

Husbandry Practices of Arsi-Bale Goats In Agarfa District of Oromia Regional State, Ethiopia

Behailu Samuel¹, Bezalem Sinote² and Sandip Banerjee³

¹ Department of Animal Production, Agarfa Agricultural T.V.E.T College,
Agarfa, P.O.BOX-15, Ethiopia

² School of Animal and Range Sciences, Hawassa University,
Hawassa, P.O.BOX-05, Ethiopia

³ School of Animal and Range Sciences, Hawassa University,
Hawassa, P.O.BOX-05, Ethiopia

Abstract

This study was conducted to assess the husbandry practices of Arsi-Bale goats production in Agarfa district. Semi-structured questionnaire survey was carried out on 150 interviewees who are selected randomly from the three agro-ecologies. Data collected were analyzed using SPSS v17.0 for Windows; qualitative traits were analyzed using frequencies and percentages and also chi-square test. The result showed that the average land holding per household was 2.3 ± 0.13 ha. Goats were the most ($p < 0.05$) widely reared livestock species next only to cattle. The main purpose of keeping goats in the study area was for income generation. The major feed and water sources were natural pasture and river water respectively. The most common type of goat's house in the study area is the one which is constructed attached to the family house sharing the common wall. Small proportion of farmers practice weaning of kids to maintain body condition of dams. Most farmers (40%) in the study area practice castration of goats for fattening and selling, of which only (50%) of farmers used modern method of

castration. Full potential of Arsi-Bale goats in the area need to be exploited by improving husbandry practices.

Keywords: Arsi-Bale goat, feed, water, weaning and castration

1. Introduction

Animal husbandry is the corner stone of rural economy and the activity play key role in the enhancement of the economic status of the society in general [16]. The livestock subsector has gross contribution to the national economy of Ethiopia [13].

Ethiopia has one of the largest livestock populations in the African continent with an estimated population of 28.16 million heads of goats. Most of the goats are distributed across the different agro-ecological zones of the country (CSA, 2014). However, the potential of these caprines are yet to be fully exploited [2&11].

Agarfa district has a large population of sheep and goats which is only next to that of cattle population. However, in spite of this potential, the husbandry practices have been left to continue as it has been done traditionally [3]. Since, management practices have not been studied in the area; there is a pressing need to study the current husbandry practices at farmers' level to determine the status and prospects of the sector.

2. Materials and Methods

2.1 Description of the Study Area

This study was conducted at Agarfa district which is located at a distance of about 460 km south east of Addis Ababa and is situated in Bale Zone of Oromia Regional State between Latitude (7°06'-7°10') N and Longitude (39°12'-39°20')E and the altitude ranges from 1,250 to 3,855masl. The average annual temperature and rainfall of the district is 17.5°C and 800mm respectively [12&17]. Livestock population is estimated to be 181,548 cattle, 79,159 sheep and goats, 33,777 equine, and 40,150 poultry [18].

2.2 Sampling techniques

The sample for the study was selected using stratified random sampling method by classifying the district into three agro-ecological zones [8]. The peasant association representing each agro-ecological zone was selected by proportional random sampling based on the number of peasant association in each agro-ecologies. Accordingly, three peasant associations were selected from Midland while only one peasant association was selected from each Highland and Lowland agro-ecologies. The households owning two goats and above were identified from each sample peasant association and among the identified goats owners the respondents were selected randomly. Thirty households per peasant associations were interviewed.

2.3 Household survey and Group Discussion

Household survey were carried out using semi-structured questionnaire. To strengthen the information collected from the questionnaire survey three group discussions with eight participants including different age groups per agro-ecological zones were held and also key informant interview was carried out with 25 key informants (15 elders above 50 years of age; 2

government officials; 3 supervisor and 5 experts famous for their experience).

2.4 Data analysis

Data collected through questionnaire were entered into statistical package for social sciences (SPSS) version 17.0 for windows. The data obtained from the survey was analyzed using descriptive statistics such as frequencies and percentages. Pearson's Chi-square (χ^2) was used for categorical variables to assess a statistical significance of a particular comparison. The data of livestock holding were subjected to one-way analysis of variance to compare means. An index was calculated to provide ranking of the purpose of keeping goats and reported reasons for feed shortage as suggested by [10] using the formula: Index = the sum of [3 x respondents in rank 1 + 2x respondents in rank 2 + 1x respondents in rank 3] for individual variables divided by the sum of [3 x respondents in rank 1 + 2x respondents in rank 2 + 1x respondents in rank 3] for all variables

3. Results

3.1 Household Resources and purpose of rearing goats

In the study area, (89.3%) of the goats owning households were male headed. Most of the respondents were married (94%). Most of household heads were Muslim followed by Orthodox Christians and Protestant respectively. Most of the interviewed respondents were literate and higher literacy was observed among the respondents from the lowlands. The occupations of all of the households were farmers. Most of the respondent's rear goats as a source of their income followed by those reared for meat and other socio-cultural purposes.

3.2 Land and Livestock Holding

The results also show that the average land and goat holding per household in the study area was around 2.3 ± 0.13 ha and 2 ± 0.16 TLU respectively. Respondents of the highland owned higher number of cattle, sheep, horse and mule than households in midland and lowland agro-ecological zones. Similarly higher number of households in midlands owned chicken as compared to the other agro-ecological zones. The

results also indicated that the highest numbers of goats and donkey were observed in the lowlands.

3.3 Feed resources availability and feeding management

From the feed type that are available in all season, natural pasture accounts the largest proportion followed by crop residues. The other feed types such as grazing after math, conserved feeds, concentrates and weeds are season dependant feed type. For majority of respondents grazing aftermath, roasting grain (asharo), maize grain and crop residues are more abundant from December to February. The major plants that are utilized by households in the lowlands areas of the district includes; Dhaddacha (*Acacia tortilis*), Hammaressa (*Acacia brevispica*), Daboobeessa (*Rhus natalensis*), Burquqee (*Acacia nilotica*), waacu (*Acaciaseyal*), Saphansa (*Acacia mellifera*). Most of the farmers (75.3%) in the area reported feed shortage problem especially in dry season. The reasons for feed shortage was primarily attributable to shrinkage and decline in productivity of the grazing lands. Drought were the second major challenge which was identified by the respondents which was correlated with feed shortages especially in the months between February and May.

Different systems of grazing were practiced in the area which includes free grazing whereby there is no herder assigned to take care of the goats, herded grazing whereby herders are assigned to take of the goats. The results of the study further indicates that most of the respondents preferred to graze their goats alone while some of them took their goats to graze with other species of livestock. It was also observed that free grazing was common during the dry season. In the wet season when there are standing crops in the fields the respondents preferred to hire herders in all the studied agro-ecologies.

3.4 Water sources, Distance and Frequency of watering

The major sources of water for goats are river, spring and ponds. Source of water varies during dry and rainy seasons in the studied agro-ecologies. During dry season most of the households in the highlands use river only followed combination of river and well. Whereas most of the households in the midlands in the same season use river water only followed by combination of river and spring.

Irrespective of agro-ecologies, most of the respondents reported that the distance travelled to reach the watering point was less than a kilometer followed by between 1-5 kilometer during the dry and rainy season. Respondents of the highland and lowland agro-ecologies did not go beyond 5 kilometer during both seasons.

In the highlands the water is provided once daily during the dry season while it is provided freely during the rainy season. The results further show that in the midlands and the lowlands most of the respondents provide water once a day. Water is freely available during wet season in all agro-ecologies, though it is proportionally higher in the highlands.

3.5 Housing of Goats

Most of the households in the lowlands followed by midlands and highlands construct their goat's house attaching to the main house, while less proportion of respondents in the highlands followed by midlands have a separately constructed goats house. The findings also indicate that in the three agro-ecologies most of the households practice separation of their goats from other livestock.

Irrespective of the seasons the dwellings of the goats are cleaned daily, the respondents also indicated that the houses are swept with ash from the kitchen being sprinkled to absorb the residual moisture from the feces and urine.

3.6 Weaning and Castrating practice of goats

The findings indicate that most of the respondents do not practice weaning of the kids. The findings also indicate that castration is commonly practiced by the respondents in the lowlands while very few of the rearers in the midlands responded that they practice castration in their flock. The results pertaining to the age of the castration indicated that in the highlands, the rearers castrate their bucks at weaning or post weaning stage. While in the midlands the castration is usually practiced at the yearling or by 18 months of age, followed by those castrating the bucks at an age between 18 months and 24 months of age. The results further indicate that in the lowlands the bucks are usually castrated at a relatively older age of 18-24 months. The respondents of all the agro-ecologies also

indicated that castration is practiced to fatten the bucks for sale while some of the respondents in the lowlands reported that they castrate the bucks to deter them from unwanted breeding. The local method of castration was prevalent in the highlands and the midlands while the Burdizzo castrator was preferred by the respondents in the lowlands.

3.7 Breeding management of goats

In the study district (90.7%) of the respondents reported to practice selection of breeding male and female goats. The practice of selective mating was not deliberately performed. About (88 %) of the interviewed households reported that they try to have more offspring from the father/ mother of the kid, if the kid is good (i.e. progeny selection).

Half of respondents select their goats for breeding based on body length and height only and followed by combination of body length and height and also breed. All of the respondents use uncontrolled type of mating. More than half of the total respondents use combination of own and neighbors bucks for breeding, while only small proportion of farmers use breeding bucks from neighbor's flock only. Kidding takes place all year-round while peak kidding was observed from September to November.

3.8 Health management of goats

Disease and parasite are the major constraint that is affecting goat's production in the study district. Ectoparasites are the most common health problems that were reported by most of the farmers. From the interviewed households, (93.3%) of them are accustomed with treating their animals at public veterinary clinics while the rest (1.3%) and (5.4%) treat their goats with traditional medicines and by medicines purchased from private drug vendors, respectively.

3.9 Labor division in goats management

The allocation of labor in the study area to each family member who participate in different goats husbandry practices determined based on their age, sex and type of duty formed. In the area most of goat's owners (62%) face problem of labor shortage for herding and watering of their goats, especially during dry season when students are at school. All household members were involved in different husbandry practices of goats.

From the total interviewed households, most of them have great interest to expand goats' production in the area though shortage of grazing lands and feeds is their major limiting factor for expansion.

4. Discussion

4.1 Household resources

Most of the sample household heads in Agarfa district were Muslim followed by Orthodox Christians and Protestant and this is comparable to the value reported for Alaba district of SNNPR which had a higher proportion of Muslim [9].

The literacy rate (82%) as observed in this study was higher than reports in Alaba district of SNNPR [9]. This might be due to the existence of farmers training center in the district. The observations are in close accordance with those of [4&15] in Dale and Goma district respectively. The rearing of goats as a source of income is similar to those reported by several authors from different parts of the country [4,5&9].

The average land holding per household (2.3 ± 0.13 ha) across all the studied agro-ecologies was more or less similar to what was reported by [19]. Whereas lower land holding have been reported by [4]. The present finding also indicated higher flock of goats in the lowland which might be attributed to the preference of the rearers and the ability of goats to survive and perform under harsh environmental conditions. The observation is similar with those of [5&21].

4.2 Goats Husbandry Practices

The importance of natural pastures as an important source of fodder has been reported by several authors in the past [9, 15&21]. According to the current result, the reason for keeping goats alone is due to their browsing behavior, especially in the degraded pasture lands where they less compete with the other livestock, the observations are in close accordance with [15].

In dry season most (98.7%) of respondents in the area practice free grazing and the result concur with the findings of [21].

The observation are in close accordance with [4&15] who reported that the major water source for small ruminants in Goma and Dale district is river. The distance travelled to reach the watering points vary

from location to location . Studies by [4] indicated that the distance travelled was significantly higher in the dry season than those observed in this study. The frequency of providing water to the goats as observed in the study is in close accordance with finding of [4&21].

However, it was also observed by [21] that during the wet season the farmers in the studied location allowed water adlib to their flocks. Lack of separate houses for the livestock can have zoonotic implications where diseases and parasites can be transmitted from the goats to their owners, besides the feces and other excretions from the goats can also have additional health related implications, the observations are in close accordance with the findings of [7&9]. The present observations regarding the pattern of cleanliness are in close accordance with those reported by [1].

The findings indicate that most of the respondents are not quite aware of the importance of early weaning, the overall values are lower than reported by [9].

The result pertaining to the practice of castration indicated that the respondents were aware of the importance of castration; the findings are in accordance with that of [9] from Alaba district. However, the age and methods of castration varied across the agro-ecologies. The respondents are to be made aware about the importance of castrating the buck kids at an early age and that too using the castrator. The study further indicates that most of the respondents in the lowlands prefer to use the burdizzo castrator, which is in consonance with the findings of [15]. In contrast to the present findings a study by [9] indicated that traditional methods of castration are prevalent among the respondents in Alaba area.

The reasons for castration as informed by the farmers were basically for fattening which is in consonance with the findings of [9]. In the current study, external parasites, particularly ticks and mange mites in the area have significant health problem. The observation is similar with the report of several authors viz [6, 14&20].

The availability of veterinary care as indicated by the respondents is better than those reported from Alaba district where most of the respondents indicated the use of ethno veterinary methods of treating the sick animals [9]. The respondents face shortage of labor pertaining to the daily husbandry practices for their livestock. The constraint as indicated in the study are

higher than those reported by several authors viz [5,9&15].

5. Conclusions

In comparison to previous findings, the traditional husbandry practice of the area with regard to feeding management, breeding management, health management, housing management, weaning and castration practice needs improvement. Therefore, to improve the husbandry practices appropriate development intervention should be made. Respondents in the area should start community based breeding program and retention of selected bucks in the study district. Whereby breeding bucks (selected) could be shared by a number of households in organized group.

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