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Assessment of sheep fattening and marketing systems in Duna Woreda, Hadiya zone, Southern Ethiopia

Abstract

The study was conducted in Duna Woreda, Hadiya Zone, with the objective of assessing sheep fattening and marketing systems practiced in the area. Four Kebeles were selected based on agro-ecology and population densities of sheep. From each Kebele, 20 households were selected randomly. A total of 80 households were interviewed by using semi-structured pre-tested questionnaire. Farmers in the surveyed area practiced feeding of fattening sheep in feedlot system (60%) and grazing and stall feeding (40%). The high proportion of producers provided crop residues and grazing of natural grasses. The result showed 52.5%, 12.5% and 35 % were using river water, well water and both well and river water respectively. Farmers and rural assemblers from different local markets supply animals of varying sex, age and weight to Ansho and Cafemera secondary markets. The second and most important route was through medium and large traders who collect animals from Duna woreda/Ansho areas and supply through large traders to terminal domestic markets in Hosanna and Addis Ababa. Natural pasture and house leftover were the major feed resources during the rainy season whereas natural pasture, crop residue, improved forage and house leftover were the feed resources in the dry season. Male sheep were given higher choice than females during selection. Matured sheep which are within the age range of 1-2 years had got higher choice in selection over the young ones (68.75 %). The price of fattening sheep depends on body condition, castration, age, color and ranging from 2000-4500 ETB. Exposed challenges were lack of awareness, lack of marketing channels and distance from marketing place. Both market supply and demand of sheep were typically seasonal and reaches peak during the holidays. Agricultural development agents should give attention in creating awareness for farmers by providing adequate skill and monitoring.

Keywords: farmers, fattening, marketing, sheep

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Abbreviations: ESGPIP, Ethiopia sheep and goat productivity improvement program; DWARDO, Duna Woreda agriculture and rural development office

Introduction

Ethiopia has the largest livestock population in Africa with estimated number of 57.83, 28.89, 10.37, 1.23, 56.87 and 10 millions of cattle, sheep, goats, equine, camel, poultry and bee colonies respectively. Sheep have a great environmental adaptability, short production cycle, faster growth rates, easy management, low investment capital and low feed requirement as compared to large ruminants.[1] Sheep are the major economically important in Ethiopia playing an important role in livelihood of resources poor farmers. They provide their owners with a vast range of products and services such as meat, skin, hair, wool and manure and as means of saving and investment. Similarly, the countries have huge and diverse sheep population and genetic diversity is the requisite for the present and future livelihoods of a large number of poor farmers.[2]

Sheep serve as living bank for their owner and immediate cash need and ensures against crop failure especially where land productivity is low and a reliable due to erratic rainfall, sever erosion, too frost and logging problems. In the country, the highland sheep are important source in the diet of poor farmers, help in providing extra income and support for survival of many farmers, the income obtained from sheep are used to purchase household commodities and farm inputs.[3] Lack of grazing area due to human population growth and crop land expansion has forced the small scale farmers of Ethiopia to recognize the significance of sheep.[4]

Fattening/Finishing involves intensive feeding of sheep to slaughter weight with adequate finish (fat deposit) in feedlots. This targets the local market that has high demand for fat animals. The operation of large feedlots by export slaughter houses and independent feedlot operators (on-farm feedlots) is becoming feasible. The principal functions of such feedlot operations are to assemble large numbers of sheep, often coming from different genetic and management backgrounds, and produce a product of acceptable standard.[5] A current carcass yield of Ethiopian sheep average was42 percent. Improving carcass yield results in more meat available for domestic consumption/export and directly increases producer incomes. Short term intensive feeding using locally available feedstuffs is a strategy that can be employed to increase animal live weights and subsequent carcass yields. Short term intensive feeding prior to sale is economically more feasible than the current systems where animals are kept for long periods of time on maintenance level feeding. Cost benefit analyses of short-term fattening compared to maintenance feeding for extended periods show that short term fattening can be a viable business venture.[5]

The domestic market remains to be the largest consumer of Sheep in Ethiopia even though exports have been increasing over the past

years. A fattening operation can be of various sizes. One can fatten a single sheep up to many hundreds or even thousands depending upon availability of capital, market access, etc. operations ranging from backyard to large scale fattening should be promoted. This can be done through provision of training, credit, fostering market access, etc.[5]

Such practice is the most common traditional fattening practice among farmers in various parts of Ethiopia. The small scale sheep fattening in Ethiopia follows a seasonal operation with a peak during Easter, Christmas, Ethiopian New Year and Muslim festivities. Marketing of sheep are completed through negotiation. In the process of sheep marketing, farmer, middle men and traders are involved. The price of fattening sheep depends on body condition, castration, age, color and ranging. Ethiopia has suitable agro-ecology which is best for sheep production. Sheep production has been practiced in the country for the exploration of meat, skin and manure.[6] As different areas of the country, sheep production is common in Duna Woreda, which is one of the eleven Wored as found in Hadiya zone, South Ethiopia with suitable agro ecology that makes the Woreda potential for sheep production and marketing. Even though the district is potential in sheep production, there is no complied data and reliable information on sheep fattening and marketing system practiced. Therefore, this study was aimed to assess fattening and marketing systems of sheep practiced in the area.

Materials and methods

Description of the study area

Duna Woreda is one of the eleven Woredas in Hadiya Zone, South Ethiopia. The Woredashares boundaries with Kambata Tambaro zone in the North and East, and Soro Woreda in the South and West. The Woreda is astronomically located between 70 15' N and 70 25' N Latitudes and between 370 32' E and 370 46' E Longitudes. In terms of administration, Duna Woreda is sub-divided in to 31 rural and 1 urban Kebeles. Its main town, Ansho, is located at about 269kms Southwest of Addis Ababa, and 178kms Northwest from Hawassa (the capital of the region) and 42kms from zonal major townHosannato the South direction.[7] The topography ranges from 1,500 to 2,926 meters above sea level. The climate characterized as follows; maximum monthly temperature occurs in April (19.8°c) whereas minimum monthly temperature occurs in December (16.5°c) over the ten year. The mean annual temperature is 18°c. The rainfall is characterized by uneven distribution throughout the year. The highest rainfall occurs from the end of spring to the beginning of autumn season (May-September).[7]

Sampling technique

Agro-ecologically, the Woreda is classified into 'Dega'(25 Kebeles), 'Woina Dega' 5 Kebeles and 2 Kebeles in 'Kola'.[7] From 'Dega' 3Kebelesand 1 Kebele from 'Woina dega' were selected purposively based on population density of sheep and market potential. From each Kebele, 20 households that are familiar with the practice of sheep fattening were selected using systematic random sampling technique. A total of 80 households were interviewed by using pre-tested semi-structured questionnaire regarding sheep fattening and marketing practices.

Data collection

Both primary and secondary data were used for this study. The primary data was obtained by preparing semi-structured questionnaire and personal observation whereas the secondary data was collected from written documents and agricultural office of Duna Woreda.

Data analysis

The collected data were arranged, summarized and analyzed by using simple descriptive statistics like percentage, mean and frequencies and presented by using tables.

Result and discussion

Socio-economic characteristic of the respondents

From the socio-economic characteristics of the households, it is reported that (85 percent) of household members were males while (15 percent) were females. The educational background of the respondents indicated that (56.25 percent) of the household members are illiterates (32.5 percent) attended primary school (10 percent) attended secondary and the (1.25 percent) rest hold diploma. The majority of the sample households have large family size. Of the total, half (51.25 percent) of respondents had a family size of 4-7 while a few (33.75 percent) of respondents had family size 1-3 the rest greater than 8 family size (15 percent).In terms of occupation, the almost all of the households (98.75percent) of the respondent are in predominantly engaged in subsistence farming and produce cereal crops such maize, and sorghum, etc. for their house consumption. Income sources a number of activities such as farming, livestock keeping, small scale business and government worker (Table 1).

Table 1 Socio-economic characteristic of the respondents

Parameters		Frequency (N=80)	Percentage (%)
Sex	Male	68	85
	Female	12	15
Age	15-25	10	12.5
	26-45	39	48.75
	>45	31	38.75
Education status	Illiterate	45	56.25
	Primary	26	32.5
	Secondary school	8	10
	Diploma and above	1	1.25
Family size	3-Jan	27	33.75
	7-Apr	41	51.25
	>8	12	15
Occupation	Farmer	79	98.75
	Government worker	1	1.25
Income source	Crop farming	51	63.75
	Livestock keeping	10	12.5
	Small business	18	22.5
	Government worker	1	1.25
Total		80	100

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Fattening system of sheep identified in the study area

Farmers in the surveyed area practice feeding of fattening sheep in feedlot system (60 percent) and grazing and stall feeding (40 percent). The high proportion of producers provides crop residues and grazing of natural grasses. The two option of stall feeding, and stall feeding with grazing were previously reported from southern Ethiopia. The result showed housing system of sheep fattening (33.75 percent) common with total sheep and (66.25 percent) separate for fattening sheep in the study area.

Purposes of keeping sheep as respondents: The main purposes of keeping sheep in the studied area were for cash income (56percent), for security (30percent) and for home consumption by slaughtering during holidays (14percent) which is similar with the result of Yenesew et al., who pointed that, most of the people keeping sheep for main purpose those were cash income, home consumption and security (Table 2).

Table 2 Fattening system of sheep identified in the study area

Systems of sheep fattening	Frequency (N=8)	Percentage (%)
Stall feeding	48	60
Grazing with Stall feeding	32	40
Housing system of fattening sheep		
Common with total sheep	27	33.75
Separate for fattening sheep	53	97.9

Livestock holding in the study area: The result of the existing study shown that the cattle the majority respondents of (71.25percent) Calf, (95percent) Heifer and (78.75percent) were ox cattle size (1-3) in the study area (Table 3). The result of the current study discovered that the flock of goat the majority respondents of (62.5percent) Buck, (77.5percent) Doe and (53.5percent) were kids goat size (1-3) in the study area (Table 3).The result of the current study revealed that the flock of sheep the majority respondents of (88.75percent) breeding ewes, (85percent) lambs and (75percent) were rams sheep size (1-3) in the study area (Table 3). The majority of the ewes in the flock indicate that famers maintain the breeding female stock with higher priority. The source of flock was mainly through purchase from the local market. Slight attempt has been made by government in introducing Dorper breed for crossing of the local.

Table 3 Purposes of keeping sheep in the studied area

Purposes of keeping sheep	Frequency (N=80)	Percentage (%)
For income	45	56
Security	24	30
Home consumption	11	14
Total	80	100%

Feed sources and supplements of sheep in study area: The major feed resource of sheep in the study area were natural pasture, crop residue, improved forage and house leftover. Natural pasture and house leftover are the major feed resources during the rainy season whereas natural pasture, crop residue, improved forage and house leftover are the feed resources in the dry season. The result is similar with the report of Abebe et al., who pointed that, feed shortage is one of the limiting factors for increasing production and productivity of small ruminant in most of the agro-ecological zones in Ethiopia. The main feed source was communal grazing land, crop residues and crop stubble. Farmers supplement their sheep during fattening by treated maize, sweet potato, and tuber or vine and atella (Table 4&5).

Table 4 Livestock holding in the study area

Livestock	Class	Livestock size					
		3-Jan	%	7-Apr	%	>8	%
Cattle	Calf	57	71.25	10	12.5	13	16.25
	Heifer	76	95	4	5		
	Bull	63	78.75	6	7.5		
Goat	Buck	50	62.5	9	11.25	2	2.5
	Doe	62	77.5	13	16.25	1	1.25
	Kids	43	53.75	4	5		
Sheep flock	Ram	60	75	12	15	8	10
	Ewe	71	88.75	9	11.25		
	Lambs	68	85	8	10	4	5

Table 5 Feed sources and supplements of sheep in study area

No	Major feed sources	Frequency (N=80)	Percentage (%)
1	Natural pasture	38	47.5
2	House leftover	19	23.75
3	Improved forage	17	21.25
4	Crop residue	6	7.5

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Table Continued...

No	Major feed sources	Frequency (N=80)	Percentage (%)
	Supplements during fattening		
1	Boiled maize	42	52.5
2	Sweet potato tuber or vine	15	18.75
3	Atella	23	28.75
	Total	80	100%

Water sources and watering of fattening sheep in the study area: The result showed 52.5 percent, 12.5percent and 35 percent were using river water, well water and both well and river water respectively. In this study 77.5percent of the respondent responded they provide water at least once/day. However, 22.5percent of the farmers water the animals every two days and three days consecutively (Table 6).

Table 6 Water sources and watering of fattening sheep in the study area

No	Source of Water	Frequency (N=80)	Percentage (%)
1	River water	42	52.5
2	Well Water	10	12.5
3	Well &River Water	28	35
	Watering frequency		
1	At least Once/day	62	77.5
2	Every two days	18	22.5
	Total	80	100%

Condition for selecting fattening sheep in the study area: The result of current study indicated that farmers in the study area select sheep on age through dentition, body condition, coat color and sex to some extent (Table 6). The most desired colors of sheep in market were Dalecha and white where as black sheep were badly preferred. Sheep with poor body condition were not selected for fattening. Male sheep were given higher choice than females during selection. Castration of animals was also another creation for fattening in the study area. Accordingly, (77.5 percent) of the respondents either castrate or purchase castrated sheep for fattening while the remaining (22.5 percent) of the respondents used both castrate and intact. Matured sheep which are within the age range of 1-2 years had got higher choice in selection over the young ones (68.75 percent). The result is supported by the findings of Getachew and Jane.

Sheep marketing system identified in the study area

Sheep marketing in study area

A typical sheep and goat marketing structure/chain based on a typical livestock market structure identified by Ayele et al.,[8] and sheep and goat marketing structure.[9] The main actors of the 1st level are local farmers and rural traders/rural assemblers who transact at farm level. Those small traders from different corners bring their animals to the local market (2nd level). Traders/wholesalers purchase a few large animals or a fairly large number of small animals for selling to the secondary markets. In the secondary market (3rd level), both smaller and larger traders operate and traders (wholesalers or retailers) and butchers from terminal markets come to buy animals. In the terminal markets (4th level), big traders and butchers (wholesalers or retailers) transact larger number of mainly slaughter type animals. Consumers get meat through direct purchase of live animals or from butchers. In Duna woreda/Ansho, farmers market sheep at farm gates or the nearest local/primary markets. Farmers and rural assemblers from different local markets supply animals of varying sex, age and weight to Ansho and Cafemera secondary markets. There were two possible exit market routes through which animals from Ansho area reach to the final consumers. The first route was through agents of export abattoirs who collect young male sheep from the local markets while the second and most important route was through medium and large traders who collect animals from Duna woreda/Ansho areas and supply through large traders to terminal domestic markets in Hosanna and Addis Ababa. Animals that exist through the later routes were often exceptionally fattened male animals usually supplied during holidays. In the second and third levels (primary and secondary markets), animals were bought for breeding and fattening purposes.

Fattening season of sheep study area

With regard of season fattening and marketing, (58.75percent) of respondents practice fattening at the time of holiday; however, (41.25percent) of them practice on both holiday and non-holiday. Season of cattle fattening agrees with the report of Getachew and Jane who reported that small scale sheep fattening in Ethiopia followed a seasonal operation with a peak during Easter, Christmas, Ethiopian New Year and Muslim festivities. Marketing of sheep was completed through negotiation. In the process of sheep marketing, farmer, middle men and traders were involved. According to the present study, the fatteners sold their fattened sheep by negotiation with customer in the study area. The price of fattening sheep depends on body condition, castration, age, color and ranging from 2000-4500 ETB (Table 7).

Table 7 Criterion for selecting fattening sheep

No	Criterion for selecting fattening sheep	Frequency (N=80)	Percentage (%)
1	Sex		
	Male sheep	54	67.5
	Female sheep	26	32.5
2	Age		
	Younger	25	31.25
	Matured	55	68.75
3	Condition		
	Poor	10	12.5
	Medium	60	75
	High	10	12.5
4	Coat color		
	White	15	18.75
	Dalecha	50	62.5
	Any type	15	18.75
5	Castration		
	Both	18	22.5
	Castrated	62	77.5
	Total	80	100%

Length and frequency of sheep fattening in study area

The result of current study indicated that the average duration of fattening as responded by the majority of farmers was three months for matured sheep where as it might extend to 4 months for the young sheep. This is in the study area finish sheep in agreement with the finding of Getachew and Jane that reported most farmers in the study area finish sheep in three months. Based on the peak periods of marketing, farmers practice 2-3 times a year to catch public festivals as opportunities (Table 8&9).

Table 8 Fattening season and marketing of sheep study area

No	Variables	Frequency (N=80)	Percentage (%)
1	Fattening season		
	During holidays	47	58.75
	Holidays and non-holidays	33	41.25
2	Marketing system		
	Negotiation with consumer	22	27.5
	To middle men	28	35
	To traders	30	37.5
	Total	80	100%

Table 9 Length and frequency of sheep fattening in study area

No	Variables	Frequency (N=80)	Percentage (%)
1	Duration of fattening (months)		
	2	14	17.5
	3	50	62.5
	4	16	20
2	Frequency of fattening (round)		
	Once	15	18.75
	Twice	50	62.5
	More than twice	15	18.75
	Total	80	100%

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Conclusion

Sheep production was common practice in Duna Woreda due to suitable agro ecology that makes the Woreda potential for sheep production and marketing. Fattening sheep in feedlot system (60 percent) and grazing and stall feeding (40 percent) were the major fattening systems identified in the area. The high proportion of producers provided crop residues and grazing of natural grasses. Farmers market sheep at farm gates or the nearest local/primary markets. In the process of sheep marketing, farmer, middle men and traders were involved. The fatteners sold their fattened sheep through negotiation with customer in the study area. Farmers and rural assemblers from different local markets supplied animals of varying sex, age and weight to Ansho and Cafemera secondary markets. The second and most important route was through medium and large traders who collect animals from Duna woreda/Ansho areas and supply through large traders to terminal domestic markets in Hosanna and Addis Ababa. Based on the result of the current study, utilization of improved forage and house leftover was appreciated and intensive training on sheep fattening, marketing and management in addition to further work is needed to develop a cost effective feeding strategy by combing improved and locally available feed resources for better productivity and profitability.[10–21]

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None.

Conflicts of interest

We declare that there are no conflicts of interest.

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