



COLLEGE OF AGRICULTURE AND NATURAL RESOURCE
DEPARTEMENT OF ANMAL PRODUCTION AND TECHNOLOGY
ASSESSMENT OF LIVESTOCK FEED RESOURCE AND FEEDING
PRACTICE IN CHEHA DISTRICT OF GURAGE ZONE, ETHIOPIA

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ACRONYMS

ADF.....	Acid detergent fiber
BM.....	Bench mark
BOARD.....	Bureau of agriculture and rural development
CC	Cellular constituents
CGL.....	Communal grazing land
CF.....	Crude fiber
CP.....	Crude protein
CWC.....	Cell wall constituents
DM.....	Dry matter
DMY.....	Dry matter yield
EASE.....	Ethiopian Agricultural Sample Enumeration
FAO.....	Food and agricultural organization
HH.....	House hold
ILCA.....	International livestock center for Africa
IVDMD.....	In-vitro dry matter digestibility
NDF.....	Neutral detergent fiber
PGL.....	Private grazing land

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APPROVAL SHEET

Wolkite University College of Agriculture and Natural Resource
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Senior Research Project Approval Form

As Senior Research advisor, I hereby certify that I have read and evaluated this Senior research work prepared, under my guidance, by Abdulhamid Oli, Amante Kebeda, Gabru Lombiso, Teklil Worku, entitled “Livestock Feed Resource and Feeding Practice in Cheha District of Gurage Zone, Ethiopia”. I recommend that it be submitted as fulfilling the Senior Research requirement.

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DEDICATION

This work is dedicated to our families for their great sacrifice, ceaseless prayers, support and encouragement.

ACKNOWLEDGMENT

First, and for most our deepest heart beat thank goes to our God who help us starting from our birth to these day and activities to do this entire senior research project. Second, we would like to thank our advisor Mr. Shimelis Mengistu (Msc.) who helped us with his full effort to accomplish our project. He gives us continuous advice, comment and providing important source and also, we would like to thanks our family for their endless love and support from first class to this level. Finally, our thank is to all our department staff teachers and our classmates for being with us during the work with their corresponding help.

ABSTRACT

This survey research was conducted with the objective of assessing livestock feed resources and feeding practices in Cheha district. Two representative kebeles were purposively selected in consultation with woreda officials based on their livestock production potential and accessibility. Ten voluntary farmers for interview were purposively selected from each kebele. Individual interview was administered using semi structured questionnaire. Data collected was analyzed using SPSS and excel spread sheet. Average family size in the study area was 3.6 with 2.15 active working members. Average land holding was 2.7 hectare. Poultry holding (6.55) was the highest livestock holding followed by cattle with cow holding (2.45) took highest share. Natural pasture was the first (Index=0.44) in terms of livestock feed by coverage in the total diet followed by hay (Index=0.23) and crop residue (Index=0.17). Majority of farm households indicated that feed availability is low during dry season (75%), and medium (70%) in wet season. Almost all farm households (100%) practice free grazing system during dry season while controlled grazing, and cut and carry feeding (55%) followed by controlled grazing alone (40%) practiced in wet season. Larger proportion of farmers (70%) accustomed to use supplementary feeding practice for their livestock. Enset (27.3%) was the most commonly used supplementary feed followed by food waste (21.3%) and Chat leftover (21.2%). Lactating cows were did have the highest access (25%) to supplementary feeds, followed by lactating ewe/due (20%) and fattening cattle (15%). Almost all farmers (100%) face feed shortage during dry season (100%) of the year. Majority of them purchase crop residue (40%) followed by grass purchasing (35%) and feeding enset (25%) as coping strategy. The output of the study indicated that there is a need of strong extension work towards boosting feed availability and quality.

Key words: Feed resource, Feeding practice, Livestock, Supplementary feeds

1. INTRODUCTION

1.1. Background

Ethiopia is an agrarian country where large majority of people are engaged in cultivation of food crops and rearing of livestock. In the small-holder systems, food crops are produced for subsistence and livestock are raised to provide mainly draught power for crop cultivation and other secondary outputs like milk, meat, hide/skin, dung and manure. Livestock production is an integral part of the farming systems in all parts of Ethiopia. This livestock sector of agriculture plays a vital role in the livelihood of the majority of people in the country. The country has a large livestock population that makes it first from the continent and tenth from the world. Furthermore; Ethiopia has diverse agro-ecological zones suitable for livestock production and for growing diverse types of food and forage crops (Adugna, 2008). Ethiopia holds the largest livestock population from African with an estimated approximately, 70.29 million cattle, 42.91 million sheep, 52.46 million goat, 2.15 million horse, 10.79 million donkey, and 0.38 million mule, 8.15 million camel, 56.99 million poultry (CSA, 2021).

Despite the large livestock population in the country with high potential for meat and milk production, the sector's contribution is well below its biological potential due to various reasons such as feed shortage and disease (Berhanu *et al.*, 2009), less efforts in introducing the appropriate package of improved livestock technologies such as cross breeds, improved feeds management practices and inadequate healthcare services which enhance the current livestock production and productivity (Getahun, 2012).

This feed scarcity is indicated as a factor responsible for the lower production, reproductive and growth performance of animals especially during the dry season (Getachew, 2002). The season is characterized by inadequacy of grazing resources as a result of which animals are not able to meet even their maintenance requirements and lose substantial amount of their weight.

Though increased utilization of agro-industrial by-products has been reported (Benin *et al.*, 2004), they are not available, affordable or feasible for most of the farmers in the highlands of Ethiopia.

Animals are allowed to graze natural pasture or crop stubbles, around homestead and are supplemented with weed, by-products of enset and crop residues. Previously, grazing natural pasture was the major feeding practice but it is now shifting to zero grazing because of continuing shrinkage of grazing land. Herding depends on size of land per HH and season. Those HHs with large number of livestock allow their animals to graze around the homestead or nearby communal grazing land. Similarly Brandt *et*

al. (1997) stated that there was variation in livestock management according to wealth category; wealthier HHs possess more livestock and require greater access to additional labor and grazing land. Reduction of communal grazing lands was caused by using the grazing lands for crop production; enclosures of vast areas as a result of severe overgrazing, land degradation and deforestation.

Thus, there is no doubt that Review the current potential and identification of challenges that threatening this potential is mandatory in order to keep and exploit the potentiality that we have and tackle the threatening problem for the sustainable development and improvement of the sub-sector. Identification of feed resources and opportunities and constraints associated to livestock feeding are therefore, preconditions for designing suitable livestock development strategies (Funteet *al.*, 2010).

1.2 Statement of the Problem

Chena district has been believed that the scarcity of different type of livestock feed resources .Natural pasture cultivated crop and natural vegetation: So, to fill this gap and to give supporting information for further study was done on livestock feed resource and its concentrates.

Therefore, the current study was conducted with the following objectives:

1.3 Objectives:

1.3.1 General Objective

- To assess major livestock feed resources and common feeding practice in Cheha district.

1.3.2 Specific objectives

- To assess types of feeds commonly used as livestock diet and options at time of feed scarcity.
- To assess mechanisms how farmers feed their animals at different season.
- To identify type of supplementary feeds farmers used for different class of animals.

2. LITERATURE REVIEW

2.1. Features of Crop and Livestock Production Systems

Mixed farming systems are characterized by interdependency between crop and livestock activities (Abate Tedla, 1993). It is the main system of production for smallholder farmers in many developing countries (Ostergaard, 1995; Blackburn, 1998). In the Ethiopian highlands, crop and livestock sub-systems interact with each other in many ways (Getachew and Abate, 1993; Lemma, 2002). The largest

share of the total milk and meat available in the country is produced by mixed farming systems (Ostergaard, 1995).

The principal objective of farmers engaged in mixed farming is to gain complementary benefit from an optimum mixture of crop and livestock farming and spreading income and risks over both crop and livestock production (Solomon, 2004).

In the mixed crop livestock farming systems, livestock provide important inputs to crop cultivation, especially manure and traction. Livestock are often the major source of cash that farmers can use to buy agricultural inputs. In turn, crops provide livestock with feed in the form of residues and by-products from crop production, which are converted into valuable products like meat, milk, and traction (ILCA, 1992; BoRD, 2003). The potential use of crop residues as livestock feed is greatest in integrated crop/livestock farming systems (Getachew, 2002; Lemma, 2002). Crop residues are required by animals to supply feeds during the dry seasons; while they are also vital to crop production (e.g. through increasing soil organic matter and nutrients). In this regard, it is very likely that changes in the way and time farmers harvest their crops and manage the residues offer a number of possibilities for increasing both crop and livestock production (ILCA, 1992).

2.2. Animal Feed Resources in the Ethiopian Highlands

2.2.1. Available feed resources and their utilization

The major feed resources in the highland are natural pasture, crop residues and stubble grazing (Alemayehu, 2004). The availability of feed resources in the highlands depends on the intensity of crop production, population pressure, the amount of rainfall, and distribution pattern of rainfall and seasons of the year. Pasture growth is a reflection of the annual rainfall distribution pattern (Seyoum *et al.*, 2001). However, with the decline in the size of the grazing land and degradation through overgrazing and the expansion of arable cropping, agricultural by-products have become increasingly important (Alemu *et al.* 1989; Abate *et al.*, 1993; Getnet, 1999; Alemayehu, 2004). Mohamed and Abate (1995) indicated three feeding periods in the central highlands of Ethiopia, the main rainy season (June-September) when feed is adequate, the dry season (October-February) when straw and other crop residues become gradually available and the period, starting from February to May, when feed supplies decline, although new re-growth may occur depending on the timeliness and amount of the short rains. Grazing is the predominant form of ruminant feeding system in most part of the extensive and small-holder crop-livestock farming areas in Ethiopia (Getnet, 1999; Yosef, 1999; Getachew, 2002; Solomon, 2004). Natural pasture as a

source of feed is restricted to the wet season (Zinash *et al.*, 1995). However, grazing lands still play a significant role in livestock feeding and support a diverse range of grasses, legumes, shrubs and trees (FAO, 2001). Natural pasture could be utilized as a grazing or green feed in the form of cut and carry system. Continuous grazing and stall-feeding of mostly oxen with crop residues are the common feeding systems in the highlands of Ethiopia. Free grazing, sometimes under the control of herders, is also practiced with natural pasturelands, fallows and stubble grazing. Zinash *et al.* (1995), Lemma (2002), and Alemayehu (2004) reported that livestock in the central highlands graze on communal, fallow and permanent pasturelands during cropping season and on croplands after harvest. Oxen are given priority for grazing on private grazing land (PGL), and followed by lactating animals (Mohamed-Saleem and Abate, 1995; Lemma, 2002). The contribution of stubble and fallow land grazing is also significant just after harvesting. Standing hay is also open at the end of the cropping season. The contribution of crop residues to the feed resource base is significant (Seyoum and Zinash, 1995; Getachew, 2002; Solomon, 2004). Daniel (1988), Lemma (2002) reported that under the Ethiopian condition, crop residues provide 40 to 50% of the annual livestock feed requirement. In most central highlands of Ethiopia, crop residues account for 27% of the total annual feed supply during the dry periods (Gashaw, 1992). The quantities of different crop residues produced depend on the total area cultivated, the access of the season's rainfall, crop species as well as other inputs such as fertilizers (Daniel, 1988). Oxen are given priority for feeding crop residues mainly during the peak period of ploughing and followed by weak animals and lactating cows (ICRA, 2001). Trees and shrubs play a significant role in livestock production in very limited places. Their importance increases in arid areas (Getachew, 2002). The importance and availability of trees and shrubs in tropical Africa are influenced by the distribution, type and importance of livestock, their integration and role within the farming systems and availability of alternative sources of feed (Getachew, 2002).

2.2.2. Management of feed resources

The quality and quantity of pasture vary markedly depend upon the type of management. According to (Alemayehu Mengistu, 2004) the yield and quality of the natural pasture in the Ethiopian highlands has declined through the years due to overgrazing, and lack of proper management. Proper grazing management, fertilization of natural pasture, planting of productive and high quality forages, preparation of high quality hay are some of the major forage resource management practices (Ensminger *al.*, 1990; Alemayehu, 2004). Improved utilization of crop residues can be achieved either through appropriate supplementation (legumes, urea, etc.) or chemical pretreatment (urea/ammonia) both of which facilitate

the microbial breakdown of the cell wall of the crop residues. Moreover, conservation and economic use of crop residues improve and enhance their utilization (Alemu *et al.*, 1998; Getnet, 1999).

2.3. Productivity of Feed Resources

2.3.1. Natural pasture

Natural pasture is the major feed resource in Ethiopia the grass land of Ethiopia accounts for about 30.5% of the area of the country (Alemayehu, 2004). The challenges of species composition in the grassland vegetation naturally depend upon a number of factors. In the high land of Ethiopia, seasonal fluctuation in the availability and quality of natural pasture is common phenomena, which results in serious feed shortage their by affecting livestock production and productivity (Alemayehu,1998 and Solomon, 2004).

Livestock grazing stimulates nutrient mobilization and uptake through consumption of vegetation mobilization of nutrient to growing plants is enhanced by frequent depletion (Daniel Keftasse, 1998). Farming system and altitudes are important variable affecting vegetation distribution (Ayantu, 2005). Botanical composition of plants species and productivity of the pastoral lands are highly influenced by animal species , intensity of grazing land and edaphic factors. Biomass production over time varies and therefore causes seasonal variation in forage availability (Holech *et al.*, 1998).

From grazing viewpoint, production or yield is one of the most important measures in pastureland productivity. Biomass (yield) as regards to forage refers to the weight of plant material present at a time (Gashew and Devenda. 1998). Most estimates of biomass or standing crop includes only that above the soil surfaces and this material is commonly available to large herbivores. Direct harvesting is considered the most reliable method of determining biomass above the ground. In the highlands of Ethiopia, the annual DM yield of the natural pasture on seasonally waterlogged fertile areas was estimated to be 4-6 tons per hectare (Alemayehu, 1987). On the other hand, Jutziet *al.* (1987) reported 1.5 tons per hectare of DM per annum for continuously grazed grassland and 3.0 tons per ha for protected grass lands for areas over 2500 m.a.s.l. Native pasture contributes a maximum of 50% of the total feed supply .According to the estimate of FAO (1987), the DM yield of fallow and forestlands were estimated to be 1.8 and 0.7 tons/ha/annum, respectively. reported that the DM yield of a well-managed natural pasture varied from 3.05 to 7.97 tons/ha with a mean value of 6.18 tons/ha.

2.3.2. Crop residues and other stubbles

Crop residues are roughage and become available for livestock feed after crops have been harvested (Daniel Keflasse, 1998). Crop residues represent large part of feed resources, most of which are under utility (Alemuet *al*, 1991). They are the most important feed resources for ruminant in developing countries (Alemayehu, 1987). Crop residues are distinct from agricultural by products, such as bran oil, seed cakes, which are generated when crops are processed in different industries for feed products. Crop residues can usually be grouped by crop type including cereals grains, legumes, roots and tubers. The role of crop residues of feed resources depends mainly on the degree of intensification of crop livestock system and shortage of feed from natural pasture (Daniel, 1998).

2.3.3 Agro-industrial by products

They are by product of the primary processing of crop include bran and related by product of sugar factors such as molasses. Alemayehu (1998) noted that Ethiopia grow most temperate and subtropical oil seed such as line seed ground nuts, rape sesame, sunflower and cotton noug native for compositor which produces niger seed for oil is grown. The various milling by products obtained through state farm city dairy holder large number of livestock mainly cattle, sheep and goats are slaughtered in abattoirs which processing facilitate abattoir produce meat, bone and blood meal. Brewery products are traditionally valued for local cows because of their palatability and producing property (Alemayehu, 1998). Supplemental feed such as byproducts of grain and oil seed mills are feed to livestock specially, when there is shortage of feed. Farmers in high altitudinal zone, specially, around per-urban areas, utilize by products of grains for locating cross breeding cow. By product of oil seed secured though purchase from local market are mixed with straw and other local supplements such as spent brewers grain from the local manufacture of “atella” to feed livestock especially cross breed dairy cows, fattening animals and calves (ILRI, 2010).

2.3.4 Improved forage and pasture crops

Forages play vital role in different livestock production systems. In general they are important as adjusts to crop residues and pastures may be used to fill feed gaps during periods of in adequate crop residues and natural pasture supply.

Even presence of abundant crop residues which are often free feed to ruminantes, forage crops especially, legumes are needed to improve the utilization of crop residues, crop residues provide energy, while forage legumes provides proteins. Forage also provide benefits such as soil fertility through their nitrogen

fixing ability and are also useful in breaking insect, weed or disease cycles, which are likely to act when they are not supplanted.

Forage crops are commonly grown for feeding dairy cattle with oats and vetch mixture, fodder beet, elephant grass mixed with siratro and dismodium species, Rhodes, leucarnia and tree leucenas are being common once (Abiye, 1993). Improved forage production strategies are developed and successfully implemented by the Forth Livestock Development Project in Ethiopia evolved from experiences in other countries and understanding the importance of matching forage systems to Agro-ecological zones. The strategies are farmer centered and were developed with farm to maximize sustainable income generation and food production at household level (Alemayehu, 1999). The strategies are divided in two categories. The first one is on the farm strategies which includes backyard forage production under sowing and inter planting and contour forage strip. The second one is common as land strategies. This includes over sowing, communal grazing areas, stock extension areas and permanent pastures (Alemayehu, 2000).

2.3.5 Non-Convection Feed

Livestock feed resources are classified as convectional and non-convectional (Alemayehu, 2003). Where the non-convectional ones vary according to feed habit of community. For example, vegetable refusals are non-convections. Enset and banana are the major supplementary feed to their livestock. Many of people feed stem and leaf of inset to their animals at dry season (Alemayehu, 2003). Tree leaves are usually used for feeding sheep and goats sometimes feed to their cattle during fodder crisis.

These are also suitable from maintenance ration for the livestock. After harvesting crops, livestock are allowed to graze stubble grazing of different crops mainly from November to February. The stubble grazing is grazed by animal as land owners (Alemayehu, 2003).

2.4 Livestock Feeding Practices

The amount and types of feed allocated to different classes and species of animals are, mainly based on availability of the feed level and livestock productivity. Some crop residues where stored to supply for working oxen when cultivation is practiced and cows followed by work oxen and calves (Getachew Eshet, 2002).

2.4.1. Grazing

In most of Ethiopia lowlands, over 50% of feed to animals comes from natural pasture which confirms to the general indicate on that natural pasture is one of the major sources of animal feed (Alemayu, 2004). There is different system of grazing like controlled, continuous, deferred periodic grazing. In most cases of our country, grazing pressure is high and it does not give chance for reseeding which eventually leads decrease in ground cover and degradation of grass land. Crop after math is also contributing to the ruminant feed supply especially in dry season. It was estimated that the grazing potential of crop after math for latitude zone of 2,000 to 3,000 m.a.s.l in the Ethiopia as 0.4 tone/ha.

2.4.2. Cut and carry feeding system

Developing more intensive systems of dairy becomes a necessity, zero grazing maximizes land use through the production of the high yielding fodder crops and their utilization (Holech and Devenda 1998). Cultivate forage species is not widely practiced species by NGOs like world vision of Ethiopia sustainable land management program in all altitude zones of some improved species like buffaloes and elephants grass. Some household in the feed improved forage to their livestock in the cut and carry system (CWAO, 2005)

2.4.3. Tethering

Backyard cattle rising consists of breeding and or fattening one or a few heads of cattle which are stall feed for the tethered along a road and yard. Stall feeding and tethering of animals are practiced during the growing period of cattle (CSA, 2001)

2.4.4. Importance of pasture condition evaluation

Pasture condition includes the direct and indirect changes in vegetation composition, land productivity and land stability over time under various regimes of livestock production . Pasture condition and trend are the most important concepts in the management of renewable resources. Effective land management requires knowledge of the relationship between the present land productivity and its long-term potential under proper management. In pasture management, the relationship can be expressed in pasture condition classes as poor, fair, good and excellent. These reflect the level of environmental degradation and are determined by certain indicators, which are sensitive to and vary with productive capacity of the land . Most Ethiopian vegetation types are the function of human disturbance (grazing, burning, shifting cultivation and selective cutting) super

imposed on the effect of climate, soil, and wild fauna. The result is that the present appearance and composition of vegetation often gives poor indication of the true potential of a site in terms of either vegetation or land (Holechek *et al.*, 1998). Periodic assessment and monitoring of pasture condition and productivity is required to provide information for policy makers, farmers, and development workers and researchers for better pasture management practices (Getachew, 2002).

3. MATERIALS AND METHODS

3.1 Description of the study area

The study was conducted in Cheha Woreda, located in Gurage Zone of Southern Nations, Nationalities and Peoples Regional State (SNNPRS), Ethiopia. The capital city of the Woreda, Imdibir, is located at 188 km distance south of Addis Ababa on the way to Wolkite town, the capital of the Zone. The geographical location of the study area extends from 8° 00'18.9" to 8° 15' 28.53" N and 37° 35' 46.48" to 38° 03' 59.59" E at an elevation ranging from 900 to 2812 meters above sea level (m.a.s.l). It has a total area of about 57313.85 ha of which 40190 ha is cultivated. Enemor Ener Woreda borders the in the south, Oromiya Region in the west, Ezha Woreda in the east, Gumer and Geta in the southeast, and Wabe River, which separates it from Abeshege, and Kebena in the north. The Woreda constitutes 40 rural kebeles (the lowest administrative unit) of which 39 are rural and 1 is rural town. The area is characterized by a unimodal rainfall pattern with heavy and erratic distribution.

'Kiremt', the main rainy season, extends from June to September with the peak rainfall occurring during July and August. The short rainy season called 'Belg' stretches from March to May. However, the short rains are highly erratic in nature that farmers do not rely on them for grain production.

3.2 Data Collection and Sampling Method

Two stage purposive sampling was employed. Two representative kebeles were purposively selected in consultation with woreda officials based on their livestock production potential and accessibility. twenty voluntary farmers for interview were purposively selected from each kebele. Individual interview was administered using semi structured questionnaire. Household characteristics, resource holding (both land and livestock), major feed resources and their contribution rank, adopted feeding practices in different seasons, supplementary feeds and livestock classes supplemented, season of feed shortage and coping mechanisms were collected.

3.3 Method of Data Analysis

The collected data were entered into statistical package for social science (SPSS 20) software and subjected to descriptive statistical analysis such as percentage and mean. Once the data is analyzed with

SPSS, graphical presentations were prepared using excel spread sheet. Index values for feed contribution were calculated using the following formula.

$$Index = \frac{[(N * F1) + (N - 1 * F2) + \dots + (1 * Fn)]}{\sum [(N * F1) + (N - 1 * F2) + \dots + (1 * Fn)]}$$

Where N = maximum level of rank, F1 = Frequency of the 1st rank, F2 = Frequency of the 2nd rank, Fn = Frequency of last rank.

4. RESULT AND DISCUSSION

4.1. Household Characteristics

House hold characteristics is presented in Figure 1. Male headed house holds are the most common (80%) which is in agreement with other research outputs (Shimelis et al., 2021). This is attributed with the case in Ethiopia that husband is the head of the family. Majority of the farm households are within productive age group the 31-60 age range where 31-45 age category holds 50% of the respondents, indicating long farming experience. About 80% of the farm households were literate (primary education and above), which would be important for easily technology dissemination. Average family size in the study area was 3.6 with 2.15 active working members.

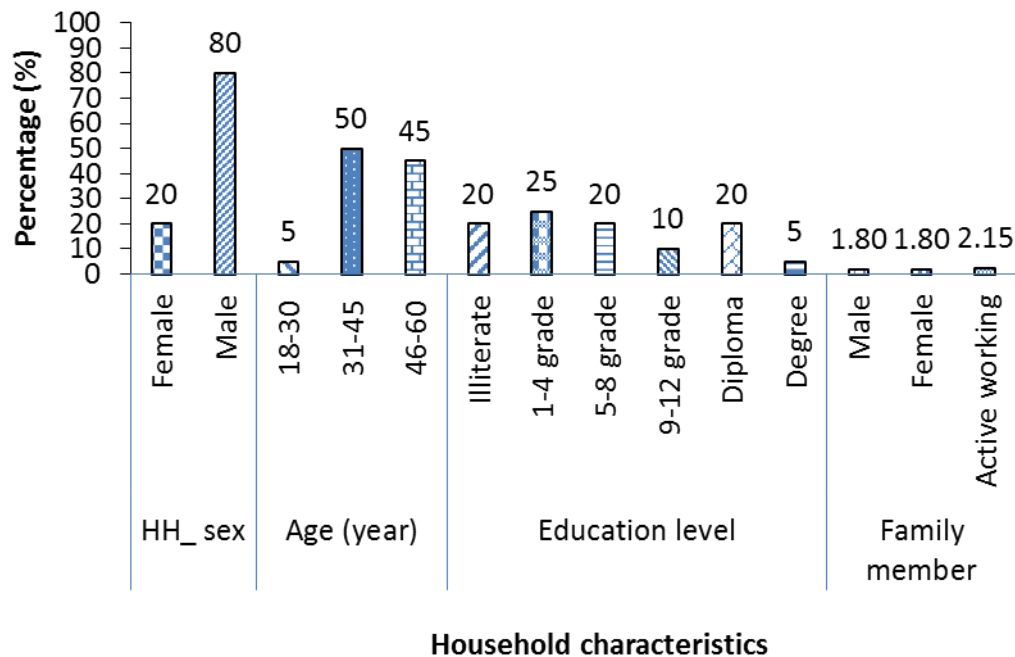


Figure 1: Household characteristics in the study area

1.2. Land and Livestock Holdings

Figure 2 below shows average land and livestock holdings per household in the study area. Average land holding was 2.7 hectare (ha) (ranging from 1.1-5 ha) with cultivated land (1.86 ha) took the highest share, followed by grazing land (0.58 ha). This is the highest holding as compared to reports for Doyogena district (Ashenafi et al., 2013). Poultry holding (6.55) was the highest livestock holding followed by cattle with cow holding (2.45) took highest share.

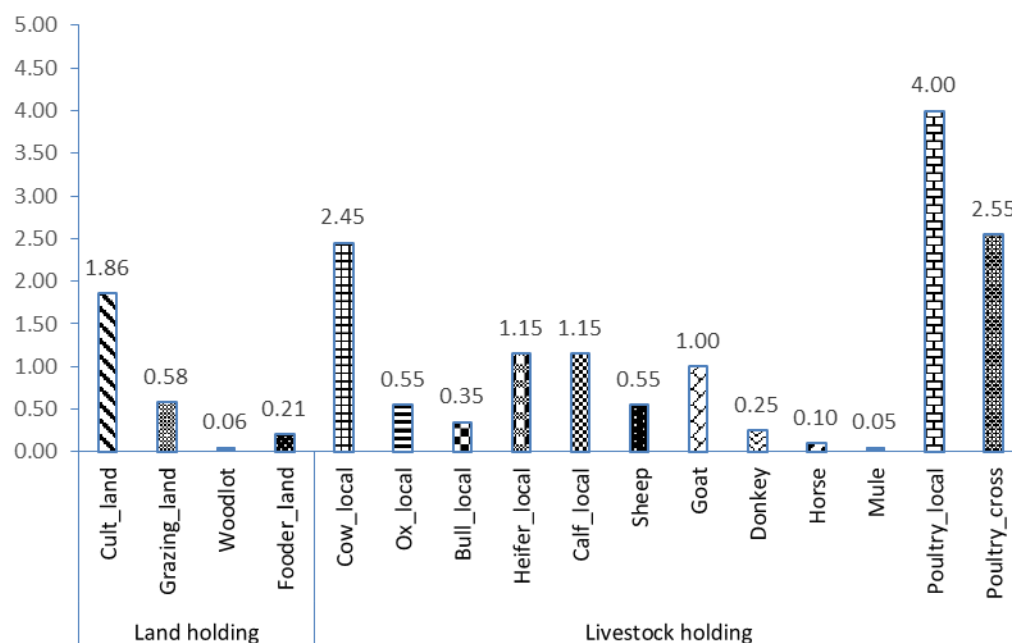


Figure 2: Land and livestock holding in Cheha district

1.3. Major Livestock Feeding Resource, Availability and Feeding Practices

1.3.1. Major livestock feed resources in Cheha district

Major feed resources commonly used as livestock feed have been indicated in Table 1. Natural pasture was the first (Index=0.44) in terms of livestock feed by coverage in the total diet followed by hay (Index=0.23) and crop residue (Index=0.17). The coverage for natural pasture is in agreement with the country level report, but that of crop residue which is 3rd in its contribution in the case of this report is not inline with the country report (which was second) (CSA, 2021).

Table 1: Major livestock feed resources in Cheha district

Feed resource	Index	Rank
Crop residue	34 (0.17)	3
Enset	7 (0.03)	6
Fodder crop	16 (0.08)	4
Hay	46 (0.23)	2
Industrial byproducts	12 (0.06)	5
Natural pasture	89 (0.44)	1

1.3.2. Seasonal feed availability

Seasonal feed availability status is indicated in Table 2 below. Majority of farm households indicated that feed availability is low during dry season (75%), and medium (70%) in wet season of a given year. This recall that there is a need to produce improved forage using different production strategies that can boost feed availability both in dry and wet seasons.

Table 2: Seasonal feed availability status in the study area.

Description	Respondents	
	N	%
Feed availability (dry season)	Low	15 75.00
	Medium	5 25.00
	High	0 0.00
Feed availability (wet season)	Low	0 0.00
	Medium	14 70.00
	High	6 30.00

1.3.3. Livestock feeding practices

Commonly practiced livestock feeding practices are presented in Table 3. Almost all farm households (100%) practice free grazing system during dry season. This practice seems to be a challenge for the sustainability of watershed development efforts as it causes loss and destruction of biological and physical conservations. But, during wet season, majority of the farmers use controlled grazing and cut and carry feeding (55%) followed by controlled grazing alone (40%). This could be attributed with protection of food crops as large cultivated land is covered crop during wet season. Larger proportion of farmers (70%) accustomed to use supplementary feeding practice for their livestock.

Table 3: Livestock feeding practices in Cheha district

Descriptions		% of respondents
Feeding practice during dry season	Free grazing	100.00
	Controlled grazing	0.00
	Cut and carry feeding	0.00
	Controlled grazing, and cut and carry feeding	0.00
Feeding practice during	Free grazing	0.00

wet season	Controlled grazing	40.00
	Cut and carry feeding	5.00
	Controlled grazing, and cut and carry feeding	55.00
Do you use	Yes	70.00
supplementary feeds?	No	30.00

1.3.4. Supplementary feeds and animal classes with access to supplementation

Supplementary feeds commonly used in the study area have been presented in Figure 3. Enset (27.3%) was the most commonly used supplementary feed followed by food waste (21.3%) and Chat leftover (21.2%). This indicated that enset has immense contribution as livestock diet over its food role. Lactating cows are the classes of animals (25%) that have the highest access for supplementary feeds, followed by lactating ewe/due (20%) and fattening cattle (15%). This tendency could be attributed with the intention of farmers to get more milk yield and better animal growth.

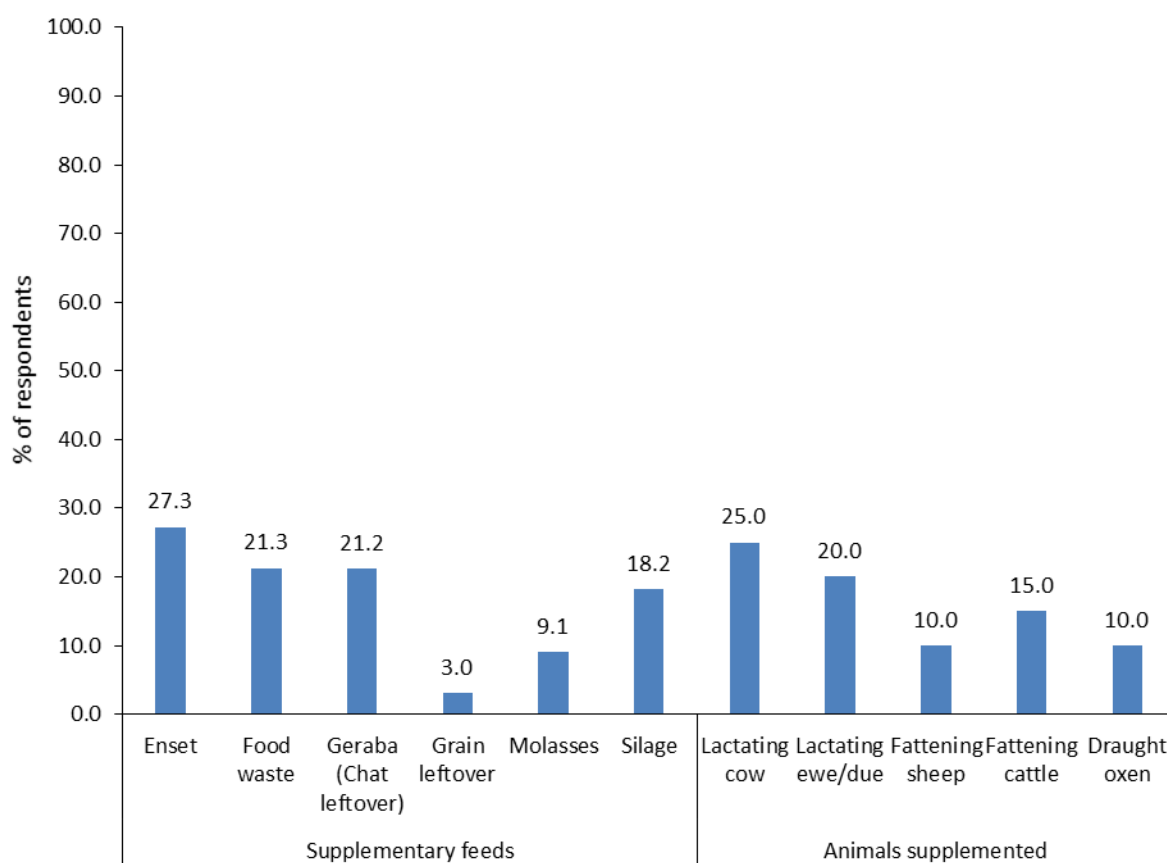


Figure 3: Supplementary feeds and animal class that have access to supplementation

1.3.5. Feed shortage problem and coping mechanisms

Existence of feed shortage problem, season of feed shortage and coping mechanism are presented in Table 4. Almost all farmers (100%) face feed shortage during dry season (100%) of the year. Majority of them purchase crop residue (40%) followed by grass purchasing (35%) and feeding enset (25%). This might be associated with the largest contribution of crop residue that emerging as major component of feeds in crop producing areas.

Table 4. Feed shortage problems and coping mechanisms in Cheha district

Explanatory variable		% of respondents
Do you face feed shortage	Yes	100
	No	0
Season of common feed shortage	Dry season	100
	Wet season	0
Feed shortage coping mechanism	Purchase concentrate	0
	Purchase grass	35
	Purchase crop residue	40
	Feed enset	25
	Reduction of stock	0

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Livestock feed resource in the study area are mainly natural grazing, hay, and crop residue. Feeding systems includes free grazing, controlled grazing, cut and carry system and combination of these practices. Supplementary feeding practice is adopted for lactating, fattening and draught animal in respective order. Majority of the farmers face feed shortage in dry season where they practice purchasing of crop residue and grasses and feeding of enset as coping mechanisms. This situation indicated better intervention of concerned stakeholders towards boosting feed availability and quality.

5.2. Recommendations

- There need to be strong extension work towards intensification of improved forage technologies.

- Even though crop residues, with low digestibility and nutrient content, have been emerging as major component of livestock diet, technological options (either biological or chemical) should be practiced to improve efficient utilization by animals.

- It is required to have sustainable improved forage seed transfer system to ensure sustainable improved forage production.

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7. APPENDIX

I. General Information

1. Date-----2. Study kebele-----

3. Name of house holder-----4. Sex-----

5. Age-----

II. Socio Economic characteristics

1. household characteristics

1.1 Number of families

A) Male-----B) Female-----

1.2 age(year)

A) Children (≤ 14 years) B) Adult ($\geq 15-64$ years) C) Dependants (>65 years)

1.3 Educational status

A. Illiterate B. Read and write only. C. Primary school E. Secondary School.

F. Above Secondary School2. Occupation and Land holding

A. cultivation crop ----- B. For Grazing land----- C. Fodder crop production-----

D. Forest and woodland----- E. Other (specify) -----

2.2 Livestock production

2.2.1 Do you have farm animals/livestock?

2.2.2 If yyes for Q.2.2.1 describe the type and quantity of you have currently?

Table 7.1.livestock population

Type of animal	Total
Cows	
Oxen	
Calf	
Heifers	

Bulls	
Goat	
Sheep	
poultry	
donkey	
Mule	
horse	

2.3 Livestock Feed Resource

2.3.1 What are the major feed resource you used to feed for your animals?

2.3.2 What are feed resource you fed to your animals in dry season?

A) natural resource grass B) Hay C) Crop residues D) Others (specify)

2.2.3. What are feed resource you fed to your animals in wet season?

A) natural resource grass B) Hay C) Crop residues D) Others (specify)

2.3.4 When season are the availability of feed resource? A)dry season B) Wet season

2.4 Livestock Feeding practices

1. How dou feed your animal during dry season?

a) Free grazing b) Controlled grazing c) cut and carry feeding d) tethering feeding e) controlled grazing and cut and carry feeding f) other (specify)

2. How do you feed your animal during wet season?

a) Free grazing b) Controlled grazing c) cut and carry feeding d) tethering feeding e) controlled grazing and cut and carry feeding f) other (specify)

3. Do you use supplementary feed for your animal? A) Yes B) No

4 If yes list type of supplementary feeds?.....

5. Do you face feed shortage for your livestock? A) Yes B) No

6 If yes, what measures do you take to alleviate problems of feed shortage?

A) Purchase concentrate B) Purchase forage (rent grazing land) C) use crop residues D) reduction of stock E) other (specify)

7. At which season do you face feed shortages? A) Dry season B) Wet season