

In measuring poverty, consumption expenditure approach was used. After setting the poverty line by using cost of basic needs method, factors associated with poverty status were analyzed using descriptive statistics and then econometric model. In the analysis of the data, the FGT poverty index (index developed by Foster, Greer, and Thorbecke) was used to attain the first objective which is related to dimensions of agro-pastoral poverty while to capture and identify determinants of poverty in the study area Logistic binary model was employed. Accordingly, out of the total sampled agro-pastoral households, 70 were poor, the remaining 90 were non-poor. The food poverty line was 2,255.59 Birr and the total poverty line was 3,821.74 Birr per adult person per year. The three common poverty indices were found to be 0.4375,0.1345 and 0.0443forhead count, poverty gap and poverty severity, respectively.

Moreover, the results of descriptive statistics showed that sex and educational status of the household head were significantly related to poverty status of the households indicating that being female headed and illiterate is positively correlated with poverty. Besides, poor households have large family size (in AE), high dependency ratio than non-poor households. With regard to the household socio-economic variables, poor households have relatively small number of livestock (in TLU/AE), small size land holding, mostly of them did not have oxen, and have less farm and non-farm income per AE. This signified that livestock holding, oxen ownership, land holding size, annual farm and non-farm income (per AE) were found to have significant and negative relationship with the household poverty. In addition, the poor households have limited access to education, health, water and sanitation, communication services relatively compare to better off households of the study area.

Concerning to institutional factors, extension contact with DAs was found to have significant and negative relation with poverty. In contrary, credit utilization and distance to market centers were found to have a positive and significant relationship with poverty. This confirms that most poor households did not have contact with DAs, reside far from market centers, and do not utilize the available credit sources better than non-poor group even if they incurred it for direct food consumption.

On the other hand, results of the econometric model indicated the relative influence of different variables on household poverty. A total of fifteen explanatory variables were included in the model out of which eleven variables had shown significant relationship with poverty. Accordingly, number of livestock (TLU/AE), oxen ownership, and farm size per AE, non-farm income, farm income excluding milk income, milk income, expenditure on improved seed, and expenditure on veterinary services were found to have negative and significant influence on poverty. On the contrary, family size (in AE), dependency ratio and sex of the household head, had significant and positive relation with poverty status.

Moreover, lack of livestock market centers and poor road infrastructure in the kebeles of Dambal Woreda has hindered livestock trade and protected for pastoralists to sell their livestock at appropriate time and at good prices. The level of education limited drought adaptation strategies of the pastoralists in Dambal Woreda. For example, majority 66 % of the household heads interviewed were illiterate In addition, the number of children who are going to school are very few because boys and girls are taken out of school to help their parents. Absence of credit service is another main constraint that limited the drought adaptation strategies for the pastoralist in the Woreda. 93.3% of the household heads questioned had not access to credit only 6.7 had access to credit which is traditional way of barrowing from friends or relatives. Although, the government is currently promoting micro-finance credit institution as a means of poverty reduction in the country, micro finance credit institution is not yet available among the pastoralist in the woreda. Food aid as a mechanism to minimize the effect of drought is becoming more common in the Woreda but the food aid received is not enough and the pastoralists are expecting to get more than that.

5.2 Recommendations

Large family size was found to be one of the key factors that contribute for high rate of population growth and poverty. Hence, the government and NGOs, particularly operating at the local levels should design sound implementation programs to put the already endorsed and existing population policy in to effect. To this end, a focus on family planning and integrated health service and education provisions must catch the attention of decision-making bodies.

As the result farm size per adult equivalent significantly determine poverty status of households although land holding cannot be increased , thus the already existing policies on increasing productivity per unit land area need to continue in a more strengthened and sustained way

The result of the study also shows that implementation of agricultural extension activities in the area is contributing significantly in alleviating poverty. Thus further expansion of the program both in crop and livestock sectors should deserve due attention by the development actors at all level

The coefficient of livestock holding (in terms of TLU) shows significantly influencing poverty level. Therefore as the livelihood of pastoralist is linked with a high holding of livestock, it is recommended to at least maintain the current size of herd of the holders through adequate pasture land, water, vet service provision and linkage to an improved marketing system. The policy should also focus on animal health services by establishing adequate livestock health infrastructures and training the required manpower. Special attention should be given to improving livestock markets, quarantine stations and holding grounds as well as aqeduate pastureland with water.

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ANNEXES

Annex. A. Questionnaire Distributed to Respondents

This questionnaire is prepared by Abdinasir Shukri. The purpose of the questionnaire is to gather information about the Dimension and determinants of Poverty in agropastural areas of Dambal woreda. The information provided in the interview will remain strictly confidential and will be used only for the academic purpose in the particular fulfillment of Development Masters Degree in Economics.

1. **General Information**

1.1. Household information

1.1 Sex of the household head 1. Male 2. female

1. Age of the head_____

1.2 Marital status of the head 1) married 2) unmarried 3)widowed 4)divorced

1.3 Household size_____

1.4 Number of children or number of households from 0-15 years old

Male_____ Female_____

1.5 Number of households from 16-60 years of old

Male_____ Female_____

1.5.1 Number of households from 61 years old

Male_____ Female_____

1.6 The highest educational level attained by the head of the household

1) Illiterate 2) read &writes

1.7 occupation of household head 1) Livestock rearing, 2) farmer, 3) Merchant/trader, 4) Handicraft 5) No job, 6) others (specify)_____

2. Marketing

2.1. Is there a nearby market place? 1. Yes 2. No 3) to some extent

2.2. Where do you usually obtain the items you want to purchase?

1) From nearby market 2) In my villages market 3) in any other specify _____

3.3. Do you go to distant areas to trade? 1.) Yes 2.)No 3) to some extent

2.4. Where is the nearest market place for selling your livestock and crops? _ _____

2.5. Is this market place serve for selling and buying of all classes of livestock and crop? 1) Yes 2) No 3) to some extent

2.6. If Q2.5 is no, indicate the market place and its distance for different livestock classes? Please, fill in the table.

Classes of livestock	Market place	Distance (in km)	Remark
Camel			
Cattle			
Shoat			
Donkey			

2.7. If Q2.5 is no, indicate the market place and its distance for different crop Please, fill in the table.

Types of crops	Market place	Distance (in km)	Remark
Sorghum			
Wheat			
Maize			
Others			

2.8. Is the price of your animals and crops over years and over seasons of these years showed variations? 1. Yes 2. No 3) to some extent

2.9. If Q2.8Yes why? 1_____
2_____

2.10. When do you sell most of your livestock? _____ Months/seasons

1. Summer (Keremt) June, July august 2. Autumn (Meher) September, October November

3. Winter (Bega) December, January, and February 4. Spring (Belga) March, April, May

2.11. When do you sell most of your harvested crops? _____Months/seasons

1. Summer (Keremt) June, July august 2. Autumn (Meher) September, October November

3. Winter (Bega) December, January, and February 4. Spring (Belga) March, April, May

2.12. Do you get reasonable prices at this particular time both the livestock and crops? 1. Yes 2. No 3) to some extent

2.13. IfQ3.12.is No, what are the reasons? (Multiple answers are possible)

1 Lack of access to potential markets 2. More supply of livestock

3. Lower or no demand for livestock 4. Others (specify) _____

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

1) To settle debts, 2) To pay tax, 3) Social obligations (wedding, funeral, Etc) , 4) To meet family requirements 5) Others (specify) _____

2.15. Do you sell milk and milk by-products? 1. Yes 2. No

2.16. If Q3.15 is yes, which animals' milk and milk by-products you sell? (Multiple answers possible) 1) Cow 2) Camel 3) Goat 4) Sheep

2.17. If Q3.15. Is yes, for what purpose do you sell?
1. _____ , 2 _____ 3_____ , 4. _____

2.18. IfQ3.15 is No, what are the reasons you sell?

1. No access market 2. Used for family consumption only
3. No demand 4. Others (specify) _____

2.19. Do you sell hides and skins? 1. Yes 2. No

2.20. If no, what are the reasons?

1. No access market 2. Used for family consumption only
3. No demand at market 4. It is a taboo 5. Others (specify) _____

2.21. Where do you buy foodstuffs and non-food items (clothes and the like) for your household consumption? 1) Nearby market 2) In my villages market 3) in any other specify _____

2.22. How far is from your residence from this market?

1) 5 - 20 km, 2) 21 - 40 km, 3) 41 - 60 km, 4) 61 - 100 kms 5) Above 100 kms

2.23. What are the basic sources of market price information? Mention.

1. Radio 2. Merchants/Traders, **3**. Development Agents

4. Friends /relatives/neighbors’ 5. Others (specify) _____

3. Income

3.1. What are the main sources of your income? (Multiple answers possible)

1) Sale of livestock 2) Sale of harvested crops 3) Sale of livestock products and by-products

4) Others (specify) _____

3.2. How much is your household farm income? (Husband) ----------

3.3. Do you engage in rural non- farm activities? 1. Yes 2. No

3.4 If your response for Q4.3 is yes, in what kind of small scale business activities you are engaging? 1. Petty trade 2. Hand craft 3. Cattle trading 4. others (mention)_____

3.5 If your response for Q4.3is No, why you didn’t participate?

1. I lack money to begin my business 2. I don’t have know-how to run business 3.others_____

3.7 Sales of milk 1) yes 2) no

3.6. What was your annual income from the animals you have for the last year?

Description of activities	Annual income (in Birr)	Remark
Sales of animals		
Sales of milk		
Sales of skin & hides		
Others		

3.7 Do you have any other sources income (from other activities) apart from livestock and crops harvested

1. Yes 2.No 3) to some extent

3.8 If Q4.7.is yes, indicates the annual income for the last one year.

Description of activities	Annual income (in Birr)	Remark
Informal trade/ Contraband		
Sales of fire wood/ charcoal		
Rent of pack animals		
Sale of labor		

Remittances		
Others		

4. Consumption expenditure

4.1. What type of food item is your family mostly used to eat? (Multiple answers possible)

1. Sorghum 2. Rice ,3) Milk , 4) Sugar, 5) Pasta 6. Others (specify) _____

4.2. From Q5.1 which one is your staple food? _____

4.3. Do you tell me the consumption of each of the food items in your family for the last 12 months? (Indicate the quantity for and value for one year period)

Food items	Consumption by household			
	Unit	Quantity	Value (Birr)	Remark
Sorghum	Kg			
Rice	Kg			
Sugar	Kg			
Pasta	Kg			
Wheat	Kg			
Maize	Kg			
Salt	Kg			
Meat	Kg			
Milk	Littre			
Others (specify)				

4. 4. How many times you used to eat per day in most of the year's time?

1) Once 2) Twice 3) Three times 4) As obtained 5) More than 3 times

4.5. If the answer for Q. 5.4 is number 1 or 2, what is the reason? (Multiple answers is possible)

1. Lack of enough food

2 no enough water to cook 3. No time to cook 4. it is the culture of the society

4.6. From where do you get food for your family?

1) Own produce 2) Purchase 3) Borrow from relatives/neighbors

4) Food aid 5) Gift /share from relatives/ clans 6.)Others (specify) _____

4.7 .What were the quantity and type of food you produced or got from livestock and the farm you have for household consumption for the last one year 2002/2003

Type of food items	Unit	Quantity2003/4	Remark
Milk from camels	Littre		
Milk from cows	Littre		
Milk from shoats	Littre		
Butter	Littre		
Skin and hides	No		
Meat	Kg		
Sorghum	Kg		
Wheat	Kg		
Maize	Kg		
Others			

4.8. What is your family's average consumption of milk per day?

1)1 litre, 2) 2 litres, 3) 3 litres, 4) 4 litres, 5) 5 litres 6) 6 litres and above 7) Do not know

4. 9. What were the quantity and type of food you purchased from market during the year 2002/3 for the household consumption?

Type of food items	Unit	July'03 - June 04		Remark
		QTY	Value in birr	
Sorghum	Kg			
Wheat	Kg			
Maize	Kg			
Suger	Kg			
Salt	Kg			
Oil	Littre			
Tea leaf	Kg			
Spices	Various			
Others				

4.10. Do you receive food aid? 1 yes 2 no 3) to some extent

How much food aid _____in Birr

4.11. If Q5.10 is yes what is the quantity and type of food you received through food aid from various sources during the year 2002/3?

Type of food items	Unit	Quantity	Sources	Remark
Wheat	Kg			
Maize	Kg			
Sorghum	Kg			
CSB	Kg			
Edible oil	Littre			
Others				

4.12. Indicate the amount of expenditures for your family on various food and non-food items during the year 2002/3?

Items	Annual expenditure (in Birr)	Remark
Food		
Clothing		
Medical/ health care		
School fee		
Chat and tobacco		
Religious contributions		
Purchase of animals		
Kerosene (lamp fuel)		
Veterinary services		
Social obligations (marriage, etc)		
House utensils		
Transport cost		
Others (miscellaneous)		

4.13.Did your income from sale of animals, animal products or the farm fairly cover the above Expenses? 1) Yes 2) No 3) to some extent

4.14. If Q5.12 No, where did you cover the excess? (From where did he get money for additional expenses?)

1. Borrowing 2.Through aid 3. Through local relative assistance 4.Throgh Diaspora relative assistance 5.Pegging 6. Charity assistance

5. Agriculture

5.1. Do you owned land? 1) Yes 2) No

5.2. If your response for Q6.1 is yes, specicify your land holding size in hectare or "Qodi" ----------

5.3.If you specified the size of the land, how much hectare (Qodi) of land is used for cash crops and food crops? 1) Cash crop----------ha(qodi) 2) food crop----------ha(qodi)

5.4.Have you got an agricultural extension services? 1) yes 2) No

5.5.If your response for Q6.4 is yes, what are the services that are getting ?(multiple answers is possible) 1) fertilizer 2) improved seeds 3) training 5) specify others if any_____

5.6.If Q5.4 is yes you use the agricultural extension services of one or a combination of them, would you compare the agricultural output of the "before" and "after" the services usage?

1) Before not using the agricultural extension services, on average---------- Qt was produced from ----------ha(Qodi) per yea
2)) After using the services ----------Qt is producing from ----------ha (Qodi) in average per year.

5.7.If your response for Q5.4. Is No, what is the reason?

1) Lack of awareness 2) lack of accessibility due to discrimination 3) since it has no significant difference from traditional farming system in terms of output 4) the cost of inputs is high 5) others---------- (mention) ----------

6. livestock Resource and Management

6.1. Which classes of livestock do you own? Please, fill the number and ownership sources in the following table

Classes of livestock	Number	Ownership source

		Parent	Purchased	Gift	others
Camel					
Cattle					
Goat					
Sheep					
Donkey					
Others					

6.2. For what purpose you use livestock?

Classes of livestock	Reasons for keeping							
	Milk	Meat	Prestige	Income	Transportation	breeding	Riding	others
Camel								
Cattle								
Goat								
Sheep								
Donkey								
Others								

6.3.What is the herd structure of the livestock classes you have? Fill in the following table with respect to each class of livestock

	Cattle	Camel	Sheep	Goat
Number of mothers				
Number of bulls				
Number of heifers				
Number of steers				
Calves				

6.4. Why you keep such herd structure?

1. _____ 2. _____

3. _____ 4. _____

6.5. Have you made any changes in your herd compositions?

1. Yes 2. No

6.6. If Q 7.5 is yes, what is the reason?

1. _____ 2. _____
3. _____ 4. _____

6.7. If Q 7.5 is yes, do any of these changes you made or occurred have any effect on your life or livelihood?

1. Yes 2. No

6.8. If Q 7.7 is yes, what are the changes in your life?

1. Increased income 2. Satisfaction 3. _____
4. _____ 5. _____

7. Animal Health Situation

7.1. Do you get veterinary services for your animals?

1) Yes 2) Sometimes 3) No

7.2. What animal health facilities are found in you're in this area?

Facilities	Location	Distance (in Km)
Crush		
Dipping bath		
Health post		
Vet clinic		

7.3. If Q 8.1 is No, where do you take animals when they get sick?

1. To traditional healer 2. Give medicinal plants 3. Buy vet drugs from where it is available 4. Take to nowhere& pray for it 5. Slaughter and eat 6.Others (specify) _____

7.4.If you treat with drugs where do you get or buy vet drugs?_____

7.5.What services are provided by the vet facilities in your area?

1. Vaccination 2. Treatment 3. Both, 4. Nothing

7.6.Do your livestock have got annual vaccination in the last 12 months?

1. Yes 2. No

7.7. If Q 8.5 is yes, who was conducting the vaccination? _____

7.8.If Q 7.6 is No, how long has it been since annual vaccination was conducted?

1. One year 2. Two year 3. Three years 4. Above Three years 5. Do not remember 6. Never been vaccinated

7.9.Have you lost livestock as a result of diseases during the last 2 years? Please indicate in the table.

Classes of Livestock	Number died	Disease type	Remark
Camel			
Cattle			
Shoat			
Donkey			
Others			

7.10. What are the major killer animal diseases in your area?

1. _____ 2. _____ 3. _____

4. _____ 5. _____ 6. _____

7.11. Do you have any coping mechanism for an outbreak of animal disease?

1. Yes 2. No

7.12. If yes, mention the methods _____, _____,

8. Human Health, Water and Sanitation

8.1. Is there human health facilities in your community? 1. Yes 2. No

8.2. If Q 9.1 is yes How far do you travel to get the health services? _____Km

8.3. If Q 9.1 is yes what kinds of health facilities are available in your community?

1. Hospital 2. Health center 3. Clinic, 4. Health post

8.4. How do you travel to health facility in cases of emergency or medical service is needed?

1. On foot 2. By animal 3. By bus 4. Other, specify

8.5. What is the permanent source of drinking water in your village during dry seasons? (Multiple answers possible)

1. Ela (traditional well) 2. Chirosh (aquifers in the sands of riverbeds), 3) Hand dug wells 4. Deep wells / bore holes (motorized) 5. Ponds 6. Springs 7. Tapped water 8. Water tracks 9 others _____

8.6. How far you travel to fetch water _____ Km.

8.7. Who is the owner of the water sources?

1) Private 2) Group, 3) Traditional leaders 4) Others (specify)_____

8.8. It is far, what is the system of transportation?

1) Donkey 2) Camel 3) Human back 4) Other means (specify)

9. Access to Services

9.1 How far do you travel to get to the nearest school in your kebele? ___ Km

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

9.3. How far do you travel to get the services of all weather roads? _____ Km

9.4. How far do you travel to get the services of telephone? _____km

9.5. How far do you travel to get the services of post office? _____km

10. Household assets

10.1. Do you have your own house? 1. Yes 2. No

10.2. If yes, what type of house?

1. Thatched roofed 2. Plastic roofed hut 3. Soil roofed house 4. Iron sheet roofed house 5. Others (specify)

10.3. If yes, is your house permanent? 1. Yes 2. No

11.1 What you understand poverty?

1_____ _____-
2_____
3_____
4_____-
5_____-

11.2 What challenge you face to reduce poverty in this area?

1_____-
2_____
3_____
4_____-
5_____-

11.3 For Q 11.2 what do you think is the solution to pass these challenge?
1_____-
2_____
3_____
4_____-
5_____-

11.4. Please would you indicate what you would like to have but that you do not have?
1. _____ 2. _____
3. _____ 4. _____

11.5. In your opinion, what should be done in order to improve the livelihood of this agro pastoralist community?
1. _____ 2. _____
3. _____ _ 4. _____

Thank you…….

For office interview

1 is there poverty reduction plan 1) yes 2) no

2 if yes are there any collaborative NGOs in poverty reduction plan?
1) Yes 2) no

3 what are problems exist in these community? (Priories) give 1) very low problem 2). Low problem 3) medium problem 4) high problem 5) very high problem

a) Water _____
b) Health _____
c) Infrastructure _____
Feader roads _____

Electricity _____
Communication _____

d) Education _____
e) Market _____
f) Clan conflict _____

4. What you determine poverty in this area?

1_____
2_____-_____
3_____-
4_____
5_____

5 do you know poverty line in Dambal woreda ?
1) Yes 2) no
If yes what is the poverty line _____

6. What are the solutions that you could reduce poverty in this area?
1_____
2_____-_____
3_____-
4_____
5_____