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Assessment of Sheep Husbandry and Fattening System in Daramillo Woreda Gamo Gofa Zone, Southern Ethiopia

Gumayde Gufa[1] Ayelech Sana[1] Taju Hussein[2]
1.Depertment of Animal and Range Science,Damot Pullassa Woreda Livestock and fisheries office Gamo Gofa Zone, Southern Ethiopia
2.Depertment of Animal and Range Science, College of Agriculture, Wolaita Soddo University, Ethiopia Po. Box 138, Wolaita Soddo, Ethiopia

Abstract
The study was conducted in Daramallo Woreda with the objective of assessing sheep husbandry and fattening system in small holders. To select the data two stage sampling was used. Firstly two kebele were selected purposively from each agro ecologic zone based on the proportion of kebele found in each agro ecology. Secondly from each selected kebeles 20HHs were selected randomly based on fattening practices making total sample size of 120 respondents. To collect data both primary and secondary data was used. To collect primary data, semi structured questionnaire was used during interviewing of respondents while secondary data was collected from written documents. The survey result revealed that about 65% of respondents are illiterate while the rest received different level education that is from primary to diploma. The most dominant (66%) type sheep fattening system practiced in the study are is extensive while about 34% practice semi intensive fattening system. The available and use feed resources for both extensive and semi intensive system is natural pasture (grazing land), road side, crop residues while the semi intensive system level of feeding local brewery by products, grain, sweet potato, sweet potato vines and boiled coffee leaves locally called Haytetuke as supplementary feeding is higher than extensive. Moreover current finding showed that about 25.3% respondents of practicing extensive fattening system has faced problem of diseases and parasites as the main cause of mortality of their flocks while that of semi intensive fattener did not faced any problem of diseases and parasites. Optimum utilization of seasonal available feeds through preservation, strategic supplementation with low cost alternatives feed like development of improved forage is vital to balance seasonal feed supply and animal requirements. The veterinary service needs to provide strategic disease and parasite control and treatment measures in order to reduce mortality of flock for extensive fattener.
Keywords: Fattening, Husbandry, Householder Daramall

1. INTRODUCTION

1.1. Background

Tropical Africa has about 22% and 17% of the total world sheep and goat population of 1,028 million and 765 million respectively. Ethiopia is home to about 25.02 million sheep and about 70% of the small ruminants are found in the semi-arid zones of Ethiopia and these belong to the agro-pastoral farmers utilizing extensive and semi-intensive management systems (CSA, 2009).

The farm animal genetic resource (livestock) in Ethiopia has higher value in the livelihood of the small farm households whether they are pastoralists or crop-livestock practitioners. Livestock provide high value food (meat and milk), labor force (tilling, oil mill service, and transportation), organic fertilization through their manure, biogas generation after fermentation of their waste, cash income through live animal & products sell, stored wealth to be dispense as required and prestige. Poorer people in major part of Ethiopia and other underdeveloped nations utilize livestock as sources of cash income (Thornton *et al.,* 2002). Therefore, utilizing the farm animal genetic resources efficiently and optimally is crucial for both food security and sustainable development.

The major production system of Ethiopia in general and SNNPR in particular is a mixed crop-livestock system with farmers keeping especially ruminants to different extents in small areas. Mostly animals are left to graze or browse in range lands or in almost degraded grazing lands during the day time and supplemented, if at all, with hay or Stover in backyards in the evening. Animals in this type of production system are considered as low producing because of several factors such as insufficient feed availability confounded with the prevalence of disease and parasitic pests (Zelalem and Abreham, 2010).

In view of the prevailing feed problem and food security in current condition much effort needs to be made to identify types of feed available, system of fattening of sheep to produce enough amount products with the smallest land we have and produce within the develop the ways of using locally available and relatively cheaper feed sources. To this strategy use of locally available feed resources and a comparable type of feeding system was reported for smallholder farmers in east Ethiopia. Therefore, much needs to be learnt to promote the expansion, improvement, adoption of this type of feeding strategy for a much wider use across the country (Fekadu and Alemu, 2000).

1.2. Statement of the problem

Fattening of small and large ruminants as a business is not common in Ethiopia. Small ruminants are usually reproduced on the farms and are sold around holidays and/or when cash is required. No special efforts, other than grazing the animals, are made by many smallholder farmers and pastoralists to "fatten" them.

In line with the above, the Regional government, in its recent comprehensive plan for agriculture, has given particular attention to the promotion of fattening development. The comprehensive development plan for crop and livestock is aimed at transforming the subsistence mode of agricultural production system into market oriented production system and its implementation has begun in 2004. The plan views improved livestock and products marketing as an important Regional development strategy to increase both rural incomes and foreign exchange. Fattened animal production and marketing has, therefore, been included as one of the intervention areas in the current commodity-based specialization and commercialization plan (FAO, 2004). This study therefore intends to assess the management practices of sheep and fattening system, in the study area with the following objectives.

General objective

The general objective of the study was to assess sheep husbandry and fattening system in the study area.

Specific objectives would be:

To assess husbandry practice and fattening system of Sheep in the study area

To identify challenges and opportunities of small house holder fattening system

2. Methodology

2.1. Description of Study area

The study was conducted in Daramallo woreda, which is located in the Southern part of Ethiopia 495 km from Addis Ababa, 260km from Awassa and 210km from Arbaminch which is the capital city of Gamogoffa.. The woreda has an estimated human population of 51,101 based on the 2004 population census with 97.7 persons per square kilometer (BoFED, 2013).

The climate of the woreda is semi-arid with two major distinct seasons, namely, the wet and dry seasons. The wet season starts from late May and ends in early September but could extend to October with a mean annual rainfall of between 500 mm and 1300 mm. Peak rainfall is reached in August. Between the months of March to May, the weather is hot and dry with temperatures reaching 38ºC - 42ºC during the day with relative humidity less than 20%. In terms of vegetation, Daramallo woreda is suitable for cultivation of grains, cash crops and animal husbandry. It has an estimated that the woreda has about of 151,050 cattle ,20,37922 goats 22622 sheep and 3.4 million poultry population (BoFED, 2013).

2.2. Sampling method and Sample Size

The woreda has 3 agro ecologic zones namely land, medium and lowland and 22 kebeles or peasant associations (PA) of 7, 5 and 10 PA are found in highland, midland and lowland respectively. To select the data two stage sampling was used. Firstly two PA were selected purposively from each agro ecologic zone based on the proportion of PA found in each agro ecology. Secondly from each selected PA 20 households (HHs) were selected purposively based on fattening practices making total sample size of 120 respondents.

2.3.Data collection

To collect data both primary and secondary data was used. To collect primary data semi structured questionnaire, focus group discussion were made. Secondary data was collected from Journals, newspapers, published, unpublished documents of woreda's livestock and fishery offices.

2.4.Data analysis

The collected data was analyzed using descriptive statics like, percentage, and frequency. The analyzed data was presented in the form of table and figures

3. Result and discussion

3.1. Socio-economic characteristics of the households

Table 1 Respondents profile

Parameters		No of respondents	Percentage (%)
Sex	Male	68	57
	Female	52	43
Age	<15	25	21
	15-20	20	17
	20-25	19	15.5
	25-30	16	13.5
	30-40	14	11.25
	>40	26	21.75
Marital Status	Single	4	3
	Married	115	96
	Divorced	1	1
Educational Status	Illitrate*	78	65
	Primary	30	25
	Secondary	9	7.5
	Diploma	3	2.5
	Degree & above	0	0

*Illiterate = unable to read and write

`The average family size of the households was 6.7+0.18 (ranging from 2-13) and it is higher than the average values at the national (5.2) and SNNPR (5.1) levels (CSA, 2008). This is attributed to the common practice of polygamous marriages (26.8% two and 10.0% three wives) and low awareness of family planning. Having many members of the family seems to be considered as an asset and security in times of retirements. The family size is comparable to the value reported for Wolaita zone (6.9) (Tsedeke, 2007).

Majority of the household heads (96%) are married and 57% of the household members were males while 43% were females. Overall, 65% of the household members are illiterates. This could be attributed to lack of access to education in the remotely located PAs. The educated households tend to have higher productivity as they are better able to decode new production technology (ILCA, 2002).

3.2. Land holding and land use systems

The average land holding across all the study sites per household is 2.3 ha. This is within the range of holdings of for 32.6%and 16.2% of smallholder farmers in the country and SNNPRS level, respectively. Land holdings range from 1.01 to 2.00 ha for about 30.8% of farmers in the SNNPR and for 33.3% of farmers at the national level (CSA, 2003).

3.3. Purpose of keeping Sheep

From the results in this study, the predominant reason for keeping sheep by majority (85%) extensive fattening system is for support livelihood of their family and the rest use for different festival ceremony by slaughtering and all semi extensive fatting system practicing respondents sell their fattened flock for cash income (Table 2).

Table 2. Purpose of keeping sheep

Purpose of sheep keeping		Frequency of respondents	Percentage (%)
Extensive fattening system	Family livelihood	67	85
	Festival ceremony	22	15
Semi intensive fattening system	For family lively hood	-	-
	For festival	-	-
	For cash income	41	100

The result shows that most farmers in extensive fattening keep sheep for sales in order to meet family expenditures while all of semi intensive fattening system for cash income. This finding is similar with that of Tsedeke, (2007).

3.4. Sheep husbandry practices

3.4.1. Feed resources, seasonal availability and utilization

As indicated in table 3 extensive sheep producers use verity of feed resources of which road side grazing, communal grazing, river side grazing are the major grazing system or feed resources where as root and tuber crops, local *tukia hayta* residues , coffee and *tela* residues are used as supplementary feed.

Table 3 . Feed resource of sheep in extensive production system

Feed type	Frequency of respondents	Percentage (%)
Communal grazing	11	11.2
Road side grazing	20	20.4
River side grazing	12	12.2
Private land grazing	8	8.2
Crop residues	12	12.2
Root or tuber crops	9	9.2
Local tukia hayta residues	5	5.1
Coffe and Tela atela	5	5.1.
Grazing stubble	16	16.3

As response of respondent indicated the feed resources used by semi intensive sheep fattening and extensive system is more or less the same. The only differences are existences improved forage for few (7.4%) fattener and presence of private grazing land for about 20% respondents and variation in the amount of *tukia hayta* residues coffee and *tela atela* residues as supplementary feed that is the amount of *tukia hayta* residues coffee and *tela* supplemented in semi intensive system is higher than extensive system.

Table 4: The major feed resources of semi intensive sheep fattener

Feed types	**Number of No of respondents(N)**	**Percentage (%)**
Communal grazing	5	9.3
Private grazing	11	20.4
Crop residues	10	18.5
Improved forages	4	7.4
Root & tuber crops	9	16.6
Tukia hayta residues	10	18.5
Coffe and Tela atela residues	5	9.3
Total		

3.4.2. Water sources and watering frequency

Table 5. Water sources of the flock

System category	Frequency of respondents			
	Water sources	Wet season	Dry season	Percentage
Extensive system				
	River	60	60	86.3
	Pond	19	19	13.7
Semi intensive system				
	River	36	36	87.8
	Pound	4	4	9.8
	Hole	1	1	2.4

According to the respondent responses river was the major (86.3%) and (87.8%) of water source respectively for extensive and semi intensive system and about 13.7% and 9.8 % of extensive and semi intensive sheep fatteners are using pound as their flock water sources in order and 2.4% of semi intensive fattener use spring as water sources for their flock (Table 5). Solomon (2007) also reported that river was the major water source in Gumuz sheep in north western lowland of Amhara region. More over the current survey revealed that during the wet (rainy or summer) season in both production systems about 62.1% of respondents allow their flock to water as they needed and the rest (37.9%) water their animal once per day. And during dry season only 25% of respondents allow their animal free access to water while the rest water once per week in both extensive and semi intensive fattening system (Table 6)

Table 6. Flock watering frequency

System category	Watering frequency during wet			Watering frequency during dry		
	free choice	Once per day	once per weeks	Free choice	Once per week	once per two week
Extensive	49	30	-	17	62	-
Semi intensive	25	16		10	31	-

3.5. Fattening system

The current findings revealed that presences of two types of fatting system that is extensive and semi intensive

fatting system. Of the respondent interviewed majority 79 (85%) ware practicing extensive fattening system whereas the rest 41(15%) practicing semi intensive fattening system. In the study area, semi intensive fattening usually practiced following the end of the main rainy season and the beginning of dry season coinciding with the availability of good quality and quantity natural pasture and aimed to specific market (holiday market). Some farmers also reported that they perform fattening activity twice a year, during the time when the quantity and quality of available feed resource is high. The various sheep fattening farmers differ in their feeding systems. This is due to differences in availability of feed and market requirement (Animut and Wamatu (2014).

3.6. Sheep health managements

Sheep diseases were one of the main constraints for sheep production in the area. Overall, 34.6% flock owners rated diseases and parasites are the main cause of mortality. Fasciolosis, pneumonia, sheep pox, blackleg and anthrax were reported as the most prevalent flock health threats across all system. This study found high mortality rates of pre-weaned young (28.4% for lambs and breeding female, 23.7% for ewes flocks (Table 4).

Table 7: Mortality rates of flocks

Parameters	Extensive system		Semi intensive system	
Type of mortality	Number of respondents	Percentage (%)	Number of respondents	Percentage (%)
Prenatal mortality	1	5	-	
Suckling flock	6	30	-	
Young flocks (3-12 months)	3	15	-	
Breeding ewe	7	35	-	
Intact/breeding males	2	10	-	
Castrated male	1	5	-	
Toatal	20	100		-

The present finding showed that 35% of breeding ewe's death and 30% of suckling flock death,5% prenatal mortality and that of castrated male (Table 7). This implies that the problem of death mainly happens in suckling flock and breeding ewes due to susceptibility of these groups to diseases. Abebe (2013) also reported that especially pregnant and lactating ewes in the highland PAs were affected by diseases in his study.

When animals get sick in both system respondents got most of the animals treated at local/rural veterinary service. Treating animals using drugs bought from the market is common as the public veterinary clinic is very remote from their residences. Respondents buy drugs is mainly open markets. Based on farmers' opinion, veterinary services given in all the study districts were not adequate. The veterinary clinics were far from most of the farmers' residences. On average, veterinary clinics are 6 km away from the farmers' residences. Taking sick animals to remote veterinary clinics on foot will take time and expends farmers' time and labor in vain. In addition, during peak labor months (mostly in the rainy season) farmers spend most of their time on crop production. So, when animals get sick during this time farmers retain the animals at home to save labor and time. In addition to the above problems, farmers faced that drugs were not usually available when they take sick animals to the rural veterinary clinics.

3.7. Housing and management practices

In both systems both 98.6% of respondents accommodate their flocks in the main houses together with the family members. Confining of flocks in separate barns and adjoining structures which is only 0.7% is uncommon. The major reason for housing flocks at night with the family is to minimize attack by predators and to avoid theft. Predators rarely destroy barns and also main houses and causes complete loss of flocks. Fox and hyenas are the major predators. Housing of flocks in the main house is more common than other (Berhanu, 1998). Confining of flocks together with family has zoonotic health implications, nevertheless, to reduce predator and theft losses household for long held the tradition of sharing the same roof with their flocks.

3.8. Challenges and Opportunities

3.8.1. Sheep production challenges

One quarter of respondents reported that diseases and parasites are overriding problems in sheep production. The effect of morbidity on productive and reproductive performances of the flocks is also apparently higher. Limited capacity and coverage of the existing public veterinary institution to serve the broad geographical area and vast livestock population in the woreda further worsen consequence of diseases and parasites.

An overall of about 9.3% respondents reported lack of improved technologies and inputs for intensive and market-oriented sheep production. This is more noticeable in mixed flock and sheep dominating PAs that have limited land holdings. Technological inputs to mitigate the clear and present danger of flock health and nutrition are critical requisite. Lack of capital to build flock holding and purchase production inputs (largely health and feeding) is among limiting factor for about 6.5% of the total respondents.

Out of interviewed respondent's only13.3% condemned that the current extension system is providing them little support to enable them to expands their flock production. Degu (2012) also reported that major problems in fattening were shortage of feed and inadequate veterinary service. It is anticipated that the extension service system could impartially support the farming activities that uphold the livelihood of the smallholder farmers (Tsedeke, 2007).

3.8.2. Opportunities

There is a growing demand for sheep in both the domestic and export markets. Young male flocks have huge demand of export abattoirs. Rural assemblers and agents for export abattoirs collect these young flocks at farm gates and local markets. Fattened flocks have high demand and incentive price during seasonal Holiday markets with peak demands in New Year and Easter holidays. Wacha is a potential local market for fattened flocks.

Smallholder farmers are aware of the current high market values and demand for sheep. These could facilitate entry of intervention (inputs, technology and recommendation). The support of safety-net programme is making substantial contribution in building flock holdings targeting women and destitute households. Considering these emerging and existing opportunities, the extension system needs to organize and guide to focus on sheep production and marketing in order to improve income and enhance smallholder livelihoods.

4. Conclusion and recommendations

4.1. Conclusion

Of the respondent interviewed majority 79 (85%) ware practicing extensive fattening system whereas the rest 41(15%) practicing semi intensive fattening system and (85%) extensive fattening system is rear or fatten sheep of their family livelihood and the rest use for different festival ceremony by slaughtering and all semi extensive fatting system practicing respondents sell their fattened flock for cash income. Road side grazing, communal grazing, river side grazing are the major grazing system or feed resources where as root and tuber crops, local *tukia hayta* residues , coffee and *tela* residues were used as supplementary feed. And river was the major (86.3%) and (87.8%) of water source respectively for extensive and semi intensive system whereas only 2.4% of semi intensive fattener use hole water sources for their flock. Sheep diseases were one of the main constraints for sheep production in the area. Overall, 25.1% of flock owners rated diseases and parasites as the main cause of mortality in extensive fattening system. Growing demand for sheep in both the domestic and export markets and support of safety-net program of small householder were the observed opportunities of sheep fattening system in districts.

4.2. Recommendation

- The veterinary service should be widely distributed ad needs to provide strategic disease and parasite control and treatment measures
- Infrastructure facility should given attention as most respondents walking for long distances to treat sick flocks
- Due attention should be given by government, none government and professionals to encourage overall productivity of the sectors

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