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Management practices and production constraints of central highland goats in Emba Alaje District, Southern Zone, Tigray, Ethiopia

Tsegay Tkue Gebrewahd[1], Abadi Meresa and Niraj Kumar[1]*

[1]College of Veterinary Medicine, Mekelle University, P.O.Box: 2080, Mekelle, Ethiopia

**Corresponding author: Tsegay Tkue Gebrewahd, Email: tsegay1984t@gmail.com*

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Abstract

A cross-sectional study was conducted from March to June 2016 on randomly selected 250 households who reared goats in Emba Alaje District to assess management practices of central highland goats and their major constraints. A pretested and semi-structured questionnaire was used to collect the required data. Out of the total respondents, 213 (85.2%) were male and 38% of them had a basic education. Almost all 249 (99.6%) of the respondents practiced a mixed crop livestock production system, and majority of them (85.2%) reared goats for an immediate cash source. About 78.8% of the respondents had a separate farming area for their goats. Regarding the feeding management, majority of the respondents, 223 (89.2%) used a communal grazing/browsing area. Provision of supplementary feeds for goats was not common, and the breeding system was almost uncontrolled. Majority of the respondents 154, (61.65%) did not select buck for breeding, and 88 (35.2%) of them did not know the source of the bucks that mated their goats. In the present study, 100% of the respondents complained that, there were diseases that affected the health and production of their goats, of which 33.6% of the respondents complained, pasteurellosis as one of the major goats' diseases in the study area. Feed shortage (36%) and diseases (33.6%) were among the major constraints raised by the respondents. Therefore, solving the above constraints is of paramount importance to improve the goat production potential and livelihood of the farmers in the study area.

Keywords: Central highland goats; Constraints; Emba Alaje; Management; Tigray

Introduction

There is a rise in the importance of goats in most developing countries (FAO, 2001). Increasing population pressure, land scarcity and diminishing production resources are promoting goat and sheep production in the tropic (Bett *et al.,* 2009). The increasing interest in goat keeping observed recently in many developed countries is related to the fact that goat products are considered a delicacy of great nutritional value (Park, 2000). Despite the huge genetic diversity and valuable contributions of goats to the livelihoods of farmers in rural areas, the sector has been given low research and development attention at global and national levels (Mahmoud Abdel Aziz, 2010). This is mainly due to an inadequate recognition of the contributions goats make to the livelihoods of the poor, resulting in underutilization of the diverse goat genetic resources (Mahmoud Abdel Aziz, 2010).

According to the CSA (2013), out of the 54 million livestock population in Ethiopia, goats cover 23.23%. Goats have a significant role in the economy of the country. The country earns annually on average about US dollar 8 million from the export sales of live sheep and goats and of mutton and goat meat. (ILCA, 1991). Despite the large size of the country's goat population, the productivity per goat and the contribution of this sector to the national economy is relatively low. This may be due to different factors such as poor nutrition, prevalence of diseases, lack of appropriate breed and breeding strategies and poor understanding of the production system as a whole. However, the indigenous goat breeds have relative advantage in their natural habitat (Tesfaye Tsegaye, 2009). In Tigray Region, goat rearing is among the livestock production activities where they are kept under extensive production system. Goats have a significant contribution for the economy of livestock keepers and the region as whole. Despite study on goats' management practices and production constraints are important for developing appropriate intervention for improving the productivity and income from keeping goats, there is a study gap in Tigray Region in general and particularly in Emba Alaje District. Therefore, the current study was conducted with the objective of assessing management practices and production constraints of central Highland goats in Emba Alaje District.

Materials and Methods

Description of the study area

The current study was conducted in Emba Alaje District. It is located in the southern zone of Tigray at a longitude and latitude of 39° 15′ to 39° 35′ E and 12° 51′ to 13° 00′N at a distance of 100 km south of Mekelle city. It has an altitude of 2445 to 2480 meters above sea level (m.a.s.l.) and with maximum and minimum rainfall of 845 and 580 mm, respectively. The temperature ranges between 14°C and 22°C for minimum and maximum values, respectively. Generally, the agro climatic condition of the wereda varies from dega (2,300-3,300 masl), woyna dega (1,500 -2,300-masl) and kola (500-1,500-masl). The livestock population of the study area is 76,215, 62,148, 59,286 and 218,640 for cattle, sheep, goats, and equine, respectively (BoARD, 2015)

Sampling procedure and data collection

First, seven representative peasant associations (Ayba, Atsela, Keyhe Tkeli, Kelma, Batmera, Tekea and Fana) out of twenty peasant associations of the study district were purposively selected. The peasant associations were selected based on their goat population and production potential. During the selection process, experts from the Bureau of Agriculture and Rural Development of the district were involved. Next, 250 households from the seven peasant associations who rear goats were randomly selected. Then, qualitative data were collected using pretested and semi-structured questionnaires by face-to-face interview. The questionnaire survey was focused on the respondents' biography and socioeconomic characteristics, goat management practices such as housing, feeding, breeding and health and major constraints of goat production. Moreover, data were collected from group focused discussion, and qualitative data were also collected via observations by the researchers during field visits.

Data analysis

The data collected from the current study were entered into a Microsoft Excel sheet and coded properly. Then, it was imported to a Statistical Package for Social Sciences (SPSS) version 20 for descriptive data analysis such as frequency and percent.

Results

Respondents' biography and socioeconomic characteristics

Out of the total respondents interviewed in the current study, 85.2% of themwere males, and 38% of them had a basic education. Almost all (99.6%) of the respondents practiced a mixed crop livestock production system, and majority of them (85.2%) reared goats for an immediate cash source (Table 1).

Table 1. Respondents' biography and socioeconomic characteristics

Variables	Category	Frequency	Percent (%)
Sex	Male	213	85.2
	Female	37	14.8
Level of education	Illiterate	41	16.4
	Basic education	95	38
	Elementary	71	28.4
	Secondary	42	16.8
	Diploma and above	1	0.4
Farming activity	Crop production	1	0.4
	Mixed crop livestock production	249	99.6
Production system	Intensive	8	3.2
	semi intensive	1	0.4
	Extensive	241	96.4
Purpose of rearing goats	For immediate cash source	163	85.2
	For live animal saving	68	27.2
	For meat source	18	7.2
	For milk source	1	0.4

Housing managements of goats in the study area

The statistical analysis of the present study indicated that 62.4% of the total respondents kept their goats only at nights. Moreover, 78.8% of the respondents had a separate housing for their goats. Majority of the respondents (96.4%) cleaned the goats' house regularly. However, 96.4% of the respondents did not have a separate house for pregnant goats (Table 2).

Table 2. Housing management of goats in the study area

Variables	Category	Frequency	Percent (%)
How do you keep your goats at night?	Housed alone	156	62.4
	Housed with sheep	92	36.8
	Housed with cattle	2	0.8
Where do you keep your goats at night	In a separate farming area	53	21.2
	In our residence compound	197	78.8
What type of goats' house do you have?	Closed type	239	95.6
	Open but fenced	11	4.4
Do you clean the house regularly?	Yes	241	96.4
	No	9	3.6
Cleaning frequency of the house per week	Once	57	22.8
	Twice	146	58.4
	Three times	37	14.8
	Four times	10	4
Do you have a separate house for does and kids?	Yes	126	50.4
	No	124	49.6
Do you keep pregnant goats in separate house?	Yes	9	3.6
	No	241	96.4

Feeding management of goats in the study area

Regarding the feeding management of goats in the study area, majority of the respondents (89.2%) used a communal grazing/browsing area, since most of them used an extensive production system. Provision of supplementary feeds for goats in the study area was not common, as most respondents (89.6%) did not give any supplementary feeds to their goats, and none of the respondents (100%) purchased supplementary feeds for their goats (Table 3).

Table 3. Feeding management of goats in the study area

Variables	Category	Frequency	Percent (%)
Main feed source for goats	Communal grazing/browsing area	223	89.2
	Owned grazing/browsing area	2	0.8
	Both	25	10.0
Provision of supplementary feeds	Yes	26	10.0
	No	224	89.6
Type of supplementary feeds	Straw	3	1.2
	Hay	11	4.4
	Atela	13	5.2
Purchasing feeds for goats	No	250	100
Practicing goat fattening	Yes	4	1.6
	No	246	98.4
Water source for goats	River	212	84.8
	Pound	19	7.6
	Pipe	19	7.6
Watering frequency per day	Once	220	88.0
	Twice	19	7.6
	Once in two days	11	4.4

Breeding and milking management of goats in the study area

The results of the present study showed that, majority of the respondents (61.65%) did not select bucks for breeding, and 35.2% of them did not know the source of the bucks that mate their goats. Generally, 99.2% of the respondents used uncontrolled breeding.

Goats in the study area served as source of milk for the households, and there was a habit of raw milk consumption. In addition to drinking raw and boiled milk, goats' milk was also processed into butter using a traditional processing technique (25.6%) (Table 4).

Table 4. Breeding and milking management of goats in the study area

Variables	Category	Frequency	Percent (%)
Do you select buck for breeding?	Yes	96	38.40
	No	154	61.65
Where is the source buck for breeding?	Own	48	19.00
	Neighboring	114	45.60
	Unknown	88	35.20
Average age at first kidding	<1year	127	49.20
	1-1.5 years	123	83.20
Number of kids per kidding	Single	208	83.20
	Twine	41	16.40
	Triple	1	0.40
Average kidding interval per year	One	5	2.00
	Two	245	98.00
Do you milk goats for human consumption?	Yes	102	40.80
	No	148	59.20
Average milk yield per goat	<0.5 Litter	44	17.60
	0.5-1Litter	13	5.20
	I do not know	189	75.60
Do you drink raw milk?	Yes	67	26.80
	No	183	73.20
Do you process goats' milk into butter?	Yes	64	25.60
	No	186	74.40

Health management of goats in the study area

According to the results of the present study, 100% of the respondents complained that there are diseases that affect the health and production of their goats in the study area. About 33.6% of the respondents complained that pasteurellosis is among the major goats' diseases in the study area, and 92.8% of them also complained that there is mortality of goats due to different types of diseases. Moreover, selling and slaughtering of diseased goats is common in the study area (Table 5).

Table 5. Health management of goats in the study area

Variables	Category	**Frequency**	**Percent (%)**
Do you have diseases problem for your goats?	Yes	250	100
What are the common goats' diseases?	External parasites	67	26.8
	Goat pox	51	20.4
	PPR	48	19.2
	Pasteurellosis	84	33.6
What do you do when your goats are diseased?	I treated them my self	32	12.8
	I take them to a veterinarian	217	86.8
	I do nothing	1	0.4
Do you vaccinate your goats regularly?	Yes	222	88.8
	No	28	11.2
What are the common causes of death for your goats?	Diseases	81	32.4
	Draught	82	32.8
	Predators	84	33.8
	Accident when they are vaccinated	3	1.2

Major constraints of goats' production in the study area

In the study area, different constraints were identified to affect goat production. Feed shortage (36%) and diseases (33.6%) were among the major constraints raised by the respondents. However, according to the results of the current study, 92.8% of the respondents said that there is a good veterinary service in the study area (Table 6)

Table 6. Major constraints of goat production in the study area

Constraints	**Frequency**	**Percent (%)**
Feed shortage	90	36.0
Diseases	84	33.6
Market problem	12	4.8
Lack of farming land	30	12
Lack of credit services	34	13.6

Discussion

The results of the current study indicated that, the main feed source for goats in the study area was from communal grazing/browsing (89.2%). About 89.6% of the total respondents did not give supplementary feeds for their goats, implying that majority of them did practice an extensive production system where the goats mainly depended on feeds of the communal grazing/browsing area.

This result was higher than that reported by Manzi (2013), where communal grazing constituted only 5.2% of the feeds for goats. Moreover, 89.2% of the respondents did not use supplementary feeds for their goats. Most of the respondents did not purchase feeds for their goats, and this could be due to the fact that most of them did not give supplementary feeds for their goats and due to lack of awareness on the advantages of giving supplementary feeds in increasing and/or improving productivity and health of goats.

Goat fattening was not a common practice in the study area, as 98.6% of the total respondents did not practice supplementary feeding of goats. About 99.2% of the respondents use uncontrolled breeding, and selection of the best bucks for breeding was very low. Moreover, 35.2% of the respondents use buck of unknown source for mating their does. This could be due to the fact that the owners and the children who often keep the goats do not have adequate awareness about the breeding management of their goats.

About 49.6% of the respondents did not separate kids and does during night and day time, possibly increasing the chance of getting contagious diseases by running the kids with the flock when the new born kids are not immunologically competent. This result is in agreement with the results of Sharif *et al* (2005), who reported that kids were at higher risk of dying if they were not being separated from adult animals. Therefore, provision of extension services and giving trainings on management practices of goats to the farmers of the study area is very important to improve the production and productivity of their goats and livelihood.

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References

Aziz, A. M., 2010. Present status of the world goat populations and their productivity. *Lohmann Info.*, 45 (2), 42–52.

Bett, R.C., Kosgey, I. S., Kahib, A. K. and Petersa, K.J., 2009. Realities in breed im- provement programmes for dairy goats in East and Central Africa. *Small Rum. Res.*, 85, 157-160.

BoARD (Bureau of Agriculture and Rural development), 2015. Agroecology of Embalaje Wereda, Southern zone, Tigay, Ethiopia.

CSA (Central Statistical Agency), 2013. Agricultural sample survey volume II: Report on livestock and Livestock Characteristics in Ethiopia. Statistical Bulletin 570, Addis Ababa, Central Statistical Agency (CSA), and federal Democratic Republic of Ethiopia.

FAO (Food and Agriculture Organization), 2001. FAOSTAT.FAO production year book, Volume 48. FAO, Rome, Italy.

ILCA (International Livestock Center for Africa), 1991. Hand book of African livestock

Statistics working document No.15, ILCA, Addis Ababa, Ethiopia.

Manzi,T. J., Mutabazi, C. D., Hirwa and Kugonza, D R., 2013. Socio-economic assessment of indigenous goat production system in rural areas of Bugesera District in Rwanda. *Livesto. Res. Rural Dev.,*25.

Park,Y ., 2000. Comparison of mineral and cholesterol composition of different commercial goats milk products manufactured in USA. *Small Rum.* Res., 37,115-124.

Sharif, L. and Obiedat, J., 2005. Risk factors for lamb and kid mortality in sheep and goat farms in Jordan. *Bulgarian J. Vet. Med.,* 8, 99-108.

Tsegaye, T., 2009. Characterization of goat production systems and on –farm evaluation of the growth performance of grazing goats supplemented with different protein sources in Metemaworeda, Amhara region. MSc thesis. Haramaya Univrsity,Ethiopia.