Sheep and Goat Fattening Practice and Marketing System in Anlemoworeda, Hadiya Zone, S/N/N/P/R/S, Ethiopia

By Deginet Hailemeskel & Abiy Defar

Wachemo University Department of Animal Sciences

Abstract- This Research was Conducted in S/N/N/P/R/S; Hadiya Zone; Analemo Woreda; on Title of Sheep and Goat Fattening Practice and Marketing System in 2011 E.C. The Objective of the Study was Assessing Sheep and Goat Fattening Practice and Marketing System of in the Study Area. The Kebeles of the Study Area were Purposively Selected Based on the Accessibility, Sheep and Goat Fattening Practice, and from These Kebeles Respondents were Selected by Systematic Random Method. In this Study Both Primary and Secondary Data; Both Qualitative and Quantitative Data were Collected and Adequate Information about Sheep and Goat Fattening and Marketing System by using Structured and Semi-Structured Questionnaire, Interview, and through Direct Observation was Collected and Finally The Data was Analyzed by using Statistical Package for Social Science (Spss Version. 22) Software and Microsoft Excel Program Prior to Analysis and then by using Descriptive Statistics Such as Table, Number, Graph, Figure, and Others.

Keywords: fattening practice, marketing system, sheep and goat.

GJSFR-D Classification: FOR Code: 070799

SHEEPANDGOATFATTENINGPRACTICEANDMARKETINGSYSTEMINANLEMOWOREDAHADIYAZONESNNPRSETHIOPIA

Strictly as per the compliance and regulations of:

Sheep and Goat Fattening Practice and Marketing System in Anlemoworeda, Hadiya Zone, S/N/N/P/R/S, Ethiopia

Deginet Hailemeskel [α] & Abiy Defar [σ]

Abstract- This Research Was Conducted In S/N/N/P/R/S; Hadiya Zone; Analemo Woreda; On Title Of Sheep And Goat Fattening Practice And Marketing System In 2011 E.C. The Objective Of The Study Was Assessing Sheep And Goat Fattening Practice And Marketing System Of In The Study Area. The Kebeles Of The Study Area Were Purposively Selected Based On The Accessibility, Sheep And Goat Fattening Practice, And From These Kebeles Respondents Were Selected By Systematic Random Method. In This Study Both Primary And Secondary Data; Both Qualitative And Quantitative Data Were Collected And Adequate Information About Sheep And Goat Fattening And Marketing System By Using Structured And Semi-Structured Questionnaire, Interview, And Through Direct Observation Was Collected And Finally The Data Was Analyzed By Using Statistical Package For Social Science (Spss Version. 22) Software And Microsoft Excel Program Prior To Analysis And Then By Using Descriptive Statistics Such As Table, Number, Graph, Figure, And Others.The Sheep And Goat Fattening Practice In The Study Area Assessed The General Husbandry Issues Such As, Major Feed Resources, Management Practice, Major Constraints And Marketing System. In The Study Area The Most Fattening System Were Traditional Especially In The Chingo Kebele This Was Due To Most Of Households Are Illiterate And They Have No Awareness For Modern Fattening System In This Kebele. The Finishing Of Shoat Was Described As Within The Range Of 3-6 Months With The Percentage Of Three Months 40%, Four Months 33.33%, Five Months 22.22%, And Six Months 4.44%. The Marketing Systems In The Study Area Were From Producer-Consumers And Producer-Local Traders-Consumers.Generally, In The Study Area The Sheep And Goat Fatteners Were Lead Traditional Shoat Fattening Practice And They Use Different Activities To Increase Their Profile By Utilizing Locally Available Feed Resources Especially Khat Residue. The Marketing System Of Sheep And Goat Were Predominantly Characterized As Producer-Consumer And Followed By Producer-Local Trader-Consumer In Some Extent. Farmers Should Enhance Availability Of Feed By Using Different Mechanism. This Can Be Done, As Farmers Should Practice Supplementation Of Available Fed And Production Of Green Feed Even If The Distribution Of The Land Is Too Small. Sheep And Goat Producers Should Have Access To Market Information So As To Adjust Their Marketing Activities.

Keywords: fattening practice, marketing system, sheep and goat.

Author α σ: (Msc) principal Author, wachemo university Department of Animal Sciences. e-mail: degu.ab2020@gmail.com

I. Introduction

a) Background Information

Ethiopia has diverse agro-ecological zones suitable for livestock production. Agricultural scenario in Ethiopia is characterized by the pastoralism in low land area, and mixed farming system in mid and highland areas (CSA, 2012). Ethiopia is a home for many livestock species and suitable for livestock production and believed to have the largest livestock population in Africa (Tilahun and Schnidt 2012). The economic contribution of the livestock subsector in Ethiopia is about 12% of the total and 33% of agricultural gross domestic product (GDP) and provides livelihood for 65% of the population (Ayele *etal.,* 2003). An estimate indicates that the country is a home for about 54 million cattle, 25.5 million sheep and 24.06 million goats. From this 99.8% of the sheep and nearly all goats' population of the country are local breeds (CSA, 2013).

Sheep and goats are owned by smallholder farmers as an integral part of the livestock subsector and contribute to both subsistence and cash income generation (Ehuis *et al*., 2000). Sheep and goat are rear in various agro-ecological condition of the country. The suitability of an area for either animal or crop production, and the type of animal or crop to be produced depends on the agro-ecological conditions of the area(Tolera and Abebe, 2007).

Sheep and goat fattening in Ethiopia has been recognized as a potential profitable activity that enhances the income of smallholder farmers (Pasha, 2006). In spite of the large population of sheep and goat, and the role of sheep and goat both to the livelihood of resource-poor farmers and the national economy at large; the current level of on-farm productivity in the smallholder production systems is low; with off-take rate 33% and average lamb carcass weight of 10 kg (EPA, 2002).

Different research report presents the characteristics of the prevailing sheep and goat fattening activities in Ethiopia as described by stakeholders across various regions, the challenges likely to slow productivity and the prospects for improving sustained productivity (Getachew and Jane, 2014).

57

The total annual meat production (in %) are cattle (63%), sheep (25%) and goats (12%).At the national level, sheep and goat account for about 90% of the live animal/meat and92% of skin and hide export trade value. Sheep and goats represent an importantcomponent of the farming system by providing about 12% of the value of livestockproducts consumed and 48% of the cash income generated at the farm level (FAO,2004).

It has been long recognized that the limitation to increase sheep and goat development (increasing fattening practices and their productivity) in Ethiopia are multi-dimensional. Constraints can be grouped into socio-economic limitation (infrastructure: Ethiopia has one of the lowest density of roads of any country, those forcing shoat in almost all cases to trek long distance; policy issues: sheep and goat fattening and natural resources management are influenced by absence of sheep and goat fattening policy, pricing policy, community organization and participation), and technical limitation: feed quantity and quality, breeds of sheep and goat, and pests and disease (Alemayehu, 2002).

As our country, there is still a gap of information available on sheep and goat fattening practices in Anlemo woreda. Therefore, to plan and develop improved sheep and goat fattening practices in the sub-sector, it is very important to investigate the existing sheep and goat fattening practices and marketing systems.

b) Statement of the Problem

Although Ethiopia has a high population of sheep and goat but their productivity for fattening is low due to lack of knowledge for mutton shoat selection, poor management system and poor marketing system and other limiting factors of shoat fattening and marketing. There were no adequate or documented information about sheep and goat fattening and marketing techniques in Anlemo woreda. In addition to this, poor linkages have been observed among different organizations involved with sheep and goat. Therefore, it is an urgent need to investigate various management factors (feeding, watering, housing, health care) related to fattening, and marketing techniques of sheep and goat in Anlemo woreda. As a result, this title was selected as a topic of study to justify this factors that concerned with shoat fattening practice and marketing system based on the following objectives.

c) Objective of the Study

i. General objective
  ➢ To assess sheep and goat fattening practice and marketing system in Anlemo woreda

ii. Specific objective
  ➢ To identify sheep and goat fattening practice and related activities
  ➢ To identify marketing system of sheep and goat and its structures and performance
  ➢ To identify problems related with sheep and goat fattening and marketing

d) Research Question
  a. How farmers practice sheep and goat fattening program in their farm land?
  b. What looks like the marketing system of sheep and goat?
  c. What problems are facing the system of sheep and goat fattening and marketing?

e) Significance of the Study

The significance of this study was to address some elements of the system in adoption process of the small ruminants' fattening and marketing in Anlemo woreda. The information obtained in the area has paramount significance to evaluate the national proposed small ruminants' fattening practice and marketing system in Ethiopia in general and in study area in particular.

Hence this helps Anlemo woreda as baseline information for its future fattening practices and knowing local available market for small ruminant fatteners especially for small holder farmers. As a baseline this work also provides directions for further research extensions, development schemes for formulating appropriate policy for managing sheep and goat fattening and marketing systems, for academic purposes and gives information for farmer who employed in small ruminants fattening in private.

f) Scope and Limitation of the Study

The study has identified the potential and the extent of utilization of existing sheep and goat for fattening and marketing system in the study area. This study was also be limited to one woreda, which is Anlemo especially Fonko town in Hadiya zone of S/N/N/P/R/S. This was mainly because of limited financial access and time scarcity to undertake the study on a wider scale; although, the study was limited in both sample size and area coverage.

II. Literature Review

Small ruminants are playing an important role in the economy of farmers in Ethiopia. In Ethiopia, sheep and goats are accountable for about 25% of the domestic meat consumption and 58% of the national annual hide and skin production. However attempts to improve their performance under the prevailing condition must take into consideration in order to increase their specific purpose in the production and fattening system and their potential under varying management levels (Adane and Girma, 2008). Therefore, to help our study as a guideline we want to refer literatures related with production, fattening and marketing of shoat in this portion.

a) Sheep and Goat Production System in Ethiopia

Mode of livestock production in Ethiopia is broadly classified into pastoral, agro-pastoral and mixed crop-livestock, peri-urban and urban production systems (Solomon *et al.,* 2010). There are a number of basic classification criteria for sheep and goat production systems in Ethiopia. Its usual to classify production systems as intensive, semi-intensive, extensive based on the develop inputs and intensify of production and based on agro-ecology, length of growth period and relation to land and type of commodity to be produced , there are five sheep and goat production systems, the three are major production systems such as high land sheep barley system, mixed crop livestock and pastoral and agro-pastoral production systems; whereas the minor production system are ranching and urban and per-urban production systems (Solomon and Girma, 2008).

b) Constraints of Sheep and Goat Production

Adane and Girma (2008) reported that sheep and goats production and productivity in Ethiopia are constrained by many factors. The major ones are; scarcity of feed, lack of infrastructure (transport facility), high mortality rates, inadequate veterinary coverage, long marketing channels and lack of market information, lower product quality (live animals and meat) for export market penetration, inadequate provision of credit services and low average reproductive rates (55 lambs and 56 kids born per 100 mature females per year in the central highlands).

c) Breed of Sheep and Goat

Indigenous sheep and goat genetic resources have developed specific adaptations to survive and produce under adverse local environmental conditions and to perform better under low input system (IBC, 2004; Markos, 2006).

There are about 14 traditionally recognized sheep populations in Ethiopia. These populations are called sheep typesin some literatures. They are also designated as breeds according to some definitions of 'breed'. These are *Menz*, *Sekota*, *Semen*, *Tukur*, *Wollo*, *Farta*, *Washera*, *Adilo*, *Arsi-Bale*, *Horro*, *Bonga*, BHS, *Afar* and *Gumz*, (Solomon, 2009). According to earlier characterization of work Ethiopian indigenous goats have been classified in to different classes. These includes *Afar*, *Abergelle*, *Arsi bale*, *Begayit*, Central highland, *Hararghe* Highland, *Keffa*, *Somali*, Western highland, Western lowland and *Woyto-Guji* goats (Tesfsye, 2009).

d) Sheep and Goat Fattening System

Sheep and goat fattening is a common practice in different parts of the country, though the degree of fattening and resource base differs markedly. Less than 39.0% of the farmers owning small ruminants practice some form of fattening before marketing and majority of the farmers sale their animals early before attaining optimum market weight (Solomon *et al.*, 2005; Getahun, 2008). Sheep and goat fattening practice should consider the general husbandry practice issues like major feed resources, management practice, records and marketing system (Shitahun, 2009).

i. *Traditional fattening systems*

This system generally depends on grazing natural or planted pastures with variable degrees of supplementation. Animals require a long period of time to attain market weight and condition. It is also associated with huge fluctuations in the weights and conditions of the animals depending on feed availability. This system can be improved to supply animals of acceptable condition to slaughter houses for ultimate export. The conditioned animals may also go into a finishing operation targeted to supply the local market (Alemu, n.d).

ii. *Agro-industrial by product based fattening*

Fattening of sheep and goat based on agro-industrial by products is practiced in different areas of the country. About 2740, 2296 and 2493 tons of oil seed cakes were produced in the year 2003/4, 2004/5 and 2005/6, respectively in Ethiopia (Adugna, 2008). Though the contribution to the total animal feed resource is limited (1.45%), agro-industrial by-products are one of the important feed resources available in Ethiopia (CSA, 2003).

Agro-industrial byproducts produced in Ethiopia include; by-products from flour milling, oil processing, sugar factory and brewery by-products. These products are mainly used for dairy and fattening animals (Alemayehu, 2004). Oil seed meals are produced from a variety of crops that have seeds that are high in oil (Kellems and Church, 2002). Oil seed cakes are rich in protein and most are valuable foods for animals (Mc Donald *et al*., 2002).

e) Management Practice and Risks Associated with Sheep and Goat Fattening

The fattening program should be started after the necessary feed supplies are secured. Underfeeding and incorrect timing are the most common causes of failures in fattening activities. The objective in a fattening operation is to convert as much of the feed to body tissue as possible. It is, thus, necessary to minimize the movement of animals during the fattening period. The success of a finishing operation depends on the first two weeks after arrival of animals. They may have traveled long distances and will be stressed, hungry, and thirsty. They are generally gathered, sorted; often stand for a long time without feed and water. It is recommended that the following guidelines be followed under such circumstances: Rest the animals for a few hours in a dry, clean, sheltered area with access to fresh water after arrival. Then offer grass hay or mixed grass-legume hay.

Hand feed salt during the first two weeks; then provide trace mineral salt in a separate feeder. Afterwards, these supplements can be mixed in the complete diet, but salt should continue to be provided *ad libitum* (free choice). Animals should have feed available at all times including evenings. If there is no feed left in the morning, feed supply should be increased for the following day (Alemu, n.d).

i. *Housing system and hygiene*

Housing for fattening sheep and goat varies from fattener to fattener. In Keffa zone, sheep and goat houses are attached to the side of the main house. Farmers in Basona Worena district of North Shewa zone have separate house for sheep and goat being fattened. Most of the peri-urban and urban sheep fatteners use a separate house for fattening sheep. Cooperative fatteners use separate housing for sheep and goat. Most housing is unclean, poorly ventilated; lacks proper floor bedding and stocking rates are sometimes too high. This is due to lack of awareness and lack of understanding on the space requirement of fattening sheep and goats by most producers (Animut and Jane, 2014).

ii. *Feed resource and feeding practice*

Feeds can be classified according to some of their general properties. The classification used hears is typical of that used in the feed industry. Feedstuffs can be classified as either concentrates or roughages (Birhanu *et al.,* 2009).The availability of feed resource in the highlands of Ethiopia depends on the mode and intensity of crop production as well as population pressure. The major basal feed in the highlands of Ethiopia are a natural pasture, crop residue and stubble grazing, and their contribution to the total feed resource vary from area to area based on cropping intensity (Seyoum *etal.*, 2001).

a. *Roughages*

A wide variety of roughages can be fed to growing and finishing lambs. The amount of roughage to feed depends on the objective of feeding the roughage. Roughages are bulky feeds that contains relatively large amount of poorly digestible materials. It contains more than 18% CF. They can be of two categories, namely dry and succulent roughages based up on their moisture content. Succulent feeds usually contain more than 75% moisture and it include pasture, cultivate fodder crops, grasses, tree leaves and silage available for fattening animals. Dry roughages contain only 10-15 moisture includes hay and crop residues (Ablack and Smith, 2003).

b. *Concentrate*

Concentrates have low fiber content and a high content of either protein or energy or both. Cereal grains for example are considered as primary energy sources but also contribute a significant amount of protein. Energy source concentrates: are includes cereal grain (corn, sorghum and buck wheat), grain milling by-products (wheat bran and corn gluten meal), root and tubers (cassava and potatoes), food processing by-products (molasses, bakery waste, citrus pulp distiller and brewers by-products), industrial by-products such as wood molasses. Protein source concentrates: Protein supplements generally are products with more than 20% crude protein. Some of these feeds are; oil seed meals (soybean, cottonseed, rapeseed, canola, linseed, peanut, sunflower and sunflower meals), grain legumes (beans, peens and lupines) and animal protein (meat meal, tank ages, fishmeal's and whey (Birhanu *et al.,* 2009).

c. *Watering practice*

The water intake of fattening animals depends on environmental temperature, the temperature of drinking water itself, the activity of fattening animals, the moisture content of the feed and the amount of feeds feed per day. Most fatteners give waters for fattening animals twice a day and once a day respectively. These are due to the shortage of water for small scale fatteners (Nelson, 2000).

iii. *Healthcare practice*

An important environmental challenges as a party of fattening animal health program is the control of internal and external parasites. In general any problems associated with animal health can largely prevented if proper management practices are followed. Therefore, the veterinarian involved in sheep and goat health management program should have the necessary depth of knowledge about the elements that must be addressed in crucial on animal health control (Edwards, 1998).

Prevention of disease is a key aspect of minimizing health risks in your herd. Strict sanitation is necessary to prevent disease outbreaks. Although sanitation requires time and money, it is time and money well spent since prevention of the diseases is more economical than treatment. The housing for small ruminants, feed and water must be kept fresh and sanitary (Heidi and Chelsey, 2010).

Internal parasites are one of the biggest disease issues for small ruminants. Parasites can not only kill both young and old sheep and goats, but also contribute to poor growth rates, an unthrifty appearance, coughing, diarrhea and other digestive problems. Depending on your operation (grazing density, past history of dewormer use, other health issues) a deworming schedule should be developed with help from a consulting veterinarian. Some deworming products may have poor efficacy against some types of internal parasites that affect small ruminants. Your veterinarian can assist you with conducting fecal examinations for worm eggs, and help you make critical decisions when selecting a dewormer that will be effective for your operation (Heidi and Chelsey, 2010).

iv. *Fattening cycle of sheep and goat*

For most rural and peri-urban and urban sheep and goat fatteners, the fattening activities are seasonal. This is mainly associated with market demand seasons for fattened sheep and goat and to a smaller extent due to feed availability for fattening. Informants from regional research offices and Bureau of Agriculture or Livestock Development Agency of the Amhara region, Wollega, Keffa, and Woliata Zones noted that 2 to 3 fattening cycles to be commonly used by rural farmers. The dominantly 2 fattening cycles practiced by majority of rural, peri-urban and urban fatteners in the country target two peak demand seasons for fattened sheep and goat that are highly profitable (Animut and Jane, 2014).

The peak demand is during the Ethiopian Easter (April) and New Year (September). The third fattening cycle practiced by some producers considers Ethiopian Christmas (January). It has been noted by many fatteners that demand for fattened sheep and goat is highest in Easter followed by New Year and then by Christmas. In Muslim dominated areas like Afar, ED Al Adeha (*Arefa*), a religious ceremony, is the high peak demand time for fattened sheep and goat for the live animal exporters. The length of sheep and goat fattening varies depending primarily on the availability of sufficient and quality feed for fattening. Generally the length of the fattening period is dictated by feed availability and partly on market. If there is good management, sheep and goat takes three rounds of fattening in a year (90 days are required for each round). Considering a minimum fattening length of 2 months, a maximum of 4-5 annual fattening cycles can be achieved (Animut and Jane, 2014).

v. *Risks associated with sheep and goat fattening*

The main risk associated with sheep and goat fattening activity is the loss of animals. This could be due to disease, predators or theft. Price fluctuation is another risk associated with sheep and goat fattening. To minimize risks associated with disease there is a need to enhance the service delivery system and ensure availability of enough health services. Strategic deforming and proper vaccination must be developed and in place. Risks associated with predators and theft can be minimized using proper housing (Animut and Jane, 2014).

f) *Marketing System and Constraints*

In Ethiopia, marketing of livestock and livestock products is underdeveloped. The major problems are the traditional management systems which are not market oriented, underdeveloped marketing systems and poor infrastructure, poor financial facility, and presence of cross-border trade. Despite the above major problems, there is an increase in demand of Ethiopian small ruminants both for local and export markets. However, there has been fluctuating demand of Ethiopian small-ruminants in importing countries due to disease, sanitary and phyto-sanitary reasons (Azage *et al.,* 2006; Berhanu *et al.,* 2006).

In Ethiopia the marketing process in general follows a three-step system with primary, intermediate and terminal markets through which marketable animal and animal products pass from producers to small traders and on to large traders or butchers. However, most producers sale their stock and livestock products at local markets directly or consumers or small traders at relatively low price (Alemayehu, 2003).

An important aspect of production and its response to demand and supply is knowledge of markets and marketing systems. Marketing of sheep and goats is characterized by strong seasonality and subject to fluctuation. Demand and price increases during festival periods. Factors affecting market supply, as measured by the number offered, include high demand during religious festivals, lambing season, quality and quantity of grazing, as well as cash needs for crop inputs and, later, for food purchase before harvesting (EARO, 2000).

i. *Structure and performance of small ruminant markets*

Animals are sold on a per-head basis and price agreement reached by a long one-on-one bargaining between a seller and a buyer. Under such circumstances, prices paid will reflect buyers' preference for various animal characteristics (weight, sex, age, condition, breed, and color), the purpose of animals purchased (for resale, slaughter, fattening or reproduction), the season of the year (occurrence of religious and cultural festivals) and the bargaining skills of buyers and sellers (Ehui *et al.,* 2000).

According to Ayele *et al.,* (2003), the livestock marketing structure of Ethiopia follows a four-tier system. The main actors of the 1st tier are local farmers and rural traders/rural assemblers who transact at farm level. Those small traders from different corners bring their animals to the local market (2nd tier). Traders/wholesalers purchase a few large animals or a fairly large number of small animals for selling to the secondary markets. In the secondary market (3rd tier), both smaller and larger traders operate and traders (wholesalers or retailers) and butchers from terminal markets come to buy animals. In the terminal markets (4th tier), big traders and butcher (wholesalers or retailers) transact larger number of mainly slaughter type animals. Consumers get meat through purchase of the animals from terminal markets and slaughters at home or they may get meat from markets or they may access from butchers who process the meat via abattoirs. Marketing of sheep and goats is characterized by strong seasonality and subject to fluctuation. Demand and

price increases during festival periods. Factors affecting market supply, as measured by the number offered, include high demand during religious festivals, lambing season, quality and quantity of grazing, as well as cash needs for crop inputs and, later, for food purchase before harvesting (EARO, 2000).

ii. Marketing constraints

Improving marketing success of livestock producers provides incentives to adopt technological interventions that improve livestock productivity, which in turn improves marketing success. Access to local market is the most important economic determinant to adopt technologies (Zelalem 2007) and choice of fattening enterprises. Market locations in primary and secondary markets are usually not fenced; there are no permanent animal routes and no feed and watering infrastructures. Yet, buyers and sellers are subjected to various service charges by the local authorities as well as other bodies (Ayele et al. 2003). Nearly in all parts of the country, there is no regular market information on prices and supplies, nor formalized grades and standards of sheep and goats and other livestock (Kebede and Ray 1992; Ayele *et al.,* 2003). As a result, there is excess supply of animals beyond demands in some seasons. The more mobile trader is better informed on market prices which combined with excess supply places the trader in a better position during price negotiation. Illegal market in Ethiopia is identified as a constraint to fatteners and traders (Tesfaye, 2009).

Traders and exporters are also faced with marketing problems. A survey in IPMS (Berhanu *et al.,* 2007) identified lack of adequate supply of good condition animals, inadequate market places, lack of holding (concentration) places, feed supply, lack of market information, and multiple taxation at checkpoints (especially when animals are trekked or trucked through towns) and lack of efficient vaccination services for export animals as the major problems. Problems identified by exporters include lack of adequate supply of appropriate and good quality animals, poor marketing infrastructure, livestock diseases, lack of adequate sanitary and phytosanitary services to support exports, long market channels (usually 3–5 stages between producer and the abattoirs), and problems with airfreight transport services.

III. Materials and Methods

In this portion of the proposal we have discussed methodology that was undertaken in the study and preparation of the research report. These includes: information about the study area, research design used, size of sample selected and technique of sampling, what source of data collected and utilized, data collection and its instruments used, and management and analysis of collected data. All these are discussed as following.

a) Description of the Study Area

The study was conducted in Anlemo woreda, Hadiya Zone, Southern Ethiopia, which is geographically located between 7^0 54′-7^0 73′N latitude and 37^0 89′-38^0 06′E longitudes. According to Anlemo woreda agricultural and development office annual report (2018), Anlemo woreda is characterized by the topography of hill, valleys, plains and mountains and the altitude ranges from 1500 to 2500 meters above sea level. The total area of the woreda is 224 km^2 (22,414 ha) of which 14,885 cultivated lands, 427 covered by natural forest, 583 grazing land and the remaining covered by uncultivated land, bush grassland and others.

Based on the traditional agro ecological classification, its weather condition includes *dega* zones (cool and humid with altitude above 2500 m) and *woina-dega* zones (cool and semi-arid with altitude 1500-2500 m) the mean annual rainfall ranges from 1000mm to 1200mm, and the mean annual temperature ranges from 15-20^0C. Its neighboring is Silte zones in north and northwestern part, Shashogo woreda in eastern part, Lemo woreda in southern and southwestern part (AWFEDO, 2018). In addition, Anlemo woreda is 18 km far from Hosanna town, capital of Hadiya Zone in SNNPR, 175 km from Hawassa, the capital of SNNPRS and it is about 216 km far from Addis Ababa, the capital city of Ethiopia.

Based on Ethiopian CSA (2017) census, the total population of the woreda is 87,265 from this 42,914 (49.2%) is male and 44,351 (50.8%) is female. Most of the total population of the woreda, 83,636 (96%) are rural dwellers while only 3629 (4%) are urban dwellers (AWFEDO, 2018).

The dominant religions in the woreda are Muslim, Protestant and Orthodox. The most livelihoods economic activity in the study area is agriculture (mixed farming) which consists of crop production and animal rearing. The major agricultural crops include wheat, maize, *teff,* barley, bean, pea, *enset* and sorghum. The livestock population in the woreda includes cows, oxen, goat, sheep, horse, mule, and chickens. Administratively, the woreda is divided into 27 rural kebeles. The number of livestock population in study area is 85581 cattle, 31142 sheep, 19470 goat, 15876 equines, and 211359 poultry flocks (AWADO, 2018).

b) Research Design

The method of research for this study was survey method. The reason to conduct the study with this design is that it enabled us to describe the fattening practice and marketing system that have being performed in the study area precisely. In order to assess the stated objectives we have used both qualitative and

quantitative types. This was because the proposed study needs the collection of statistical (numerical) data for the quantitative approach.

Qualitative method was applied to describe the word-based information about the study and by using qualitative data, activities that have been hold and processes that have being going on regarding to increase productivity were assessed on the study.

c) Sample Size and Sampling Techniques

The study was conducted in three kebeles of Anlemo woreda. Both purposive sampling and random sampling method were used to identify the samples. Purposive sampling technique was utilized to select kebeles and simple random sampling was used for farmer's selection. A total of 3 kebeles were purposively selected. Selection criteria for selecting kebeles mainly included availability of infrastructure/accessibility, and relative sheep and goat production and fattening potential. A total of households that are involve in sheep and goat fattening were assigned as a total target population and we have taken representative sample of farmers from the total target population.

Selection of kebeles was mainly based on the information obtained from the woreda's livestock development and health agency and selection of farmers was based on the information obtained from the kebele's livestock development and health agency. Then after 95% Confidence level and 5% precision level were used and the sample size was determined and calculated by the Slovin's formula as indicated below according to Yamane, (1967).

$$n = \frac{N}{1 + Ne^2} \; ; \alpha = 5\%$$

Where: n – is desired sample size
N – is total target population of the study
e – is margin of error
α– is degree of precision

The population size was 118 for three selected kebeles and as inserted in the formula mentioned above we have got 91 as a sample size. But for facilitating proper sample division for each kebeles we have taken 90 samples and this means we have got 30 samples from each kebeles.

d) Sources of Data

The research writing involved both the combination of the primary and secondary data sources.

i. *Primary sources*

The primary data was collected from the primary sources of data through; open ended and close ended semi-structured questionnaires, structured/semi-structured interviews and direct observations.

ii. *Secondary sources*

The secondary sources of data have also been collected from different secondary data sources such as annual kebele report documents, various registers and publications (like books, journals, research reports and papers, magazines, documents available on different profiles on World Wide Web and others.

e) Data Collection Instrument

The most important instruments that have been employed to generate relevant information were questionnaires, key informants, direct observation and interview. The data was collected from each randomly selected respondent on pre agreed mutually convenient time.

i. *Questionnaire*

The researchers have used similarly semi-structured questionnaire for all respondents of the selected sample. The questionnaire was primarily prepared in English languages and then has been translated to Amharic. The items of questionnaire were both closed ended and open ended. The closed ended items have been used for quantitative analysis. After the questionnaire distributed to the respondents the researchers have collected it themselves.

ii. *Interview*

The researchers have prepared an interview guides for displaced farmers, experts of the sector office, community members and kebele administration extension servants.

iii. *Direct observation*

First hand data on the field has been collected by direct observation on the selected area for this study. The researchers have observed and collected the necessary visual information with the help of camera from the study area. Observation has been used by the researchers in order to get more information to accurate the information gets from the other tools.

f) Data Collection

Basically two types of data sources which are primary and secondary data were collected. The primary data has been collected directly from the field assessment; while the secondary data like agro-ecological zone, livestock population, and human population were collected from Rural Agricultural offices of Anlemo woreda. The data was then gathered by using semi-structured questionnaire, interview, and through direct observation. The parameters have been collected were; breed of sheep and goat, types of sheep and goat fattening system, management of sheep and goat in fattening, cycle and duration of fattening period, marketing system of sheep and goat, and risks associated with shoat fattening.

g) Methods of Data Management and Analysis

The data that has been acquired through questionnaires from primary source was processed and

analyzed by using Statistical Package for Social Science (SPSS version. 22) Software and Microsoft excel program prior to analysis; completed questionnaires were coded, inputted and organized. After the completion of coding, all valid questionnaires were inputted in a coherent format of SPSS database. Finally, descriptive parameters such as percentages, tables, graphs and figures were employed and used for interpreting and presenting the survey data.

IV. Result And Discussion

a) *Socio-Economic Characteristics of Household*

Table 1: General household characteristics of respondents in the study area

Household characteristics	Kebele						Total	
	West Fonko		South Fonko		Chingo			
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Sex								
Female	2	6.67	4	13.33	2	6.67	8	8.89%
Male	28	93.33	26	86.67	28	93.33	82	91.11%
Total	30	100	30	100	30	100	90	100%
Age								
<30	14	46.67	20	66.67	8	26.67	42	46.67%
31-40	14	46.67	8	26.67	10	33.33	32	35.56%
41-50	2	6.67	0	-	7	23.33	9	10%
>50	0	-	2	6.67	5	16.67	7	7.78%
Total	30	100	30	100	30	100	90	100%
Educational status								
Illiterate	14	46.67	13	43.33	18	60	45	50%
Reading and writing	0	-	0	-	4	13.33	4	4.44%
Elementary school	4	13.33	12	40	6	20	22	24.44%
Above secondary school	12	40	5	16.67	2	6.67	19	21.11%
Total	30	100	30	100	30	100	90	100%
Family size								
1-5	15	50	17	56.67	14	46.67	46	51.11%
6-9	15	50	13	43.33	16	53.33	44	48.89%
Total	30	100	30	100	30	100	90	100%

i. *Household sex characteristics of respondents*

The household characteristics of respondents (Table 1) shown that the proportion of female respondents (with value of 8.89%) were less than males (with value of 91.11%) in three Kebeles (West Fonko, South Fonko and Chingo); this is because of culture, custom and individual perspective. So the participation of females in sheep and goat fattening is less and dominated by males.

ii. *Household age characteristics of respondents*

In the study area the age intervals who participate on shoat production is <30, 31-40, 41-50, and >50, and the percentage is 35.56, 46.67, 10 and 7.78 respectively as shown figure 2. The majority age of respondents was less than 30 year (46.67%) because at the time being there is different work creativity because shortage of land and high population growth.
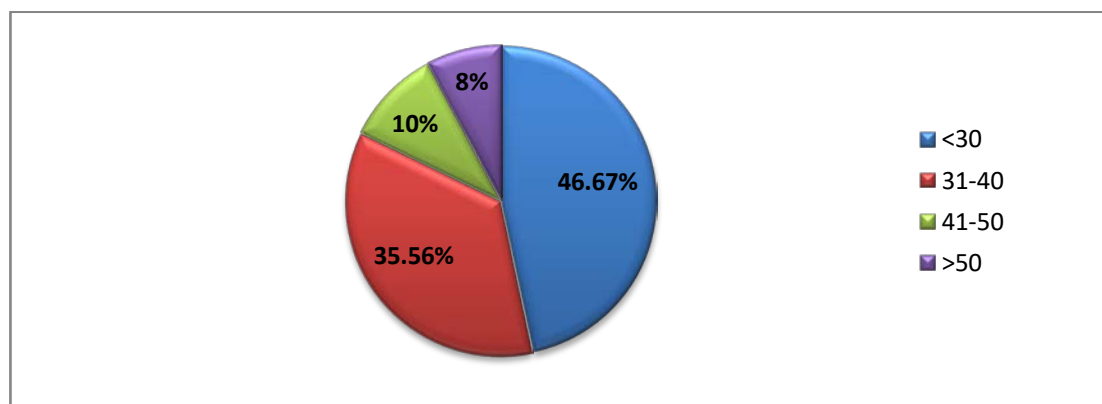

Figure 1: Household age characteristics of respondents in the study area

iii. *Household educational status of respondents*

According to our survey in the study area the educational status of the respondents are characterized as 50% illiterate, 4.44% reading and writing, 24.44% elementary school and 21.11% above secondary school respectively as shown in figure 2.
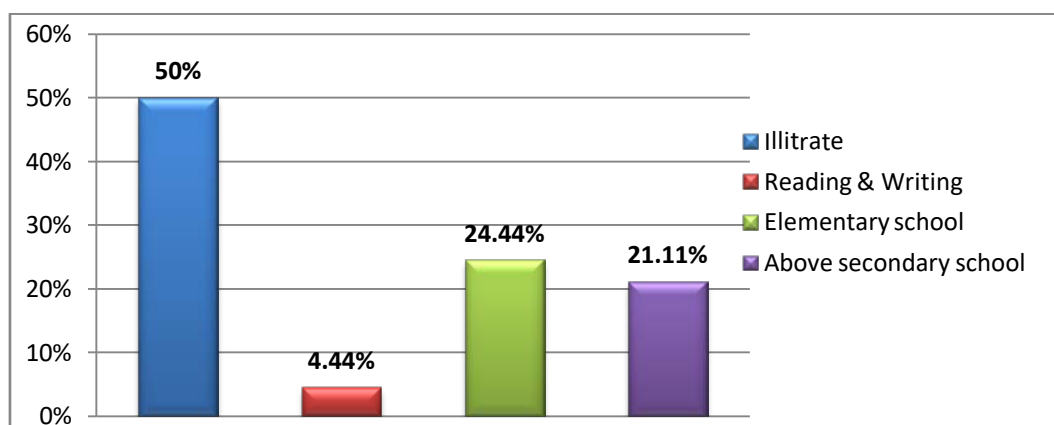

Figure 2: Household educational status of respondents in the study area

iv. *Household family size of respondents*

The family size intervals of respondents in the study area were characterized by from one-five and six-nine and the percentage is 51.11 and 48.89 respectively.

In the study area greater part of the average family size run from 1-5 (51.11%) because lack of efficient money to teach their children and lack of land for cultivation of cereal crops.
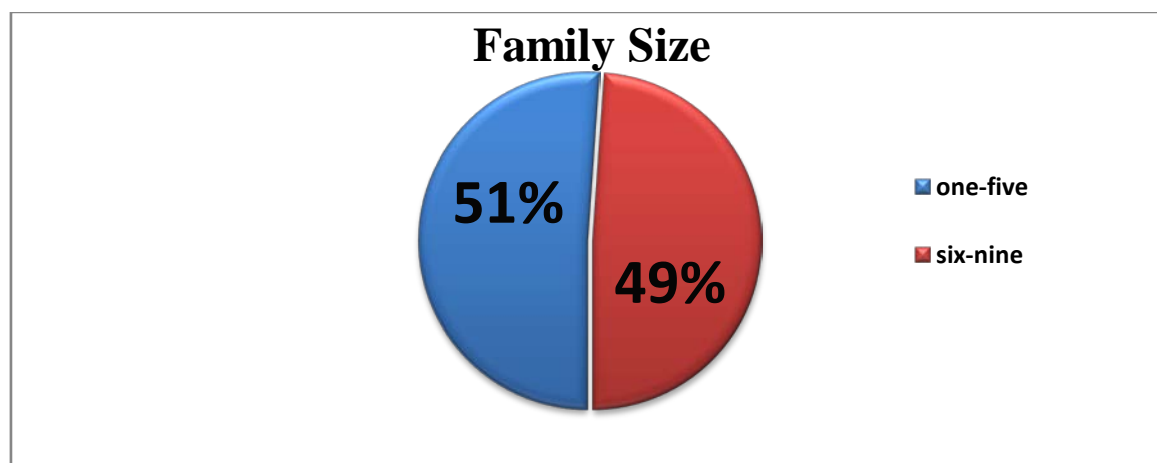

Figure 3: Household family size of respondents in the study area

v. *Households having Sheep and goat in the study area*

Table 2: Sheep and goat producers in three kebeles

Animal species	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Sheep	12	40	10	33.33	17	56.67	36	40%
Goat	18	60	20	66.67	13	43.33	51	60%
Total	30	100	30	100	30	100	90	100

In the study area according to the data obtained from respondents having goats were greater than having sheep with the percentage of 60% and 40% respectively. So from this data in West Fonko and South Fonko kebeles the goat producers are higher than sheep producers because this kebeles is towns so goat can be reared or managed in an easy way by feeding household wastes, market area wastes/ residuals, mill leftover, and khat residues. In this kebele sheep production is not favorable because of limited land to grazing lands since, they needs to graze rather than browse. But in Chingo kebele the sheep producers are high from goat producer because the area is a rural area and there is grazing lands and also in this area the agro-ecology of the area is comfortable for sheep production.

b) *Production System*

Table 3: Sheep and goat production system in the study area

Production system	Kebeles			Total	
	West Fonko (N =30)	South Fonko (N =30)	Chingo (N =30)	Frequency	%
Extensive	27	27	30	84	93.33%
Semi-intensive	3	3	0	6	6.67%
Intensive	0	0	0	0	0%
Total	30(33.33)	30(33.33)	30(33.33)	90	100%

N=Number of respondents

According to table 3, we have obtained the data from the respondent's that the main sheep and goat production system in the study area were extensive and semi-intensive production systems with the high value of extensive (93.33%), and the lowest value of semi-intensive (6.67%). Based on the result of the study extensive production system were highly practiced in the study area and followed by semi-intensive production system. This is due to the housing system is poor (cleaned once per day, all three kebele use loose housing system, feeding system is mostly natural grazing and khat residue in the study area). From the result of the study we concluded that intensive production system is little or no due to general poor management. The report of Solomon and Girma (2008), says that it is usual to classify production systems as intensive, semi-intensive, extensive based on the develop inputs and intensify of production.

c) *Constraints of Sheep and Goat Production*

Table 4: Constraints of sheep and goat production

Constraints	Kebeles			Total	
	West Fonko (N =30)	South Fonko (N =30)	Chingo (N =30)	Frequency	%
Lack of feed	14 (46. 67%)	18(60%)	14(46. 67%)	46	(51.11%)
Disease	7(23.33%)	6(20%)	5(16.67%)	18	(20%)
Lack of infrastructure	6(20%)	2(6.67%)	8(26.67%)	16	(17.78%)
Inadequate veterinary service	3(10%)	4(13.33%)	3(10%)	10	(11.11%)
Total	30(100%)	30(100%)	30(100%)	90	(100%)

N=Number of respondents

According to table 4, sheep and goat production and productivity in the study area were constrained by many factors like scarcity of feed (51.11%), disease (20%), lack of infrastructure like; transportation facility, market (17.78%) and inadequate veterinary coverage (11.11%). According to key informants of Analemo woreda agricultural office lack of feed is the major constraints of sheep and goat production in the study area that accounts more than 50%. In other finding sheep and goat's production and productivity in Ethiopia are constrained by many factors. The major ones are; scarcity of feed, lack of infrastructure (transport facility), high mortality rates, inadequate veterinary coverage, long marketing channels and lack of market information (Adane and Girma, 2008).
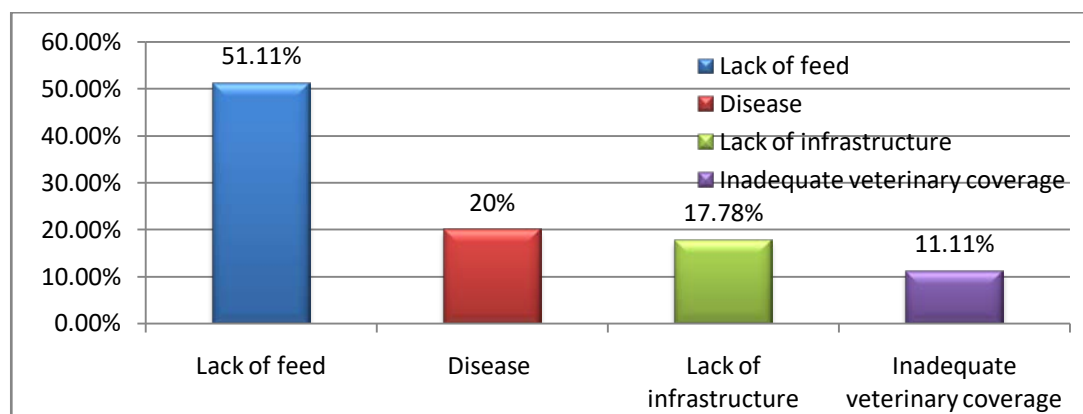

Figure 4: Constraints of sheep and goat production

d) Types of Breed Exist in the Study Area

Table 5: Sheep and goat breed type in the study area

Breed types		West Fonko		South Fonko		Chingo		Total	
		Frequency	%	Frequency	%	Frequency	%	Frequency	%
Sheep	Local breed	10	33.33	8	26.67	17	56.67	35	38.89%
	Doyogena breed	1	3.33	2	6.67	0	-	3	3.33
	Bonga breed	1	3.33	0				1	1.11
Goat	Local breed	16	53.33	19	63.33	13	43.33	48	53.33
	Konso breed	2	6.67	1	3.33	0		3	3.33
Total		30	100	30	100	30	100	90	100

The interviewed households said that most of the producers use local breeds. The proportioned value of the result showed that: As shown in the table above, the households in the study area were used sheep breeds like local sheep breed (38.89), doyogena breed (3.33) and the remaining respondents were use bonga breed (1.11%). And for goat they were used Local breed (53.33%) and Konso breed (3.33). This was because of the attitude of people to use improved breeds as they were not aware to use improved breeds and they thinks as it has no additional value from using improved breed and as these breeds need high management but local breeds need few management and they save labor of humans to manage them.

e) Sheep and Goat Fattening System

The sheep and goat fattening practice in the study area were assessed the general husbandry issues such as, major feed resources, management practice, major constraints and marketing system. In the study area the most fattening system were traditional especially in the Chingo kebele this is due to most of households are illiterate and they have no awareness for modern fattening system in this kebele. In West Fonko kebele there is some level of agro-industrial by-product and khat residue based fattening relative to Chingo because this kebele is town and they have access for different infrastructure that can promote sheep and goat fattening. But South Fonko kebele were better from two kebeles in using agro-industrial by-product and khat residue based fattening system, the housing system is also better than from two kebeles. Animal fattening practice should consider the general husbandry practice issues like major feed resources, management practice, records and marketing system (Shitahun, 2009).

f) Management Practice of Sheep and Goat Fattening
  i. Housing

Table 6: Considerations of housing in the study area

Considerations during house constructions	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Wind direction	16	53.33	22	73.33	20	66.67%	58	64.44%
Ventilation	14	46.67	8	26.67	10	33.33%	32	35.56%
Total	30	100	30	100	30	100	90	100%

According to table 6, in the study area the considerations during house construction were various depending on the fattener and it is described with the highest value of wind direction (64.44 %) this is due to the environment is windy and wind blow in the autumn so they gives special care for wind direction and the remaining 35.56% is constructed based on ventilation in order to prevent the animal from exposing of sun and hot temperature at the day time. This finding is related with Animut and Jane (2014), report in that housing for fattening sheep and goat varies from fattener to fattener.

  ii. Feed resource and feeding practice
    a. Feed resource

Table 7: Feed availability in the study area

Feeds	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Natural grazing	5	16.67	5	16.67	16	53.33	26	28.89%
Khat Residue	10	33.33	13	43.33	3	10	26	28.89%
Crop residue	6	20	0	-	10	33.33	16	17.78%
Industrial by products	6	20	10	33.33	0	-	16	17.78%
Conserved hay	3	10	2	6.67	1	3.33	6	6.67%
Total	15	100	15	100	15	100	45	100%

As shown table above the most used feed in the study area were natural pasture and khat residue in equal proportion (28.89%) because of lack of capital and lack of awareness to use improved forage and agro-industrial by-products and there is access of khat residue in the study area and the least used feed in the study area isIndustrial by products (17.78%), crop residue (17.78%) and conserved hay (6.67%). So from this can say that in the study area IBP like furishka and roughage feed is highly used than concentrate feed because of lack of capital to buy concentrate feed, absence of different factory, and lack of awareness in using concentrate feed. This finding is partially similar to the report of Seyoum *etal.* (2001), who indicated that the major basal feed in the highlands of Ethiopia are a natural pasture, crop residue and stubble grazing, and their contribution to the total feed resource vary from area to area based on cropping intensity.

b. *Feeding practice*

Table 8: Feeding practice in the study area

Feeding system	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Free grazing	6	20	8	26.67	14	46.67	28	31.11%
Stall feeding	24	80	22	73.33	16	53.33	62	68.89%
Total	30	100	30	100	30	100	90	100%

As we have collected the data in the study area two types of feeding systems were observed stall feeding and free grazing from those stall feeding were the most used feeding system with the percentage of 68.89% this is because to finish animals within a short period of time they should not move longer and next to this free grazing were present with the percentage of 31.11%.

iii. *Watering practice*

Table 9: Source of water in the study area

Source of water	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
River	11	36.67	12	40	23	76.67	46	51.11%
Pond	6	20	6	20	4	13.33	16	17.78%
Stream	7	23.33	5	16.67	3	10	15	16.67%
Tap water	6	20	7	23.33	0	-	13	14.44%
Total	30	100	30	100	30	100	90	100%

The watering practices in the study area were assessed as sources of water for fattening sheep and goat. Water is the main concern of the study. Source of water found in the study area were river, pond, stream and tap water. And the frequency of watering per day varies among different households. As shown table above watering from a river (51.11%) was the major one especially in Chingo kebele. This is due to presence of river around the area. The followers were pond and stream water with 17.78% and 16.67% respectively. But, the contribution of tap water is less with 14.44% because according to the respondents especially in Chingo kebele, it is difficult to get tap water. On West Fonko and South Fonko kebeles also there was inaccessibility of tap water. The water intake of fattening animals depends on environmental temperature, the temperature of drinking water itself, the activity of fattening animals; the moisture content of the feed and the amount of feed fed per day (Nelson, 2000).

iv. *Health care practice*

Table 10: Disease controlling method in the study area

Controlling Method	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Spraying	11	36.67	9	30	24	80	44	48.89%
De worming	19	63.33	21	70	6	20	46	51.11%
Total	30	100	30	100	30	100	90	100%

In the study area both internal and external parasites were assessed and the controlling method is shown on the above table. According to the data obtained from the respondents the highest value (51.11%) of households use deworming because the respondent says the effect of internal parasite is much more than external parasite in cold agro-ecological environment and the remaining part use spraying

(48.89%) for controlling external parasite like tick and mange from their animal. This finding is related with Edwards (1998), report who describes in terms of parasite controlling method and important

environmental challenges as a party of fattening animal health program is the control of internal and external parasites.

v. *Fattening cycle of sheep and goat*

Table 11: Fattening cycle in the study area

Fattening cycle	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
1x/year	7	23.33	7	23.33	12	40	26	28.89%
2x/year	11	36.67	17	56.67	10	33.33	38	42.22%
3x/year	12	40	4	13.33	8	26.67	24	26.67%
4x/year	0	0	2	6.67	0	0	2	2.22%
Total	30	100	30	100	30		90	100%

According to our survey the fattening cycle in the study area were 1x/year, 2x/year, 3x/year, and 4x/year and the percentage for each cycle were 28.89%, 42.22%, 26.67% and 2.22% respectively. The reason for this variation was due to feed availability, season, and fasting. This finding is similar with the report of Animut

and Jane (2014), who indicated as if there is good management sheep and goat takes three rounds of fattening in a year (90 days are required for each round). The length of sheep and goat fattening varies depending primarily on the availability of sufficient and quality feed for fattening.

vi. *Duration of fattening of sheep and goat*

Table 12: Duration of fattening

Duration of fattening	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
3 month	12	40	14	46.67	20	33.33	36	40%
4 month	12	40	4	13.33	14	46.67	30	33.33%
5 month	6	20	10	33.33	4	13.33	20	22.22%
6 month	0	0	2	6.67	2	6.67	4	4.44%
Total	30	100	30	100	30	100	90	100%

According to the data collected from the respondents the finishing of shoat were described as within the range of 3-6 months with the percentage of three months 40%, four months 33.33%, five months 22.22%, and six months 4.44%. The length of fattening is varies due to feed availability and quality of feed, feed allowance per day, feed conversion efficiency of the animal, variation of environment from place to place,

types of feed that are fed, initial body weight of the animal, age, and health management. This finding is related with the report of Animut and Jane (2014), who indicated the length of sheep and goat fattening varies depending primarily on the availability of sufficient and quality feed for fattening.

g) *Marketing System and Constraints*

i. *Marketing System*

Table 13: Marketing systems in the study area

Marketing channel	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Producer- consumers	22	73.33	9	60	13	86.67	66	73.33%
Producer-local traders-consumers	8	26.67	6	40	2	13.33	24	26.67%
Total	30	100	30	100	30	100	90	100%

As shown table above the marketing system in the study area were from Producer-consumers and Producer-local traders-consumers with the percentage of 73.33% and 26.67% respectively. In Ethiopia the

marketing process in general follows a three-step system with primary, intermediate and terminal markets (Alemayehu, 2003)

ii. *Marketing constraints*

Table 14: Marketing constraints

Marketing constraints	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Fasting	18	60	17	50	23	76.67	58	64.44%
Season	12	40	13	50	7	23.33	32	35.56%
Total	30	100	30	100	30	100	90	100%

According to the data obtained from the respondents the major constraints of marketing system were fasting and season. As shown table above fasting were the major marketing constraint (64.44%) since there are long fasting periods in our country and season were the subsequent marketing constraint (35.56%) in the study area. According to EARO (2000), marketing of sheep and goats is characterized by strong seasonality and subject to fluctuation. Demand and price increases during festival periods.

iii. *Structure and performance of small ruminant markets*

As we had assessed from the respondents in the study area animals were sold on a per-head basis and price agreement reached by negotiation of buyers and sellers on the market. The buying and selling system were based on animal characteristics (weight, sex, age, condition, breed, and color). This finding is related with EARO (2000), who describes as animals are sold on a per-head basis and price agreement reached by a long one-on-one bargaining between a seller and a buyer.

h) *Risks Associated with Sheep and Goat Fattening*

Table 15: Risks during fattening operation

Risks	West Fonko		South Fonko		Chingo		Total	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Price risk	18	60	22	73.33	14	46.67	54	60%
Loss of animals	12	40	8	26.67	16	53.33	36	40%
Total	30	100	30	100	30	100	90	100%

According to the data obtained from the respondents, the major risk during fattening operation in the study area were price risk (60%) during selling of the animal the price will be fall down so due to this price fluctuation the owner will goes to risk, and the next were loss of animals 40% due to disease, thief and predators. This finding is contrary with the report of Animut and Jane (2014), the main risk associated with sheep and goat fattening activity is the loss of animals. This could be due to disease, predators or theft. Price fluctuation is another risk associated with sheep and goat fattening.

V. Conclusion and Recomendation

a) *Conclusion*

Availability of feed was not sufficient for better sheep and goat production system in the study area. Generally, in the study area the sheep and goat fatteners were lead traditional shoat fattening practice and they use different activities to increase their profile by utilizing locally available feed resources especially khat residue. But their profit was not satisfactory because they had no enough awareness about the general husbandry practice of sheep and goat fattening system. In the study area both internal and external parasite controlling method were involved like deworming and spraying. In general any problems associated with animal health can largely be prevented if proper management practice is followed. Finally the marketing system of sheep and goat were predominantly characterized as producer-consumer and followed by producer-local trader-consumer in some extent.

b) *Recommendation*
➢ As the result showed that there was feed shortage in the study area, so the government, stakeholder and other concerning body should be support by creating awareness for about feeding, how to treat feed and how to use improved forage.
➢ The woreda as agricultural and rural development office must be take especial responsibility to develop appropriate policy to improve breed and feed resource to the farmers.
➢ Extension workers should spent time for adjusting the farmer who to formulate good feed ration to be given to the fattening small ruminants for good quality meat and growth performance.
➢ The small ruminant fetteners should plant improved grass species that have high biomass

yield and conserve some important feeds for the time of feed scarcity.

➢ The farmers should work on feeding requirements of fattening shoats and its management system

➢ To increase the profile obtained from the sheep and goat fattening activity the farmers should be aware before starting the sheep and goat fattening activity

➢ From the result health problem is one factor of sheep and goat fattening, so there should be adequate veterinary service.

➢ Sheep and goat producers should have access to market information so as to adjust their marketing activities.

➢ Training should be given to small holder small ruminant fatteners about feed conservation and feeding system by extension workers.

References Références Referencias

1. Ablack H. and SmithA.H., 2003. Forage Intake and Rumination by Fattening Animal. *J Animal Science.*Vol. 4. Pp. 119-125.
2. Adane H. and Girma A., 2008. Economic Significance of Sheep and Goats. *J Animal Science.* Vol. 3. pp.1-4.
3. Alemayehu M., 2002. Forage Production in Ethiopia: A case study with implications for livestock production. Ethiopian Society of Animal Production (ESAP), Addis Ababa, Ethiopia. Pp. 67-72.
4. Alemayehu M., 2003.Forage Production in Ethiopia: A case study with multiplication for livestock production. Ethiopian Society of Animal Production ESAP, Addis Ababa, Ethiopia. Pp. 45-51.
5. Alemayehu M., 2004. Rangeland: Biodiversity Concepts, Approaches and the Way Forward. Addis Ababa University,Faculty of Science,Addis Ababa, Ethiopia. Pp. 80-81.
6. Alemu Y., n.d.. Short Term Intensive Fattening of Sheep and Goats for Rapid Improvement in Weight, Condition and also Producer Incomes.*Technical bulletin no.11.* URL: http://www. ESGPIP.org.
7. Animut G. and Jane W., 2014. Prospects to Improve the Productivity of Sheep Fattening inEthiopia: Status, challenges and opportunities. Addis Ababa: ICARDA.
8. AWADO, 2018. Anlemo Woreda Agricultural office Annual Progressive Report: Unpublished.
9. AWFEDO, 2018. Anlemo Woreda Financial, Socio-economic Data and Annual Progressive Report: Unpublished.
10. Ayele S, Assegid W, Jabbar MA, Ahmed MM and Belachew H. 2003. Livestock marketing in Ethiopia: A review of structure, performance and development initiatives. Socio-economics and Policy Research Working Paper 52. ILRI (International Livestock Research Institute), Nairobi, Kenya.
11. Azage T., Berhanu G. and HoockstraD., 2006. Institutional Arrangements and Challenges in Market-Oriented Livestock Agriculture in Ethiopia:Proceedings of the14thAnnual Conference of the Ethiopian Society of Animal Production(ESAP) held in Addis Ababa, Ethiopia, September 5-7, 2006. pp.1-20.
12. Berhanu G., Hoekstra D. and Azege T., 2006. Improving the Competitiveness of Agricultural Input Markets in Ethiopia: Experiences since 1991. Paper Presented at the Symposium on Seed-Fertilizer Technology, Cereal Productivity and Pro-Poor Growth in Africa: Time for New Thinking 26th Triennial Conference of the InternationalAssociation of Agricultural Economics(IAAE), August 12-18, 2006, Gold Coast, Australia.
13. Berhanu Gebremedhin, Hoekstra D and Samson Jemaneh. 2007. Heading towards commercialization? The case of live animal marketing in Ethiopia. Improving Productivity and Market Success (IPMS) of Ethiopian Farmers Project Working Paper 5. ILRI (International Livestock Research Institute), Nairobi, Kenya. 73 pp.
14. Birhanu T., Shiferaw B. and Kahsay B., 2009. The Major Feed Resource in Ethiopia: Natural Pasture Grazing and By-Product Animal Feed Resource in Ethiopia. *Journal in Animal Science.* Vol. 4. Pp. 9-17.
15. CSA, 2013. Central Statistics Authority of the Federal Democratic Republic of Ethiopia. Ethiopian Agricultural Sample Enumeration. Result at Country Level. Central Statistics Authority, Addis Ababa, Ethiopia. pp. 250-350.
16. CSA, 2012. Central Statistical Agency of the Federal Democratic Republic of Ethiopia. Agricultural Sample Survey of 2011/12 (2004 E.C).Report on Livestock and characteristics (Private peasant Holdings), Central Statistical Agency, Addis Ababa, Ethiopia. Vol.2. Pp. 25-27.
17. CSA (2018). Ethiopian Demography and Health Survey, Addis Ababa, Ethiopia. Summary and Statistical Report of the 2017 Population and Housing Census. ORC Macro.
18. EARO, 2000. National Small Ruminants Research Strategy Document. ERAO, Addis Ababa, Ethiopia.
19. Edwards A., 1998. Respiratory Disease of Feed Lot Cattle. *Can 1435*. Vol. 2.Pp. 53-55.
20. Ehuis K., Benin S. and Gebreselassie N., 2000. Factors Affecting Urban Demand for Live Sheep: The case of Adiss Abeba, Ethiopia. Socio-economics and policy research working paper 31. ILRI (International Livestock Research Institute), Nairobi, Kenya, 32 pp.
21. EPA, 2002. Ethiopian Privatization Agency. Available at web: http://www.telecom.net.et/~epa/Sectors/ leather.html
22. FAO, 2004. The State of Agricultural Commodity Markets. FAO. Rome, Italy. Http://www.fao.org.

23. Getahun L., 2008. Productive and Economic Performance of Small Ruminant Production in Production System of the Highlands of Ethiopia. Ph.D. dissertation. University of Hohenheim, Stuttgart-Hoheinheim, Germany.

24. Heidi M. and Chelsey A., 2010. Sheep and Goat Herd Healthcare. Dale Bumpers Collage of Agricultural, Food and Life Science. Online Courses: Assessed on March 19, 2019. https://www.uaex.edu /farm-ranch/animals-forages/sheep-goats/herd-health.aspx

25. IBC, 2004. The State of Ethiopias Farm Animal Genetic Resources. Country Report. A Contribution to the First Report on the State of the World"s Animal Genetic Resources.IBC, Addis Ababa, Ethiopia.

26. Kebede Andargachew and Ray B. 1992. Intra-annual sheep price patterns and factors underlying price variations in the central highlands of Ethiopia. In: Rey B, Lebbie SHB and Reynolds L (eds), Small ruminant research and development in Africa. Proceedings of the first biennial conference of the African small ruminant research network, ILRAD, Nairobi, Kenya, 10–14 December 1990.

27. Markos T., 2006. Productivity and Health of Indigenous Sheep Breeds and Crossbreds in the Central Ethiopian Highlands. Faculty of Medicine and Animal Science, Department of Animal Breeding and Genetics. Doctoral Dissertation, Swedish University of Agricultural Sciences, Uppsala, Sweden.

28. McDonald P., Edwards R.A., Greenhalgh J.F.D and Morgan C.A., 2002. Animal Nutrition. 6th edition. *Pearson Educational Limited*. Edinburgh, Great Britain.

29. Mohammad A., 2006. Livestock and Dairy Development Board.

30. Nelson R.H., 2000. An Introduction to the Feeding of Farm Livestock. 2nd ed. PergamonPress. Pp. 156.

31. Pasha T., 2006. Feedlot Fattening of Sheep and Goats for Quality Mutton Production. Islamabad: Livestock and Dairy Development Board. www. iddb.org.pk/forms/Sheep Book.pdf.

32. Pereira C., Pavanin A., and Santos B. (2014).American Collage of Medical Genetics and Genomics. Retrieved March 19, 2019, from Springer Open: https://springerplus.springeropen.com/articles/10.1186/2193-1801-3-301

33. Seyum B. and Abate T., 2001. Present Status and Future Direction in Feed Resource and Nutrition Research Targeted for Wheat Based Crop-Livestock Production System in Ethiopia.

34. Shitahun B., 2009.Short Term Intensive Fattening of Sheep and Goats for Rapid Improvement in Weight, Condition and also Producer Incomes. *Technical bulletin no.14.* URL: https://www.ESGPIP.org.

35. Solomon A., Gemeda D., Takele K., Birhanu S., Dereje B., Bizunesh M., FayoD., Ulfina G. and Birhan F., 2005. On-Farm Verification of Sheep Finishing Technology in Eastern Wollega Zone. In: Participatory Innovation and Research: Lessons for Livestock Development.

36. Solomon Abegaz, Girma Abebe and Kassahun Awgichew, 2008.Sheep Production System in the Tropics. Pp. 213-245.

37. Solomon Gizaw, 2009. Technical Bulletin No.28. Sheep Breeds of Ethiopia: A Guide for Identification and Utilization. Ethiopia Sheep and Goat Productivity Improvement Program (ESGPIP).

38. Solomon Gizaw, Azage Tegegne, Berhanu Gebremedhin and Dirk Hoekstra, 2010. Sheep and Goat Production and Marketing Systems in Ethiopia: Characteristics and Strategies for Improvement. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 23. ILRI (International Livestock Research Institute), Nairobi, Kenya. Pp. 58.

39. Tesfaye Tsegaye. 2009. Characterization of goat production systems and on-farm evaluation of the growth performance of grazing goats supplemented with different protein sources in Metema woreda, Amhara region, Ethiopia. MSc thesis. Haramaya University, Haramaya, Ethiopia.

40. Tilahun H. and Schmid E., (2012). Spatial analysis of livestock production patterns in Ethiopia. ESSP 2 Working paper 44. International food policy research institute Ethiopia strategy support program 2, Addis Ababa, Ethiopia.

41. ToleraAbebe and Abebe Adugna, 2007. Livestock Production in Pastoral and Agro-Pastoral Production Systems of Southern Ethiopia. Livestock Research for Rural Development. Volume 19, No 177. http://www.lrrd.org/lrrd19/12/tole19177.htm.

42. Tsedeke Kocho, 2007. Production and Marketing of Sheep and Goats in Alaba, SNNPR. MSc. Thesis, Hawassa University, Awassa, Ethiopia.

43. Yamane G. 1967. *Sampling Techniques, 2nd edition*, New York: John Wiley and Sons, *Inc. in Development Projects*. Washington, DC: The World Bank.

44. Zelalem Tamrat. 2007. Adoption of small ruminant fattening package in agropastoral areas, Meiso wereda, Eastern Oromia. MSc thesis. Haramaya University, Haramaya, Ethiopia.

Appendices

Appendix 1: Questionnaires for household respondents

The questionnaire of our study had the following formats and permission for the respondents:

Wachemo University

Collage of Agricultural Science

Department of Animal Science

Study Questioner Paper to Be Filled By Respondents

- **Dear respondents**

The purpose of this questionnaire will have to assess the sheep and goat fattening and marketing system for determining successful study. Thus you are kindly and honestly requested to complete each questionnaire carefully.

Thanks for your cooperation!!!

- **Direction**

1. Please answer by writing "X" mark in box for close ended questionnaires.
2. Circle the letter you chosen for the questions on which you think to be an answer.
3. We would like to ask you in a polite manner to write short and precise answers for open ended questions and some close ended questions in space provided.

1. General Information

I. Owner sex: Male [   ]   Female [   ]   Date _____

II. Region _____ Zone _____ Woreda _____

2. Household fatteners

I. Position in the household

      A. Husband   C.SonE. Other

      B. WifeD. Daughter

II. Household head sex_____ Age_____ Occupation_____

II. Household education level

      A. IlliterateC. Elementary schoolE. Other

      B. Reading and writing   D. Above secondary school

IV. Do you practice sheep and goat fattening?

      Yes [   ]   [   ]

3. Study Related Questions

3.1. Animals fattened

I. How many animals do you fatten now _____

II. Breed of fattening animals (is the animal local or cross breed):_____

III. From what age do you start to fatten:_____ Sex:_____

3.2. Feed resource and feeding

I. What type of feed are locally available?

      A. Natural grazing D. Industrial by product

      B. Crop residue E. Conserved hay

      C. Cultivated F. other

II. What type of feeding system you follow?

      A. Stall feedingB. Free grazingC. Others

3.3. Housing

I. Which type of housing is used for your fattening shoat?

      A. ConventionalB. loose house C. Others

II. Which condition is fulfilling during construction of fattening shoat house?

      A. Location B. ventilation   C. Direction   D. Others

III. What facilities are fulfilling in your fattening shoat house? List:

_____

3.4. Health care

I. How many time you will clean the house per day?

    A. Once   B. Twice   C. Three times

II. Which type of parasitic disease control strategies is used?

    A. Deworming   B. Spraying   C. Dipping   D. Others

III. Is there technical assistance you employ? If yes, in what work?

    Yes   ☐   No   ☐

_____

_____

_____

IV. Is there any sheep and goat fattening constraint? If yes list them?

_____

_____

3.5. Water resource and watering practice

What is the water resource for sheep and goat?

    A. River   C. Pipe water   E. Tap water

    B. Pond   D. Stream water F. Others

3.6. Cycle and duration of fattening

I. How money months take to fatten your shoat_____?

II. How money times do you fatten per year (cycle) _____?

3.7. Risk if there

Is there risk during the fattening operation? If yes list: Yes   ☐   ☐

_____

_____

_____

3.8. Marketing

I. Where you get market information

A. Market information sources   C. Traders

B. Market visit   D. Relatives, neighbors and market visits

II. Factors for market fluctuation

    A. Season   B. Fasting   C. others

III. Which type of marketing system do you follow?

    A. Primary   C. Terminal

    B. Intermediate   D. Others

Appendix 2: Questions for key informants

1. What types of sheep and goat production system are commonly practiced in Anlemo woreda?

2. What are the major constraints of sheep and goat production in Anlemo woreda?

3. What are the major breeds exist in Anlemo woreda?

4. Which fattening system is practiced more commonly in Anlemo woreda? Why?

5. What are the major feed resource for sheep and goat fattening in Anlemo woreda?

6. What looks like the marketing system of sheep and goat in Anlemo woreda?