

Assessment of Cattle Fattening and Marketing Practice in Harshin District of Somali Regional State, Ethiopia

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Abstract

The study was carried out in Harshin woreda, Fafan zone on the cattle fattening practice and marketing system to assess cattle fattening practice and marketing system in three kabeles of the study area. 84.4% and 15.6% respondents were male and female, respectively. The average age of the respondents was found to be 39.5 out of which 55.6%, 33.3% and 11.1% were illiterate, able to read and write and primary school, respectively. The overall mean for family size house hold was 5.73 persons per household and average holding of cattle, sheep, goat, and poultry were found to be 9.08, 3.51, 1.20 and 6.17, respectively. The majority (52%) of the farmers prefer to fatten steer than bulls. the major feeds given for the fattening cattle, is natural pasture (62%), grain by product (16%) and crop residues (22%) and water sources identified in woreda were wells (73%), ponds (20%), and lakes (7%). The housing system of cattle in the woreda were 30%, 50%, 20% in living room with the family, home stead shed and barn, respectively. The cattle fatteners obtain fattening cattle from farm-gate (62.2%), primary market (33.3%) and secondary market (4.5%). The current study indicated that selling of fattened cattle was undertaken at saylada local market (86.7%), Hartasheika town (13.3%). According to the result of the household survey, overall in the study area the mean price of cattle before and after fattening were about 5,000 birr and 9,500 birr, respectively, and resulting with gross profit of about 4,500 birr per fattening cattle which comes from price margin and feed margin. Major constraints that hindered the performance of cattle fattening activity in the study area were mentioned as feed shortage, lack of capital, shortage of labor, low level of awareness towards fattening cattle and animal health problem.

Keywords: Cattle fattening; Major constraints; Major feeds; Marketing system

Introduction

Agriculture, being the backbone of Ethiopia's economy, accounts for 46% of the Gross Domestic Product (GDP) and livestock sub sector contributes 30-35% and more than 85% of farm cash income. The sub sector also accounts 19% to the export earnings [1,2]. Livestock production ensures the availability of food and income to Farming community throughout the year. Besides, livestock are source of agricultural inputs such as draft power and organic fertilizer as a direct contribution for crop production, while the contribution of crop sector is through provision of feed in the form of crop residues and stubble grazing. Hence, the role of livestock is significant in this farming system [3].

There are, however, key constraints to the productivity of livestock in Ethiopian. These include poor nutrition, poor genetic resources in terms of productivity, and prevalence of animal diseases, unfavorable socio-economic factors, and lack of livestock policy [4]. The area of land allocated to grazing progressively declined through time due to the expansion of cultivation [5,6]. As a result of this, scarcity of feed resources is the major bottleneck to livestock production in Ethiopia, where natural pasture and crop residues are the major sources of feed supply to livestock [6,7]. However, these feed resources are inadequate quantitatively and qualitatively to support reasonable livestock production [8].

In Ethiopia there are three types of cattle fattening systems namely; traditional, by-product based. And the Hararghe type of fattening which varies mainly depending on the available feed resources, source of fattening cattle and marketing conditions. Though, Ethiopia is known for its huge cattle population, most of the beef is produced under an extensive low input system and in conjunction with crop and small ruminant production, as a result of which, beef production and productivity are very low as compared to the world average.

Farmers in the study area consider their livestock to be reliable source of input for crop production. Animals were purchased and sold according to the need of farm labor, cash need of the family and investment opportunities. Similar to the other farmers of the Ethiopian highlands, the major functions of oxen in the study area were to provide traction power and to build capital savings. Cows were kept primarily to produce replacement heifers and young bulls which were mainly used as input function for crop production. After plowing, when the plowed oxen become older and suspected as if the oxen could not able to plow for the next season, farmers decide to fatten their oxen and supplied for the market to replace young plowing oxen for cultivation. Moreover, some rural farmers and semi-urban dwellers have experienced fattening by purchasing emaciated older plowed oxen from the surrounding market and sold after some months of feeding period to get profit. For example, in 2006 alone, 2367 cattle were fattened in the woreda (BWARDO, unpublished), and in 2004 alone, 39193 cattle in West Fafan Zone and 129596 cattle were fattened overall in the region [9].

Therefore the aim of the survey of this research project paper is to assess the existing cattle fattening practice, marketing system, current cattle fattening activities, major feed source and feed requirement for fattening cattle's in Harshin District of Somali regional state.

Materials and Methods

Description of the study area

The study was conducted in Harshin district of Fafan Zone which located in the eastern Ethiopia and 130 km far from the capital city of Somali regional state Jig-jiga. Approximately, 730 km far from the capital city of Ethiopia Addis Ababa and longitude 9°-21° in the North, 42°-48° in the East, 29°-35° West and 42°-53° South-East. Its altitude range from 1302 to 17000 m above sees level and it receives annual rainfall that fall from 500 to 600 mm. The area has a semi -arid climate. The temperature ranges from 25 degree siliceous 29 degree siliceous with average temperature of the 29°C. It has enjoyed pastoral service and a total population is estimated 80244 [10].

According to CSA (Central Statistical Agency) [10] the study area has estimated total population of 80,244, of which 43,869 are men and 36,379 are women. While 8,226 or 10.25% are urban inhabitants, a further 39,275 or 48.95% are pastoralists. 99.39% of the populations are Muslim. The woreda has 18,725 camel 15,470 cattle, 12,364 sheep, 7,032 goats, 3138 horses, 2440 mules, 112 donkeys, 79582 poultry, and 12 770 beehives.

Sampling methods

The study was based on purposive sampling technique. There are 10 kebelas in the district from which 3 kebelas (Lankayrta, Kuda Ramale and Dibile) were purposively selected. 15 households (who participated in cattle fattening practice) were selected from each kebele and interviewed, which makes a total of 45 households.

Methods of data collection

For this study the source for data collection was both primary and secondary data. Primary data was collected through personal interviews with the farmers, offices and group discussion was made with the farmers by making a focus group of 5 members then household's interview using the questioners prepared for the purposes of information gathering of the study area. These households were selected based on their interest, proximity to the main road and ownership of beef cattle. They were monitored by using continuous surveying method. And secondary data was collected from public organization, government agencies and other documented materials.

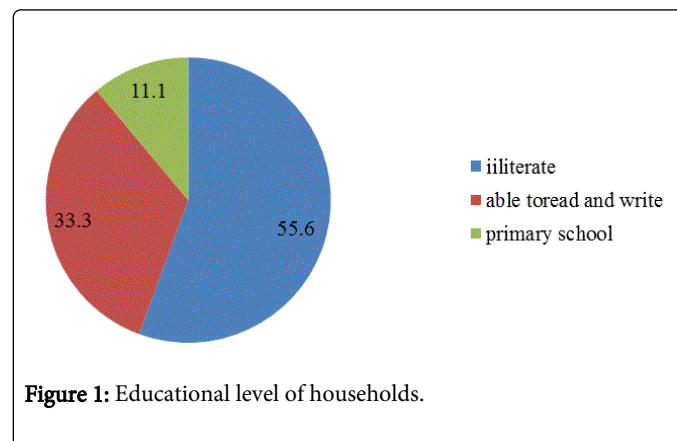
Methods of data analysis

For this study both qualitative and quantitative were collected. The quantitative data was analyzed using descriptive statistical and qualitative data was collected from both primary and secondary data and then carefully analyzed using narration in order to represent actual words and the analyzed data was presented in the form of tables, figures and percentage by using SPSS software.

Results and Discussion

Socio-economic description of sampled households of the study area

Education level of the household heads of cattle fattening participants: Out of the household heads included in the current study, about 55.6% were illiterate, 33.3% able to read and write 11.1% primary school suggesting that illiteracy rate is higher which has impact on fattening practice (Figure 1).



Family age and house hold size of the study area

The average age of the interviewed household head in this study was 39.35 years and ranged from 22 to 70 years. Out of the sampled population (45) of the interviewed households in this study, 18.1%, 46.6%, 22.1%, 6.6% and 6.6% belonged to the age classes 20-30, 31-40, 41-50, 51-60, 61-70 years old, respectively. Out of the sampled population (45) of the interviewed households, 84.4% and 15.6% were male and female, respectively. The major household heads participated in the current study were male. The overall mean for family size house hold was 5.73 persons per household (Table 1). Similarly, Kocho [11] reported that in Eastern Somali regional state, the average family size per house hold was 6.2 persons which is almost the same to the current findings, whereas Kocho [11] reported that average family size in Eastern region Harshin woreda was found to be 7.2 persons.

Parameters	Lankayrta (n=15 hh)	Kuda amale (n=15 hh)	Dibile (n=15 hh)	Over all (n=45 hh)
Age	39.36 ± 1.05	39.34 ± 1.11	39.34 ± 1.01	39.35 ± 1.07
House hold size				
Male	3.00 ± 1.15	3.00 ± 1.60	3.00 ± 1.50	3.00 ± 1.43
Female	3.31 ± 1.39	2.23 ± 1.09	2.17 ± 1.19	2.73 ± 1.60
Total	6.15 ± 1.27	5.02 ± 1.34	5.45 ± 1.65	5.78 ± 1.36

Table 1: Age, household size in two kabeelas of the study area.

Crop and livestock production system

The production system in the studied areas is a mixed crop livestock production system where farmers grow crops and keep livestock. However, the degree of interdependence of crops and

livestock and the priority given by farmers varies in the study area. In lankayrta crop cultivation is a priority activity and entirely dependent on livestock. Farmers keep cattle mainly to satisfy drought power requirement. Ox has vital importance for assuring livelihood security in the Ethiopian lowlands. There is also a lot of social prestige associated with ownership [12]. The dominant crops that are grown are slightly different with the three kabeles. In the lankayrta, crops like maize, barley and wheat, are given priority. But both in the kuda ramale and dibile maize, sorghum and barley are mainly cultivated.

The type of livestock kept by farmers in the study area is presented in Table 2. Accordingly, the average number of ox, cow, young bull, heifer, and calf were found to be 2.66, 2.55, 2.35, 1.2, and 3.5, respectively. The average number of cattle per household in the study area was 9. The role of livestock play in the study area is similar, that is, mainly to meet the draft power requirement of the household. Moreover, livestock are kept for the purpose of herd reproduction, meat, milk production for home consumption and manure for crop production, store of wealth and dung for fuel. Sheep dominate in the Harshin woreda compared to goats. This could be due to type of feed available in the lowlands favoring sheep over goat. Donkeys are kept by farmers for transportation purpose. Livestock production is not market oriented. Farmers do sell their animals whenever they need cash for food, seed and other purposes.

Parameters	Lankayrta (n=15 hh)	Kuda ramale (n=15 hh)	Dibile (n=15 hh)	Overall (n=45 hh)
Livestock holding				
Ox	2.18 ± 0.85	2.52 ± 1.16	2.10 ± 0.85	2.66 ± 1.02
Cow	2.18 ± 1.62	2.30 ± 1.36	2.08 ± 1.62	2.55 ± 1.50
Young bull	1.45 ± 0.95	1.26 ± 0.25	1.35 ± 0.95	2.35 ± 0.82
Heifer	1.27 ± 0.88	1.34 ± 1.30	1.27 ± 0.98	1.20 ± 1.03
Calf	1.40 ± 1.14	1.00 ± 0.90	1.41 ± 1.17	3.51 ± 2.83
total cattle	9.77 ± 3.84	8.43 ± 3.32	9.87 ± 3.85	9.08 ± 3.61
Sheep	3.95 ± 2.31	3.08 ± 3.24	3.94 ± 2.30	3.51 ± 2.83
Goat	0.86 ± 2.05	1.52 ± 2.01	0.87 ± 2.15	1.20 ± 2.04
Equine	0.45 ± 0.75	0.52 ± 0.23	0.47 ± 0.74	0.48 ± 0.72
Poultry	5.50 ± 4.62	6.82 ± 6.43	5.52 ± 4.63	6.17 ± 5.60
Honeybee	2.22 ± 2.67	2.13 ± 2.43	2.23 ± 2.66	2.17 ± 2.52
Land holding	3.15 ± 1.29	2.23 ± 1.45	3.16 ± 1.19	2.68 ± 1.43

Table 2: Livestock holding characteristics of house hold.

Type of cattle used for fattening

According to current study respondents prefer to fatten steer (52%) and bull (48%). Overall in the study area, sources of fattening cattle were bull 46.8%, 48.8% and 48.4% in lankayrta, kuda ramale and dibile respectively while steer were 53.2%, 51.2% and 52% in lankayrta, kuda ramale and dibile respectively for fattening purpose (Table 3).

As the respondent said both sources of fattening cattle had great different on live-weight change and gross profit. As the table below explain that bull in the study area is slightly used for fattening than

steer. This may be due to the high demand of bull for plowing purpose in lowland. Sources of fattening cattle in Harshin Woreda were culled oxen due to old age or being unproductive (51%) and immediate purchase for fattening purpose (49%) [13].

Cattle used for fattening	Lankayrta%	kuda ramale%	Dibile%	Overall (%)
Bull	46.8	48.8	48.4	48%
Steer	53.2	51.2	52	52%

Table 3: Cattle type used for fattening in the study area.

Major feed resources for fattening cattle

According to the response of households in Lankayrta, among the major feeds given for the fattening cattle, is natural pasture (62.2%), Grain by product (17.6%) and crop residues (23.2%). As indicated in Table 4. The distribution of the feed resources is similar across the three Kabeles. That means natural pasture cover about 52.2% in Lankayrta which is higher than the two other feed resources. Similarly the major feed resource in Kuda Ramale is natural pasture about (62.2%) followed by crop residues (21.1%) whereas grain by product cover is about 16.7%. and also the same is true for that of Dibile where natural pasture occupies 61.6% followed by crop residue 22% and grain by product 13.7%. Shitahun [12] reported that in Ararso the percentage of natural resource as fattening feed is 31.0%. This may be because around Harshin, the availability of grazing land areas which are allocated for grazing purpose for the animals and thus reduces the role of supplementation by humans.

Feed type	Lankayrta%	Kuda ramale%	Dibile%	Overall (%)
Pasture	62.2	62.2	61.6	62
Grain by product	17.6	16.7	13.7	16
Crop residues	23.2	21.1	22	22

Table 4: Types of feed used for fattening cattle in two kabeles of the woreda.

Water resource for cattle fattening

According to the respondents' response, the three types of water sources identified in woreda were wells (73.3%), ponds (20%), and lakes (6.7%) (Table 5). Yeshitila et al. [14] reported that in Harshin 85% wells, 8.5% local pond, 3.2% natural pond and 1.1% other sources. Most of the respondents revealed that fattening cattle have got access to the water source within <1.5 km distance and some of the respondents revealed that water is served at home. As data we discussed, considering distance and type of water source, fattening cattle getting water from the well that was around the homestead had significantly higher live-weight change than other sources of water which were relatively distant water sources. With respect to watering frequency, in the study area about 72% and 28% of the respondents offered drinking water for their fattening cattle once and twice times per day, respectively. This may be due to the fact that most of the time cattle fattening activity were done during the time when the majority of their feed was derived from seasonally available green feed and thus the fattening cattle could fulfill their water requirement from the feed. Besides, may be due to the narrow gap of watering frequency.

Generally in the study area water source for the cattle was not a big problem.

Water source	lankayrta (%)	kuda ramale (%)	Dibile (%)	Overall (%)
Ponds	9.10	30.4	20.5	20
Wells	81.80	65.2	75	73
Lakes	9.10	4.40	7.5	7

Table 5: Sources of water for cattle fattening.

Housing of fattening cattle

The current study showed that the three types of houses which had been used to keep the fattening cattle were in living room with the family 30%, home stead shed 50% and barn 20%, (Table 6). The three types of houses which had been used to keep the fattening cattle in Harshin wereda of somali region were separated room in the family house (56%), separated house constructed for the cattle (32%), and enclosed barn with simple shed (12%) as reported by Shitahun [12].

Parameters	lankayrta (%)	kuda ramale (%)	Dibile (%)	Overall (%)
In living room with the family	31.5	28.8	29.7	30
Home stead shed	48.5	51.5	50	50
Barn	18.2	21.7	20.1	20

Table 6: Housing system of beef cattle fattening in the study area.

Marketing system of fattening cattle

Source of fattening cattle: According to current study the cattle fatteners were obtain fattening cattle from farm-gate (62.2%), primary market (33.3%) and secondary market (4.5%). In the lankayrta the source of cattle fattening were based on farm-gate (52.6%), primary market (31.6%) and secondary market (8.7%). in the kuda ramale the source of cattle fattening were from farm gate (70.8%) and primary market (34.4%). And in dibile the source of fattening cattle were from farm gate (63.2%), primary market (33.9%) (Table 7). As reported by Teshager [15] in Jarar Zone 62.8% cattle used for fattening were obtained from farm gate.

Parameters	lankayrta (%)	kuda ramale (%)	Dibile (%)	overall (%)
Farm gate	52.6	70.8	63.2	62.2
Primary market	31.6	34.4	33.9	33.3
Secondary market	8.7	-	-	4.5

Table 7: Source of fattening cattle.

As it is indicated in the above Table 7 in kuda ramale high percent of cattle fattened were obtained from the farm gate or the produce by themselves because there is availability of feed source in kuda ramale than the two other kabeles.

Selling place of fattening cattle

As indicated in Table 8, the current study indicated that selling of fattened cattle was undertaken at Saylada local market (86.7%), Hartasheik town (13.3%). Marketing system was one of the least developments of the livestock sub-sector in the study area. It was characterized by a large number of highly dispersed markets, which generally lack basic infrastructural facilities like perimeter fencing, cattle pens, weighting scale, watering, feeding, resting, and quarantine place.

Parameters	Lankayrta (%)	Kuda ramale (%)	Dibile (%)	Overall (%)
Seylada local market	54.7	89.3	116	86.7
Hartasheika town	32.4	5.4	2.1	13.3

Table 8: Selling place of fattening cattle.

With respect to method of transportation, fattening cattle were trekked on foot while purchasing and selling. Marketing of fattening cattle and other cattle took place at the same open area by mixing together with no any shade and separation structure. This may be favorable for disease transmission from infected to healthy cattle and even it causes human health problem.

Purchasing and selling price of fattening cattle

According to the result of the household survey, over all in the study area the mean price of cattle before and after fattening were about 5,000 birr and 9,500 birr, respectively resulting in gross profit of about 4,500 birr per fattening cattle which comes from price margin and feed margin. But according to finding of Shitahun [12], the mean price of cattle before and after fattened were 3500 and 7,545 birr per cattle at Harshin woreda, in which its gross profit was 4,045, and when we compare this with our findings it is smaller. Average purchasing price of fattening cattle had similar between lankayrta, kuda ramale and dibile in the study area. But it had lower selling price in Saylada local market than in Hartasheik town due to the relatively small number of cattle trader from Tog wajale that resulted from distance far from Tog wajale and road facilities.

Based on the household survey result, profit per fattened cattle in Hartasheik was higher than in Seylada local market. As per the market assessment, the price of fattened cattle was highly higher during Arafa as compared to Christmas. This may be due to more demand of fattened cattle during arafa since the time allowed the farmer to fatten their cattle after completion of plowing activity and also better availability of green feed supply. But during Easter, due to the above mentioned reasons, the supply of fattened cattle was very low. Hence limited supply of fattened cattle to the market have got relatively higher price. During Easter, more proportion of plowing oxen, older and unproductive cows, and also poor conditioned heifers and young bulls were supplied to the market. This showed that, though there was huge coverage of communal grazing land and huge crop-residues supply, nutritional value of the feed resource was very low and animals did not get their feed demand. As a result; emaciated cattle supplied to the market to reduce competition for feed among the remaining cattle herd and to cover payments of agricultural inputs for crop production.

Parameters	Lankayrta	Kuda ramale	Dibile	Overall
Purchasing price (Birr)	6,500	5,475	4,550	5,506.7
Selling price (Birr)	9,720	8,530	7,540	8,596.7
Gross margin(Birr)	3,220	3,055	2,990	3,088.3

Source: Field Survey

Table 9: Purchasing and selling prices of fattening cattle

In Table 9 above, the purchasing prices in lankayrta, kuda ramale and dibile is 6,500, 5475 and 4,550 birr respectively while they sell it 9,720, 8,530 and 7540 birr respectively that bears agross margin of 3,220, 3055 and 2990 birr respectively. This means in Dibile both purchasing and selling prices are the lowest, while in lankayrta they are the highest.

Major constraints of cattle fattening

As indicated in Table 10 below, the major constraints facing the cattle fattening practicing in the study area include; lack of grazing land and availability of natural pastures due to shortage of rain fall. Therefore quantity and quality of feed obtainable from natural pastures declines as the dry season progresses, as the result, protein content and digestibility of most grass species decline rapidly as maturity of the plants increase and reaches very low levels during the dry season.

Parameters	Lankayrta %	Kuda ramale %	Dibile%	Overall %
Diseases	41	46	51	46
Lack of grazing lands	5	11	14	10
Lack of management	4	8	12	8
Poor market information	3	15	12	10
Unavailability of veterinary service	11	16	18	15
Lack of road for transportation	7	10	16	11

Table 10: Major constraints of fattening cattle.

Natural pastures are decreasing from time to time and gradually due to rapidly increasing human population and expansion of cropland. There is no introduction of cultivated forage of farmer in their back yard such as grasses like elephant grass, Rhodes grass, oats and herbaceous legumes, alfalfa, desmodiums, Lucerne, cowpeas since it is important as sources of feed and as a supplement to crop residues and natural pastures for fattening cattle. Poor feed utilization; storage, preservation such as hay making, silage and feeding system for cattle fattening of farmers due to lack of awareness on how to use and when to use feed resource utilization. Unavailability of supplementary or concentrated feeds which obtained from agro- industrial by products such as oil seed cake (locally called fagullo), molasses, wheat bran and feed processing factories in area. As respondents said there is no agro-industrial by products on market even at weroda town to buy and supplement their cattle fatten with concentrate feed so they use only grain by product at home made.

Low level of awareness towards fattening cattle practicing and its advantage for improve house hold life by maximizing profitability per animal due to higher market price with proper management such feeding, housing and health of animal. Luck of major services provided to farmers such as medication, vaccination, and artificial insemination which used to improve genetic makeup local breed like growth rate traits for beef cattle. The incidence of disease such as parasitic (internal and external) and transmittable diseases are highly prevalent in the study areas due to different in climatic condition that determine the growth and multiplication causative disease of microorganism. As most of the respondents said Leeches which is a blood sucking parasite for the cattle is the most common problem related to water source for cattle specially for fattening cattle is leeches multiplication in the water during dry season get in cattle during drinking suck blood and cause weight loose, even death may occur if it stays in animal for a long time. As the result fetching water for cattle fattening require higher labor in order to save animal from leeches. Poor market information due to; between year and monthly price fluctuations. Unreliable market information that farmers obtain from neighbors relatives and Owen market visited. Lose body weight of animal if miss market price for the first to second time market visited.

As it is indicated in the above table, disease has the highest effect on the cattle fattening practices in the study area (46%) followed by unavailability of veterinary service, lack of road for transportation, poor market information, lack of grazing land and lack of management in a percentage of 15%, 11%, 10%, 10% and 8% respectively.

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