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Characterization of Goat Husbandry Practices in Dollo Zone, Somali Regional State Ethiopia

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ABSTRACT

The aim of this study was to characterize goat husbandry practices in Dollo zone, Somali Regional state, Ethiopia. Three districts namely Warder, Danod and Daratole were purposively selected based on the goat production potential. Three kebeles were also purposively selected from each district based on the goat production potential. The relevant data for this study were collected through semi-structured questionnaire applied on 156 sample households, key informants interviews, focus group discussions and personal observations the study revealed that the major available water sources in wet season were dams/ponds (92.9%) and pipe water (7.1%), whereas, rig water (65.4%), water wells (17.8%) and dams/ponds (16.7%) were major water sources in dry season and watering frequency of goats varied according to the season, with the dry season having a higher watering frequency due to the inaccessibility of watering points within short distances. The major feed sources for goats during wet season were natural pasture and fodder trees with 63.5% & 36.5%, respectively. On the other side, the major sources of feed in the dry season were natural pasture (42.3%) followed by fodder trees (30.8%) and crop residues (26.9%), respectively. Goats were housed in an open kraal enclosed with branches of acacia tree which don't protect them from extreme weather conditions. The majority (75.6%) of the goat owners practiced an uncontrolled breeding system. Ethno-veterinary practices through use of herbal and non-herbal ways were practiced in the study area. Drought, feed shortage, water shortage, diseases, predators, and market problems were the major constraints that hindered goat production in the study area. Therefore, the study suggests the need for improving the overall management practices of goats to enhance productivity through awareness creation and extension service. The study also suggests further studies on the implications of suboptimal husbandry practices on goat production and productivity.

INTRODUCTION

Goats, being adapted to different agro-ecologies, reared by various ethnic communities and found in all production systems (Gizaw et al., 2010), are important components of the livestock sector in Ethiopia and mainly kept for the purpose of meat, milk and skin production and income generation by smallholder farmers throughout the country (Dhaba et al., 2012). Ethiopia possesses one of the largest goat populations in the continent that serves multiple functions to communities that herd them. The total goat population in Ethiopia is estimated at 52.5 million and in Somali Regional State, about 16.4 million goats, excluding the data of six zones, are reared in various agro-ecologies (CSA, 2021). In Ethiopia, goat production accounts for 16.8% of total meat supply (Sebsibe, 2008) and 16.7% of milk consumed in the country (Kocho, 2007). In Ethiopia, the average annual meat consumption per capita is estimated to be 8 kg/year which was lower than consumption of meat in the USA (124 kg per capita per year) and that of the global average meat consumption (38 kg/year) (Sebsibe, 2008). The average carcass weight of Ethiopian goats is 10 kg, which is the second lowest in sub-Saharan Africa (Yami and Merkel, 2008). Goat inhabits a wide range of environments, extending from tropical to cool temperate climates (Zelalem and Fletcher, 1991). The small body size, broad feeding habits, adaptation to unfavorable environmental conditions and their short reproductive cycle provide goats with comparative advantage over other species to suit the circumstances of especially resource-poor livestock keepers (Debele et al., 2013). Goat production in many parts of Ethiopia is of traditional (Yayneshet, 2010) and the country benefited little from this sub-sector. Low productivity and the absence of market-oriented production system limit the volume of marketable livestock (Shenkute et al., 2010). Feed shortage and poor quality of the available feed resources constrain animal output (Yayneshet, 2010; Tolera et al., 2012).

In pastoral and agro-pastoral areas like Dollo zone, goats are important components of the production system which benefits smallholder farmers in generating cash income as well as milk. Despite their potential in the area, the productivity of goat remains quite low. Besides, there is limited information in regard to goat production practices, and this suggests that there is a need for research and it is crucial to systematically assess husbandry practices, available feed resources and evaluate the nutritional value of major available feeds in order to plan and design appropriate development interventions that are relevant to the specific systems in the area. Therefore, the objective of this study was to assess goat husbandry practices in Dollo zone, Somali Region, Ethiopia.

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MATERIALS AND METHODS

Description of the study Area

This research work was conducted in Dollo zone. Dollo zone is one of the eleven zones in the Somali region of Ethiopia. Dollo is bordered on the southwest by Korehei zone, on the northwest by Jarar zone, and on the northeast and southeast by Somalia. Warder is the main and administrative center of the zone and it has a latitude and longitude of 6°58'N 45°21'E with an elevation of 541 meters above sea level. It has an annual average temperature of 28oC. Warder is 537 km far from Jigjiga and 1131 km from Addis Ababa. Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), this Zone has a total population of 306,488, of whom 175,624 are men and 130,864 are women. Livestock species such as goats, sheep, camels and cattle are integral components of the livelihood of the communities in the zone.

Warder district is one of the woredas in the Somali Region of Ethiopia. it is bordered on the southwest by the Korahe Zone, on the north by Danot, and on the east by Geladi. The average elevation in this district is 943 meters above sea level and it lies 6°50'N 45°30'E. Danot district is bordered on the south by Warder, on the west by the Korahe Zone, on the northwest by the Degehabur Zone, on the north by Somaliland, on the east by Boh, and on the southeast by Galadi. It lies 7°50'N 45°50'E. Daratole district is bordered on the south by Warder, on the west by the Korahe Zone, on the northwest by Danot district, on the east by Boh, and on the southeast by Galadi.

Study Design and Sampling Procedure

This study was a cross-sectional investigation to collect relevant information on goat husbandry practices and major constraints of goat production in the study area. The sample selection was conducted by using purposive sampling technique based on the abundance of goat-rearing practices and road accessibility in consultation with zonal and district bureau of Agriculture experts. Thus, in order to achieve the objective of the study, purposive sampling was applied on three districts among the seven districts of the zone which dominantly have the potential of goat production. Nine Kebeles (three from each district) were selected purposively based on the availability of goat as one of their key livestock species. Lastly, 156 households who own goats were selected for this study.

Data Collection and Analysis

The relevant data for this study was collected by using semi-structured questionnaire that was prepared for interviewing selected goat owners, key informants interview and focus group discussions. One focus group discussion was held within each kebele with a minimum of eight members from each location. The data was analyzed using descriptive statistics such as mean and percentage, using SPSS (ver. 26.0) as well as MS Excel (2016) for data arrangement and simple calculations such as ranking index.

RESULTS AND DISCUSSION

Demographic Characteristics of the Households

Table 1 shows sex, age, educational status and family size of the respondents in the study area. Majority of the respondents were males (72.4%) while the rest (27.6%) were females. The overall average age of the respondents was 44.2 years old. Majority (76.9%) of the respondents were illiterate. The higher percentage of illiteracy is similar with the findings of Ma'alin et al. (2022) who reported a higher proportion of illiteracy and religious schools' education for Shabele zone of Somali region. Similarly, Wendimu (2013) reported a higher proportion of illiteracy and religious schools' education for Godey and Adadle districts of Somali region. The role of education is obvious in affecting household income, adopting technologies, demography, health, and as a whole the socio-economic status of the family as well (Keralem, 2005). The overall average family size of the study districts was 5.90±0.17. However, the reported average family size in this study is lower than that of 6.41±1.3 reported by Ma'alin et al. (2022) for Shabele zone of Somali region.

Table 1: Sex, age, educational level and family size of the respondents (%)

Variables	Districts (%)			
	Warder	Danod	Daratole	Overall
Sex				
Male	26.9	25	30.8	27.6
Female	73.1	75	69.2	72.4
Age (Mean±SE)	44.2±1.3	44.4±1.30	44.0±1.3	44.2±0.74
Educational level				
Illiterate	75	78.8	76.9	76.9
Primary school	17.3	15.4	17.3	16.7
Religious school	7.7	5.8	5.8	6.4
Family size (Mean±SE)	6.17±0.33	5.92±0.32	5.62±0.27	5.90±0.17

SE= standard error

Purpose of Goat Production

The ranked purpose of keeping goats by respondents in study areas are presented in Table 2. The purposes of keeping goats in the study area were literally remaining similar among the interviewed respondents. The respondents in the study areas keep goats for different purposes such as source of income, saving insurance, meat, milk, and social and cultural functions. Accordingly, source of income was ranked as first purpose of raising goats in the study area. This is in concord with the study of Kocho (2007) which revealed that the rural households do not sale large animals for acquiring them back is not as easy as small ruminants. Whereas, next to sources of income, saving insurances, milk, meat, and socio-cultural functions have been ranked according to their order of importance.

Table 2: Proportion of respondents to purpose of goat production in the study area

Reasons	Rank						Index
	N	R1	R2	R3	R4	R5	
Income	156	65	32	25	23	11	0.214
Saving	154	35	55	37	14	13	0.211
Milk	151	18	23	32	46	32	0.207
Meat	138	23	25	40	33	17	0.189
Socio-cultural functions	130	15	20	17	25	38	0.178
Total	**729**	**156**	**155**	**151**	**141**	**111**	**999**

Index= [(5 for rank 1) + (4 for rank 2) + (3 for rank 3) + (2 for rank 4) + (1 for rank 5)] divided by the sum of all weighed purposes of goat keeping mentioned by the respondents, R=Rank

Management Practices of Goats

Water sources and management

Table 3 summarizes main water sources for goats in different seasons. The majority (92.9%) of respondents in the study area reported that the major source of water during wet season was dam/pond followed by water wells (11.1%). On the other side, the majority (65.4%) of the respondents in the study area reported that the water source of goats during dry season was pipe water (rig) followed by water wells and dam/pond with percentage of 17.95 and 16.7% respectively. The major available water sources both during the wet and dry season were dams/ponds and pipe water, respectively. However, the data obtained through interviews with key informants and focus group discussion indicated that water scarcity is one of the main challenges of goat production in the area. This finding is in line with the study of Abdilahi et al. (2022) who reported water shortage as a main constraint of sheep production in Awbarre district of Fafan zone, Somali region, Ethiopia.

Table 3: PMain water sources in the study area

Parameter	Districts (%)			
	Warder	Danod	Daratole	Overall
Water sources in wet season				
Water wells	7.7	5.8	7.7	7.1
Dam/ponds	92.3	94.2	92.3	92.9
Water sources in dry season				
Water wells	21.2	17.3	15.4	17.9
Dam/ponds	19.2	17.3	13.5	16.7
Rig water	59.6	65.4	71.1	65.4

Watering Frequency of Goats

Watering frequency of goats and distance to watering points in the study area are summarized in Table 4. During the dry season, majority (66.7%) of the respondents in the study area watered their goat once in two days followed by those who watered once a day (17.3%) were as the remaining respondents watered their goats once in three days and once in four days with percentage of 8.3% and 7.7% respectively. In the other hand, the majority (57.5%) of the respondents in the study area watered their goat during wet season once in four days followed by those who are watered their goats once a day and freely available which accounts 25.65% and 14.1% respectively. The remaining respondents watered their goat once two days and once three days 0.6% and 1.92% respectively. As the result of the study indicated, there is highly significance ($P<0.05$) difference among the three district for watering frequency during the wet season. This finding is in line with the report of Gatew et al. (2017) who reported that majority of goat owners in Bati area provides water to their goats every day and few individuals once in two days and because of lack of surface water in Borana, almost all of the goat owners take their goats to the watering points once in three or two days. However, in Siti, watering

frequency ranged from every day to once in three days based on availability. Long watering frequencies were used to water goats in the study area. This might be due to inaccessibility of watering points in close distances in most part of the study areas. However, watering frequency any time they required is small as compared to sheep. Besides, goats are better adaptive to water scarcity than sheep (Schiere and Ibrahim, 1998).

Table 4: Watering frequency of goats in the study area

Parameter	Districts (%)			
	Warder	Danod	Daradtole	Overall
Watering frequency in dry season				
Once a day	17.3	19.2	15.4	17.3
Once in two days	67.3	67.3	65.4	66.7
Once in three days	7.7	7.7	9.6	8.3
Once in four days	7.7	5.8	9.6	7.7
Watering frequency in wet season				
Freely available	23.1a	11.5 b	7.7 c	14.1
Once a day	0	19.2	57.7	25.6
Once in two days	0	1.9	0	0.6
Once in three days	0	3.8	1.9	1.9
Once in four days	76.9	63.5	32.7	57.7

Values followed by different letters in the same row are significantly different at P<0.05

Distance to the Watering Points

Distance to watering points during wet and dry seasons in the study areas are presented in Table 5. During wet season, majority (55.8%) of the goat owners traveled their animals <1 km, while 20%, 17.3% and 6.4% of the respondents reported that they water their animals at home, traveled 1-5 km and more than 5km, respectively. During dry season, on the other hand, majority (66%) of the goat owners traveled their animals >5 km, while 26.3% traveled 1-5 km and the remaining (7.7%) traveled than <1 km, respectively. However, there was a significance difference (P<0.05) of distance to water sources during wet season whereby pastoralists in Warder district reported a distance 1-5 km, while pastoralists in Danod and Daratole reported a distance 5 km to watering points.

The study revealed that water sources and its availability were significantly affected by seasonal variation in the study area. During dry period, water points get dry and consequently water requirements of animals become increased due to increased temperature, which led to water scarcity. In addition, the focus group discussion revealed that pastoralists in the study areas encounter water shortage for their flocks. The main reasons were drying water source, lack of rainfall and far distance of water source from homestead. Therefore, it needs appropriate intervention to minimize the problem. The current finding is supported by the report of Abdilahi et al. (2022) who indicated water as one of the major constraints hindering sheep production in Awbarre district, Somali region, Ethiopia.

Table 5: Distance to the watering points during wet and dry seasons in the study area

Parameter	District (%)				
	Warder	Danod	Daratole	Overall	P-value
Distance to the watering points during wet season					
Watered at home	17.3	25	19.2	20.5	
< 1 km	59.6	53.8	53.8	55.8	
1-5 km	23.1	17.3	11.5	17.3	0.03
>5 km	0c	3.8b	15.4a	6.4	
Distance to the watering points during dry season					
< 1 km	7.7	9.6	5.8	7.7	
1-5 km	26.9	25.0	26.9	26.3	
>5 km	65.4	65.4	67.3	66	
Once in three days	0	3.8	1.9	1.9	
Once in four days	76.9	63.5	32.7	57.7	

Values followed by different letters in the same row are significantly different at P<0.05

Feed Resources and Feeding Management

The major feed resources of goats in the study areas are represented in Table 6. As the majority of the respondents in the study areas indicated, the major feed sources for goats during wet season is natural pasture and fodder trees with percentage of 63.5% and 36.5%, respectively. On the other side, the major sources of feed for goats during the dry season is communal natural pasture (42.3%) followed by fodder trees (30.8%) and crop residues (26.9%), respectively. The study showed that natural pasture, crop residue and fodder trees were the common feed resources in the study area. Natural pasture from communal grazing lands was the major feed source in all time across all studied areas. However, the availability of pasture in the grazing lands reduces during dry seasons. This study is in line with the report of Abraham et al. (2017) who reported that the different feed resources reported in Kafta Humera district of western Tigray were natural pasture, browse species, crop residue and crop aftermath. It was also reported that communal grazing was the most abundant feed source for goat in the area though grazing drastically reduces in the dry season. According to focus group discussions, the majority of goat owners in all study areas used mineral supplement (table salt) during the wet season, primarily when there is sufficient feed, to improve the animal's efficiency and health. This is in line with the report of Gatew et al. (2017) for Bati, Borana and Siti areas.

Table 6: Major feed resources for goats during wet and dry seasons in the study area

Parameter	Districts (%)			
	Warder	Danod	Daratole	Overall
Major feed sources in wet season				
Natural pasture	69.2	59.6	61.5	63.4
Fodder tress	30.8	40.4	38.5	36.6
Major feed sources in dry season				
Natural pasture	44.2	38.5	44.2	42.3
Crop residues	25	28.8	26.9	26.9
Fodder trees	30.8	32.7	28.8	30.8

Housing Management

Providing a shelter for animal has impact on their productivity. Goats being small in size they are exposed to danger. Hence providing a good house can decrease environmental stress and improve productivity. Keeping animals with different size could cause loss in productivity (Zeleke and Getachew, 2017). However, the type of the house to be used vary among the different production systems and agro ecology. Though the type and way of housing vary among individual farmers, livestock housing is a common practice in the study area whereby animals are protected from predators and theft. Hence, keeping goats in a separate open kraal enclosed with acacia tree branches was common. However, the limitation of this type of house is that animals are exposed to the rainfall and extreme weather conditions, especially during the severe cold winter-nights and high daily temperatures during the spring and autumn seasons. The study also revealed that majority of the pastoralists kept kids in a separate built pen which is meant to provide ideal environment and prevent sucking at night.

Similarly, Tesfaye and Tamir (2015) reported that fencing was virtually common among all pastoralists in the Yabello district for the purposes of handling animals

Table 7: Housing management of goats in the study area

Parameter	Districts (%)			
	Warder	Danod	Daradtole	Overall
Housing type				
Enclosure with thorn plants	100	100	100	100
Are kids housed with adult?				
Yes	5.8	13.5	34.6	17.9
No	94.2	86.5	65.4	82.1
Where are goats housed?				
With sheep	57.7	55.8	80.8	64.7
Alone	42.3	44.2	19.2	35.3
House cleaning frequency				
Once a day	48.1	9.6	0	19.2
Once a week	34.6	69.2	75	59.6
Two times a week	17.3	21.2	25	21.2

and protecting them from predators. Fences were usually made from locally available materials such as shrubs, thorny and wooden trees and majority of the pastoralists (82%) keep their flocks in open kraals at night. The kids were frequently kept in the family houses or separately built pen, which was meant to provide ideal environment. Goats were mainly housed with sheep and only small percent of the respondents reported that goats were housed alone. However, there was no report of housing goats with other livestock.

The study also revealed that goat houses were not cleaned frequently whereby cleaning frequency was mainly once a week (59.6%), two times a week (21.2%) and once a day (19,2%) as shown in Table 7.

Breeding Management

Breeding practices and management of goats in the study area is illustrated in Table 8. Majority (75.6%) of goat owners have no control on the mating of their animals. The use of communal grazing land, lack of awareness and insufficient of breeding bucks were the main reasons for uncontrolled mating. The study also revealed that the main purpose of keeping bucks in the study area were fattening (57.1%), socio-cultural functions (35.2%) and mating (7.7%) respectively as shown in Table 8. This finding is inline the finding of Gatew et al. (2017) who reported that majority of goat owners in Bati (88.78%), Borana (98.48%) and Siti (98.26%) areas practiced uncontrolled natural mating due to extensive communal production system in all the study areas. About 75% of the interviewed goat owners have their own bucks born in the flock and about 16.7% of the respondents use the breeding bucks of their neighbors or relatives. On other hand, 8.3% of the respondents obtained through purchasing (Table 8). Though, breeding is one of the most important tools of improving animal performances none of the respondents reported to have basic breeding plan of their flock and mating of the flock was carried out randomly elsewhere in the field and/or during the night in the barn. This finding is in line with the report of Tesfaye and Tamir (2015) in Yabello district of Borana zone, Southern Ethiopia.

Table 8: Mating system and source of breeding bucks in the study area

Parameter	Districts (%)			
	Warder	Danod	Daratole	Overall
Mating system				
Controlled mating	21.2	32.7	19.5	24.4
Uncontrolled mating	78.8	67.3	80.8	75.6
Reasons of uncontrolled mating				
Goats graze together	53.8	50	55.5	53.2
Lack of awareness	30.8	17.3	17.3	21.8
Insufficient of bucks	3.8	0	7.7	3.8
Purpose of keeping bucks				
Mating	9.6	1.9	11.5	7.7
Socio-cultural	55.8	7.7	42.3	35.2
Fattening purpose	34.6	90.4	46.2	57.1
Sources of buck				
Born in the flock	69.2	80.8	75	75
Neighbor's buck	19.2	13.5	17.3	16.7
Purchased	11.5	5.8	7.7	8.3

Heath Management

Health management of goats in the study areas is illustrated in Table 9. Ethno-veterinary/ traditional disease treatment methods were common in the study area. However, the veterinary clinic service was very limited and some of the respondents indicated that they used both ethno-veterinary and veterinary clinic concurrently. On the other hand, the major (64.7%) veterinary service in the study area was shop/market whereby goat owners purchase from. The government veterinary clinics and private veterinary clinics

Table 9: Treatment methods and access to veterinary service in the study area

Parameter	District (%)			
	Warder	Danod	Daratole	Overall
Treatment methods of diseases				
Modern	21.2	19.2	15.4	18.6
Ethno-veterinary/traditional	40.4	46.2	51.9	46.2
Both	38.5	34.6	32.7	35.3

Availability vet. services				
Government vet services	11.5	13.5	15.4	13.5
Private	19.2	28.8	17.3	21.8
Shop or market	69.2	57.7	67.3	64.7
Distance to the veterinary services				
<1 km	7.7	1.9	7.7	5.8
1-5 km	5.8	13.5	7.7	9
6-10 km	32.7	30.8	25	29.5
>10 km	53.8	53.8	59.6	55.8

were limited and have not taken root. Majority (55.8%) of the respondents reported that they travel more than 10 km for the nearest veterinary service. About 29.5% of the respondents indicated a distance of 6-10km to get their nearest veterinary service. However, few of them (14.8%) stated a distance of 1-5 km.

Major diseases of Goats

Diseases are a major constraint to the improvement of livestock industry in the tropics as they decrease production and increase the morbidity and mortality (Mwacharo and Drucker, 2005). The most commonly prevailing diseases which hamper goat production in the study area are presented in Table 10.

According to focus group discussion, interviews with key informants and interviewed households, the major goat diseases were tick lameness, contagious caprine pleuropneumonia (CCPP), Pestedes petetis ruminants (PPR), bloating, goat pox, and foot rot in order of importance.

Table 10: Major diseases of goats in the study areas

Disease type	**Local name**	**Rank**							**Index**
		N	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	
Tick lameness	Shilin	156	60	30	25	23	9	9	0.189
CCPP	Sambab	150	30	55	33	12	11	9	0.182
PPR		148	23	25	40	33	17	10	0.179
Goat pox	Furuq	120	18	12	25	30	27	8	0.145
Bloating	Dibiro	130	15	20	17	25	38	15	0.157
Foot root	Raaf dilaac	121	10	11	16	31	22	31	0.146
Total		**825**	**156**	**153**	**156**	**154**	**124**	**82**	**0.998**

Index= [(6 for rank 1) (5 for rank 2) + (4 for rank 3) + (3 for rank 4) + (2 for rank 5) + (1 for rank 6)] divided by the sum of all weighed diseases mentioned by the respondents, CCPP= contagious caprine pleuropneumonia, PPR= Pestedes petetis ruminants

Ethno-Veterinary Practices

According to focus group and interviews with key informants, the study revealed pastoralists in the study area used different herbs and non-herbal methods in different ways for disease treatment as summarized in Table 11. The most frequently used plants were Urawawayn (Coriandrum sativum), Gumar (Acacia oerfota). Non-herbal traditional medicinal practices were included using dab (fire), carro and cusbo (soil and salt) and duco (praying).

Table 11: Herbs/non-herbs used as traditional medicine

Disease type	**Local name**	**Scientific name**	**Way of treatment**
Tick lameness	Urawawayn (coriander)	Coriandrum sativum	Smoking
	Xanshar (byproduct of coffee)		For drinking
FMD	Gumar	Acacia oerfota	Smoking
Bloating	Caro and cusbo (soil & salt)		Supplementation
Foot root	Dab (fire)		Burning
Throat swelling	Dab (Fire)		Burning swelling part
Sheep pox	Duco (praying)		Reciting a Qur'an

Constraints of Goat Production

As presented in Table 12, drought, water shortage, feed shortage, disease occurrences, predators and market problems were the major goat production constraints across the studied areas. This finding is in line with the finding Gatew et al. (2017) who stated that drought,

feed shortage, water shortage and disease occurrence as the main constraints of goat production in Siti, Bati and Borana areas. The focus group discussion and key informants interview indicated that water scarcity was a critical problem among the pastoralists in the study areas. Goats owners also indicated shortage of water for their animals, particularly during the dry season. The shortages of water for goat flock was mainly caused by the drying of water sources and long trekking to water sources. Similar information was reported by Gatew et al. (2017) for Yabello district of Southern Ethiopia. The focus group discussion also highlighted that pastoralists in the studied areas has faced feed shortage mainly during the dry season and the main causes of feed shortage were due to recurrent drought, scarce of browse in the dry period, lack of input of improved forage, increased animal population, lack of awareness of feed conservation mechanisms and lack of extension service. Feed shortage in both seasons (dry and wet) was also reported to limit productivity of goat and it was further worsened due to the absence of awareness and practice of feed conservation techniques among goat owners.

Table 12: Goat production constraints as perceived by the respondents

Constraints	Overall							
	N	**R1**	**R2**	**R3**	**R4**	**R5**	**R6**	**Index**
Drought	156	90	25	21	10	9	1	0.191
Feed shortage	150	25	34	28	27	25	11	0.183
Water shortage	153	15	25	27	24	32	30	0.186
Disease	140	10	33	30	35	32	0	0.171
Predators	100	8	7	20	35	30	0	0.122
Market problems	120	8	32	30	23	24	3	0.146
Total	**819**	**156**	**156**	**156**	**154**	**152**	**45**	**0.999**

Index= [(6 for rank 1) (5 for rank 2) + (4 for rank 3) + (3 for rank 4) + (2 for rank 5) + (1 for rank 6)] divided by the sum of all weighed constraints mentioned by the respondents

CONCLUSION

Natural pasture, crop residue, and fodder trees were discovered to be common feed resources in the study area. Natural pasture from communal grazing lands was the primary feed source. During dry seasons, however, the availability of pasture in the grazing lands decreases. Goats were housed in an open kraal that was surrounded by acacia tree branches, leaving them vulnerable to the weather. Uncontrolled natural mating was a prevalent practice in the area because of the extensive communal production system and lack of awareness and knowledge. The breeding bucks are born in the flock which indicates that inbreeding within the flock is expected to be high, and knowledge of inbreeding appears to be limited. Ethno-veterinary/traditional treatment methods were practiced because veterinary clinics were severely lacking. Tick lameness, CCPP, PPR, bloating, goat pox, and foot rot were the most common diseases that hampered goat production in the study area. Drought, water shortage, feed shortage, disease occurrences, predators and market problems were the major constraints that hindered goat production and productivity in the area. Therefore, improvement of the overall goat husbandry practices particularly disease, feed shortage, water scarcity through awareness creation and extension service would be necessary. The study also suggests further studies on the implications of suboptimal husbandry practices on goat production and productivity.

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