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Assessment of the Prevailing Cattle Fattening Practices in Jimma Zone, South-Western Ethiopia

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Abstract: The study was conducted in four districts of Jimma zone namely Gera, Gomma, Dedo and Kersa to assess cattle fattening practices. A total of 200 households engaged in fattening cattle were selected purposely for this study. Data of various parameters including available feed resources and their utilization and livestock holding was collected using a pretested questionnaires and also from secondary sources. The collected data was subjected to analysis by using SPSS version 16.0. Feed availability was computed from the collected data. It was found that the average livestock holding of the study area was 7.40 tropical livestock unit. The respondents reported the possible available feed resources for these livestock are mainly grazing land (99.5 %) and crop residue (94%). Besides, 90%, 83% and 46.5% of the respondents used salt, kitchen waste and coffee residue as non-conventional feed. As far as feed processing experience is concerned, chopping (83%), wetting (59.5%), grinding (23.5%), boiling (37.5%) and roasting (8.5%) were practiced in the study areas. Total utilizable tone of dry matter was 12.82 out of which crop residues contribute the major part (9.19+0.39). There was significant variation among study districts in available total dry matter for livestock production. Dedo and Kersa districts had more total utilizable DM than Gera and Gomma. Positive feed balance was observed in Dedo (1.93) and Kersa (4.7) districts whereas as negative feed balance was observed in Gera (-9.87) and Gomma (-1.06) districts. The vast majority (90.5%) of cattle fatteners deworm their animals before starting fattening process. River (77%), spring (16%), stream (5%) and pipe water (2%) were the sources of drinking water in the study areas. With regard to overnight shelter 22.5% and 48% used separate and shared housing system, respectively. In the study areas 47.5% of the respondents reported that they use thatched type of roof whereas 23% uses corrugated sheets of iron. Wood (62%) and bamboo (8 .5%) were the two common types of walls construction. Wooden (42%), rammed earth (25.5%) and others (3%) were the major type of floors. The average space requirement for night resting was 1.87m^2. Feed shortage (44.59%), initial capital (25%), disease (14.86%), market (6.42%) and labour (9.12%) were the major constraints for fattening cattle.

Key words: Feed · Housing · Jimma · Fattening

INTRODUCTION

In Ethiopia, livestock production is an integral part of the farming systems and plays a vital role in the livelihood of the majority of people. Cattle fattening is an emerging sector for employment and income generation for the poor, especially landless, destitute and widowed women and therefore cattle fattening can be an effective tool for poverty alleviation. Both large scale (commercial feedlots) and small scale fattening operations are carried out in Ethiopia. The large scale cattle fattening operations are concentrated around towns such as Adama (Nazareth), Mojo and Debrezeit in close proximity to the terminal markets in Addis Ababa. These commercial feedlots feed relatively large number of animals at a time as their primary objective is profit [1]. The commercial feedlots buy cattle from primary and secondary markets and feed them on concentrates such as wheat bran, oil seed cake and

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molasses [2]. That is why this type of cattle fattening is usually referred to as by-product based production system.

There are also traditional and indigenous systems of cattle and small ruminant fattening practiced in different parts of the country which are typically carried out in the backyard. The notable examples of backyard fattening practices are carried out in Wolayita and Hararge areas [1]. Ordinarily, farmers fatten their draught oxen so that they can fetch better price when brought to market. Some, on the other hand, purchase oxen specifically to fatten and sell them so as to get increased price per weight margins on each fattened animal. In such cases, animals are purchased based on their large skeletal frames and their body conformations. In any case, whether using purchased or own animals, most cattle used for fattening purposes have already reached their full skeletal size [3]. Several households in Nazareth and Modjo were engaged in small scale fattening activities consisting of 1-3 heads of cattle [4]. Significant number of farmers practice cattle fattening in Illu Abbora Zone of Oromia Region in Ethiopia for variable range of durations (4-15 months and above) due to the attention given on inputs and alternative use of the animals for other purposes [5].

One of the advantages of the cattle fattening by the rural farmers is that they use locally available cattle feed resources even if it has its own drawback. The predominant source of feed for fattening in the rural areas of Ethiopia is natural pastures, forages and browse of varying nutritive values. These feeds are generally communal, or are communally administered. Grazing as a source of feed has been continuously declining as a result of increased areas of cultivation and changing patterns of fallow land. Major problem with feed of these kind were seasonal availability and/or quality of the feed resources. This in turn affects cattle producer by restricting production to the time of feed availability [6]. The resultant crop residues from farming and by-products such as straw, are becoming increasingly important sources of feed in crop producing areas as stubbles and other crop residues [7]. Feed scarcity and quality deterioration of the feed during dry season are the main challenges facing smallholder cattle feeders. Other than grazing and crop residue use of readily available local resources including non-conventional feed sources could be an attractive option for low-income rural poor farmers [8].

Markets are dispersed with remote markets lacking price information. Generally, the number of animals offered in the local market is usually greater than the number demanded, so there is excess supply. This effectively suppresses producer prices since the more mobile trader is better informed on market prices, while better information combined with excess supply place the trader in a better position during price negotiation. Livestock are generally traded by 'eye-ball' pricing and thus weighing livestock is uncommon. Prices are usually fixed by individual bargaining and depend mainly on supply and demand, which is heavily influenced by the season of the year and the occurrence of religious and cultural festivals. Ethiopia's livestock supply is heavily influenced by the severity of the dry season [9].

High demand of animals by the local abattoirs, increasing official exports and increasing domestic meat consumption in Ethiopia are the opportunities that will enhance cattle fattening. Therefore, empowering poor smallholder farmers will help to provide high-quality, sustainable livestock production with an identified market destination and access to basic production inputs, credit, capacity-building, market-related information [9] Despite the increasing urbanization and market demand for meat consumption in Jimma Zone, there was little information regarding the cattle fattening practices, assocaited benefits and challenges. The current study is therfore conducted to assess the practices of cattle production system with special emphais on the experience of fatting by small scale farmers around Jimma.

MATERIALS AND METHODS

Description of the Study Area: Jimma Zone, found in South Western Ethiopia, lies between 360 10′ E longitude and 70 40′ N latitude at an elevation ranging from 880 m to 3360 meters above sea level. Jimma Zone is divided in to 16 Districts/districts (hosting a total population of over 2.4 million) with an agro-ecological setting of highlands (15%), midlands (67%) and lowlands (18%) [10].

Jimma zone practices mixed crop-livestock agriculture. Major crops grown, other than coffee, are maize, tef (Eragrostis tef), sorghum, barley, pulses (Beans and peas), root crops (Enset-false banana and potato) and fruits. Tef and honey production are another sources of cash after coffee. The climate is humid tropical with bimodal heavy annual rain fall, ranging from 1200 to 2800 mm. In normal years, the rainy season extends from February to early October. The thirteen years mean annual minimum and maximum temperature of the area was 11.3°C and 26.2°C, respectively.

Sampling and Data Collection: Four districts were selected for the current study. The criteria considered to select study districts were agro ecology (Highland and midland), accessibility and potential of cattle resources suggesting that the districts were selected purposely. In due regard fifty households involved in cattle fattening were selected from each district purposely totaling 200 households. Purposive sampling technique was employed to select the fattener households, because not all households of the district are engaged in cattle fattening. Questionnaires were prepared, pretested and re-written after checking some inconvenience from pretesting. Data collectors were oriented on the system and approach of data collection. The individual households were interviewed about the prevailing cattle fattening practices mainly feed resources. The primary data collected from individual household was augmented by secondary data obtained from district and Jimma Zone Agricultural Bureau. The secondary data collected from the zone level has helped to accentuate the findings from the districts.

Feed resources available from different sources were estimated based on FAO [11]. First of all crop type and yield produced per household of the study were collected from individual farmers by the questionnaire, after which crop residue production was estimated by multiplying crop production data with established conversion factors for each type. Accordingly, for a ton of maize stover conversion value of 2.0 was used, for a ton of wheat, barley and teff (Eragrostis tef) straw, the conversion value of 1.5 was used, while conversion value of 2.5 was used for sorghum. Utilizable crop residue was calculated by considering 10% loss during feeding [12]. To estimate the quantity expected from private grazing land, the land size allocated for grazing was multiplied by 0.5 whereas estimates of feed from crop aftermath was calculated by multiplying cultivated land with 3.0. Communal grazing land, irrigation by-products, shrub land and non-conventional feeds are not included in this study because the inconvenience to collect data of these sources. Housing space requirement was obtained by directly measuring the overnight shelter by using tape meter. The overnight shelter was measured length and width wise after which the area was calculated as (Area= Length*Width). The space requirement per animal was calculated by dividing the area of the house obtained to total number of cattle of the household. In the meantime type of floor, wall and roof was observed by the researchers.

Data Analysis: The data was subjected to analysis by SPSS version 16.00. Mean and percentages were used to tabulate the result. ANOVA was also used for some of the appropriate data and tested at 95% level of significances.

RESULTS AND DISCUSSION

Socio -Demographic Characteristics: As indicated in Table 1, the average family size in the four study districts was 7.8+0.18 persons, which is greater than the average of the national value reported by Federal Democratic Republic of Ethiopia Central Statistical Agency Agricultural Sample Survey [13]. The average age of the interviewed households was 41.9+0.64 years old which is within the range of productive age. A total 44.5% of the households under consideration had basic education whereas 30.5% were illiterates. The mean family size of the study participants 7.8 + 0.18, which is contemporaneous with [14] who reported that mean household size in Baresa, south region of Ethiopia to be seven. Similar to the current result, [15] reported that the average age of respondents in central highlands of Ethiopia was 40.25 years.

Livestock Holding and Herd Composition: The average livestock holding in tropical livestock unit (TLU) of the study areas was found to be 7.40+0.36 (Table 2). The livestock holding of Gera district was significantly higher than ($P<0.05$) the rest of the three districts, whereas Dedo district is significantly higher than Gomma and Kersa. No significant variation was observed between the latter two districts with regard to livestock holding. The average number of cattle in the study area was 5.80+0.23. There was significant variation among study districts with regard to cattle holding. Gera district was significantly higher than the rest of the districts whereas Dedo is significantly higher than Gomma and Kersa.

The current finding is higher than the report of Shitahun *et al.* [16] who indicated that average holdings of total livestock per household at Bure district to be 5.31 TLU which may be attributed to the fact that more land is cultivated in Bure district than Jimma zone districts. For similar reason, Ahmed *et al.* [15] had reported lower livestock number (6.15 TLU) in central highlands of Ethiopia.

In current study area the average number of sheep and goat was 0.30+0.02 and 0.10+0.02 TLU, respectively. The study had further identified that in Dedo district there were significantly more small ruminants than the other three districts. The current finding is slightly lower than that of Ahmed *et al.* [15] who reported 0.52 and 0.24 of sheep and goat per household respectively in central highland of Ethiopia.

Table 1: Socio-demographic characteristics of the households of the study area

	DISTRICT				
	GERA	DEDO	GOMMA	KERSA	Total
Variables	N = 50	N =50	N= 50	N=50	N= 200
Family size (Mean±SE)	8.44±0.431	7.60±0.353	7.52±0.331	7.62±0.318	7.80±0.18
Age (Mean±SE)	42.30±1.25	42.04±1.36	40.72±1.33	42.46±1.24	41.90±0.64
Educational status	N= 50	N= 50	N= 50	N= 50	N= 200
Illiterates	36.0	30.0	16.0	40.0	30.5
Basic education (1-6th)	56.0	46.0	36.0	40.0	44.5
Junior and secondary	8.00	24.0	48.0	20.0	25.0
Total	100	100	100	100	100

Table 2: Livestock holding per household in the study area (TLU)

	DISTRICTS				
Variables	GERA	DEDO	GOMMA	KERSA	Total
(Mean ±SE)	N= 50	N= 50	N= 50	N= 50	N= 200
Cattle	10.34 ±0.40^{a}	5.0±0.23^{b}	4.0±0.22^{c}	3.87±0.22^{c}	5.80±0.23
Sheep	0.30±0.03^{b}	0.43±0.04^{a}	0. 27±0.03^{b}	0.23±0.02^{b}	0.30±0.02
Goat	0.06±0.12^{b}	0.20±0.02^{a}	0.08±0.02^{b}	0.12±0.02^{b}	0.10±0.02
Donkey	- -	0.10±0.03^{a}	0.04±0.01^{b}	0.12±0.03^{a}	0.06±0.01
Horse	0.58±0.09^{a}	0.50±0.09^{a}	0.24±0.07^{b}	0.16±0.05^{b}	0.40±0.04
Mule	0.16±0.06	0.21±0.06	0.05±0.03	0.08±0.03	0.12±0.02
Total livestock	13.65±0.85^{a}	6.40±0.32^{b}	4.71±0.29^{c}	4.53±0.19^{c}	7.40±0.36
Chicken	0.43±0.04^{b}	0.36±0.05^{b}	0.38±0.05^{b}	0.65±0.05^{a}	0.46±0.03

$^{a, b, c}$ Means with different superscript across the row are significantly different at ($P < 0.05$).

Feed Resources: As indicated in Table 3, there were different feed resources in the study areas with different level of contribution. Almost all (99.5%) of the respondents reported that they use grazing land which was either private or communal. Through observation it was identified that fattening cattle are tethered by rope in an enclosed field if the grazing land is private. However, if the grazing land is communal they are allowed free roaming to graze. Most of the grazing land observed in the highlands of the current study areas are undulating and seem inconvenient for crop production. This is particularly true in Gera and Dedo districts. The next feed resource used by the majority (94%) of the respondents was crop residues. High proportion (80%) of the respondents also reported that they used kitchen waste for fattening cattle. Hay (36%), cut and carry (34%), crop thinning (26%) and local milling by products (42%) were also used by fatteners in the study areas. Unfortunately no respondents had reported agro industrial by-product as feed source. This is because there were no agro industrial by-products in the study areas and it is not economical to purchase from Addis Ababa and other towns. Similarly, in this study no respondent had reported silage as feed resources suggesting that the practice of silage is not common and there is a need for extension agents to train the farmers on such alternative feed conservation mechanisms. Since the area is known for maize production which is good to widely use silage.

Table 3: Feed Resources in the study areas

Districts					
	Gera	Dedo	Gomma	Kersa	Total
	N= 50	N=50	N =50	N= 50	N =200
Grazing	100	100	98.0	100	99.5
Crop residue	80.0	96.0	100	94.0	94.0
Hay	18.0	14.00	26.0	36.0	27.5
Cut and carry	70.0	30.00	42.0	34.0	51.0
Crop thinning	36.0	20.0	44.0	26.0	37.0
By-product	4.00	38.0	20.0	42.0	26.0
Miscellaneous					
Salt	100	100	96.0	98.0	90.5
Kitchen waste	92.0	72.0	88.0	80.0	83.0
Coffee	90.0	38.0	32.0	26.0	46.5

The current finding is similar with the study of Dawit *et al.* [17] who reported that natural pasture, aftermath grazing, crop residues and maize thinning were the major feed resources in Adami Tulu Jiddo Kombolcha district of Ethiopia. The main feed resources for traditional cattle fatteners of Wolayta and Hararge were crop residues, cut-and-carry grass and various agricultural by-products such as sweet potato vines and tuber, thinning or whole crop maize [1]. During the rainy season thinning of maize is the common practice in Beresa watershed found in southern region of Ethiopia to be used as feed for livestock [14].

Other than conventional feeds type, 90.5%, 83% and 46.5% used common salt, kitchen waste and coffee residues, respectively. Hundred percent of the interviewed households of Gera and Dedo districts used salt, whereas 96% and 98% of Gomma and Kersa districts households used salt, respectively. According to respondents, common salt was used mainly in two different forms; salt lick, locally called ''Amole'' and/or sprinkling the dissolved salt over dry feeds (crop residues). The salt may be used as a source of sodium and chlorine for the fattening animals. The majority (83%) of the participating households in the study districts used kitchen wastes for fattening animals. The type and availability of kitchen wastes depends on family size and feed types of the household. Enjera (stable food of Ethiopians) and bread were the common types of kitchen wastes used by the interviewed households. Coffee residue was also another feed used by 46.5% of the households in the study areas. As compared to the other study districts the majority of Gera fatteners used coffee residue.

Household wastes that include coffee residue constitute important sources of supplementary feed of fattening animals in Ethiopia [1]. Even though, coffee residue is considered as the portion after which the main part is used by the households, some respondents reported that they used the whole grain roasted, ground and boiled with water and then gave for the animals to drink. This indicates the need for further investigation. In this study unlike other parts of the country, using "Atela" (a residue resulting from home distilling of an alcoholic liquor, areqe) is minimal. This may be because the study areas were largely Muslims who do not consume alcohols. The most important thing here is that, if properly utilized these combinations of diverse feedstuff listed above, this could provide better nutrient profile for fattening cattle.

Feed Processing Experience: The vast majority (90%) practiced chopping of feedstuffs such as maize and sorghum Stover. The rest of the farmers (78%), (26%), (44%) and (32%) practice soaking (wetting), grinding, boiling and roasting, respectively (Table, 4). The type of processing varies with feed types. In the future, the practice of processing in the study district should be well understood and be encouraged because in solving feed related problems processing may have significant contribution [15]. Reported that farmers in north Shewa Zone employ fine threshing of teff, barley, wheat and pulses to improve crop residue palatability.

Table 4: Experience of respondents in processing feeds in the study area

Districts					
Variables (%)	Gera	Dedo	Gomma	Kersa	Overall
Chopping	72.0	70.0	94.0	90.0	83.0
Wetting	36.0	62.0	66.0	78.0	59.5
Grinding	34.0	18.0	8.00	26.0	23.5
Boiling	42.0	52.0	10.0	44.0	37.5
Roasting	-	-	-	32.0	8.50

Feed Resources Estimation from Different Sources: The estimated feed resource from crop residues expressed in DM (tone) was 10.21 out of which 9.19 is utilizable. In this study maize (6.67), Teff (0.7), wheat (1.50), Barley (0.66), Bean (0.20), Field pea (0.34) were the common feed resources obtained from crop residues. Because maize is the dominant crop type in the study areas it contributed greater amount of crop residue followed by teff. There is significant variation (P< 0.05%) in total crop residue production among the study areas. Dedo and Kersa districts had more crop residues than Gera and Gomma districts (Table 5). The difference may be due to more crop land allocation and higher productivity of the cultivated land for the respective crops. According to zone agricultural office report of 2014/15 production year, the cultivated land in Dedo, Kersa, Gera and Gomma was 55103ha, 38965ha, 24942ha and 19384ha, respectively indicating that there is difference in cultivated land between districts and therefore the yield from this extra land can bring the difference in crop residue. The productivity estimation (crop yield/land size) has also contributed for the differences. According to the same information, the productivity of Dedo, Gera, Gomma and Kersa was 20%, 18%, 25%, 26%, respectively.

The current finding is slightly higher than the result of Dawit *et al.* [17] who reported that 8.74 tons feed DM was annually produced per household farm from crop residues in the AdamTullu Jiddo Kombolcha District. However, the current finding is comparable with that of Shitahun *et al.* [16] who indicated that in Bure district of Amhara region where the total utilizable DM production from cropping system was 10.77 TDM per household which comprised 9.63 TDM crop-residues. Previous study by Yisehak *et al.* [18] at Dedo indicated that the major feed resource bases were natural pasture, after math, grazing, crop residues, green fodder and non-conventional feeds.

If these sources of feed are used properly, feed shortage problem can be tackled to some extent. However, there is less awareness in the management and utilization of the feed resources. Storage, way of provision and harvesting stages were all very poor according to the researchers' observations.

Table 5: Estimated annual feed dry matter obtained per household farm from different Feed resources DM (TONE)

Districts					
Parameter	GERA	DEDO	GOMMA	KERSA	Total
(Mean ±SE)	N= 50	N= 50	N= 50	N= 50	N= 200
Maize	3.65 ±0.58^{d}	7.69± 0.87^{b}	5.73± 0.58^{c}	9.63±0.68^{a}	6.67±0.38
Sorghum	0.10± 0.04	0.23±0.12	0.06±0.03	0.21±0.05	0.15±0.03
Teff	0.53±0.10^{b}	1.00±0.17^{a}	0.71±0.10^{b}	0.56±0.10^{b}	0.70±0.10
Wheat	1.13±0.29^{c}	2.40±0.20^{a}	0.54±0.10^{d}	1.80±0.18^{b}	1.50±0.11
Barley	0.68±0.14^{b}	1.12±0.17^{a}	0.29±0.10c	0.54±0.09^{bc}	0.66±0.10
Bean	0.34±0.06^{a}	0.15±0.05^{bc}	0.08±0.03^{c}	0.24±0.05^{ab}	0.20±0.02
Filed pea	0.41±0.06^{b}	0.60±0.06^{a}	0.09±0.03^{d}	0.26±0.05^{c}	0.34±0.03
Total crop residue	7.05± 0.59^{b}	13.09± 1.03^{a}	7.45± 0.60^{b}	12.51±0.78^{a}	10.21±0.43
Utilizable (90%)	6.14±0.54^{b}	11.90±0.92^{a}	6.77±0.53^{b}	11.93±0.65^{a}	9.19±0.39
Crop aftermath	0.78±0.05^{b}	1.50 ±0.07^{a}	0.86 ±0.06 ^{b}	1.70±0.41^{a}	1.20±0 .11
Grazing land (ha)	3.45±0.26^{a}	2.90±0.30^{a}	1.90 ±0.39^{b}	1.40±0.12 ^{b}	2.43±0.15
Total utilizable	10.38 ±0 .61^{b}	16.30±0 .95 ^{a}	9.54±0 .65^{b}	15.05 ±0.85^{a}	12.82±0.44

Table 6: Estimated annual utilizable feed DM supply, DM requirement and feed balance per household in the study area

Districts	Available DM	DM Requirement	Balance
Gera	10.38	20.25	-9.87 (51%)
Dedo	16.30	14.37	1.93 (113%)
Goma	9.54	10.60	-1.06 (90%)
Kersa	15.05	10.35	4.70 (149%)
Overall	12.82	15.39	-2.57 (83.30)

Estimation of Annual Feed Balance in the Study Districts: The available feed resource included in this study was not adequate to support the livestock of the districts. The estimated available feed resource was 12.82TDM whereas the livestock maintenance requirement of dry matter was 15.39 resulting in a negative balance (-2.57) (Table 6). In other words the estimated utilizable feed resources were able to support about 83.3% of the livestock. While there was positive balance in Dedo and Kersa districts, negative balance was observed in Gera and Gomma districts. The negative balance is higher in Gera district. This may be supported by the fact that insufficient grazing lands and the increased livestock population are big problems in study districts [19]. Similar to the current finding, Dawit *et al.* [17] observed negative feed balance in Adami Tulu. However [16] reported a positive feed balance at Burie district.

De-Worming: In the current study, the vast majority (90.5%) of cattle fatteners deworm their animals before commencing fattening practices. This may be considered as good practice and should be encouraged because deworming would decrease parasite load that may affect the performance of the animal that could lead to longer time to finish fattening. Office of agriculture (90%) and private animal pharmacy (6.5%) were the sources of the de-wormer. According to respondents, the common de-wormer used was Albendazole which is a broad spectrum and orally administer.

Table 7: De-worming practice

Districts					
	Gera	Dedo	Gomma	Kersa	Overall
Variables	N = 50	N =50	N = 50	N = 50	N= 200
Deworming (% yes)	100	94.0	98.0	70.0	90.5
De-wormer source					
Office of Agriculture	84.0	92.0	98.0	62.0	84.0
Animal Pharmacy	16.0	2.00	-	8.0	6.50

Table 8: Sources of drinking water for fattening cattle in the study area

District					
	Gera	Dedo	Gomma	Kersa	Overall
Variables	N= 50	N= 50	N= 50	N= 50	N= 200
Source of water					
River	90.0	70.0	92.0	56.0	77.0
Spring	10.0	30.0	4.00	20.0	16.0
Stream	-	-	4.00	16.0	5.00
Pipe water	-	-	-	8.00	2.00
Total	100	100	100	100	100

The current finding is in concurrent with that of Aklilu [3] who identified that fattening cattle in Amhara region were dewormed through drenching against internal parasites before entering feedlot. However, unlike the report of this author, vaccination is not common in the current study. Similar to our result, about 80% of farmers in Bangladesh deworm their cattle before starting fattening [20].

Sources of Drinking Water for Fattening Cattle: In the study districts there were different water sources for fattening cattle. River (77%), spring (16%), stream (5%) and pipe water (2%) were the different sources of water (Table 8). Similarly, farmers in Amhara region use different water resources for their cattle. Out of the total respondents, 48.8% use water from wells, 47.2% from rivers, 3% from Lake Tana, 2.3% from ponds and 0.2% from tap water [21]. Similarly, Shitahun *et al.* [16] also

reported that the three types of water sources identified in Bure district were river (58%), spring (32%) and hand dug well (10%). Similarly, Endale *et al.* [22] also reported that livestock in Meta Robi of west Showa zone get water from river (97.8%) and pond (2.2%).

Housing System of Fattening Animals: About 48% of the fatteners share the family house together with fattened animals and 22.5% construct separate house for animals. The rest of the fatteners do not construct house at all, they simply keep their animals either in open yard or in the barn around household vicinity. As indicated in Table 9, farmers do not construct either separate or shared house type for their animals. This indicated that they have relatively larger animal number than the other districts and also suggesting that thief and predator problem is minimal. As far as the roof type of houses in the study area is concerned 47.5% of the respondents reported that they uses thatched type of roof whereas 23% uses corrugated sheets of iron. Wood (62%) and bamboo (8 .5%) are the two common types of walls construction. Wooden (42%) rammed earth (25.5%) and others (3%) are the major type of floors. In addition to the household responses, the researchers observed all type of housing systems: types, suitability (in terms of levelness), cleanliness and others. As per the observation of the researchers, fattening animals do not have separate house from other cattle. Small ruminants and equines have their own partition under the same roof. Some of the wooden floors are very bad because there are protruding and the floors are not smooth which makes uncomfortable to rest for the animals. The rammed earth floor is relatively smooth but it is susceptible to be muddy particularly during wet season. All the observed houses are longer than wider which means that they accommodate the animal length wise than width wise. The average space per animal of the houses in the study area was 1.87m^2 with average height of the roof 205.01cm.

The current finding is relatively lower than the finding of Yisehak *et al*. [18] who reported that majority of the respondents, 88.33%, in Jimma Zone housing different species of their livestock at their own home at night, which is not separated from their own living house, while the rest (11.67%) kept at night enclosures and open yards. This proportion is also lower than the finding of Shitahun *et al.* [16] who reported that 56 % of cattle fatteners in Bure district kept their animals during night in separated room which shared family house.

Table 9: Night enclosure for the fattened cattle in the study areas

District					
	Gera	Dedo	Gomma	Kersa	Overall
Variables	N= 50	N= 50	N= 50	N= 50	N= 200
House type					
Separate	2.00	18.0	20.0	50..0	22.5
Not separate	6.00	80.0	58.0	48.0	48.0
Roof type					
Sheets of Iron	-	42.0	16.0	34.0	23.0
Grass	8.00	56.0	62.0	64.0	47.5
Wall type					
Wood	6.00	72.0	78.0	92.0	62.0
Bamboo	2.00	26.0	-	6.00	8.50
Floor type					
Wooden	4.00	82.0	52.0	30.0	42.0
Earthen	4.00	16.0	26.0	56.0	25.5
Other (stone)	-	-	-	12.0	3.00
Space requirement					
(Mean ±SE)	N= 25	N= 25	N= 25	N= 25	N= 75
Space per animal (m^2)	use barn	1.29±0.8^{ab}	2.69±0.48^{a}	1.61±0.16^{b}	1.87±0.18
Roof height (cm)	use barn	211.60±8.99^{a}	205.62±6.20^{a}	198.10±4.66^{a}	205.01±3.96

$^{a, b, ab}$means with different superscript are significantly different ($p<0.05$)

Table 10: Constraints of cattle fattening

District					
	Gera	Dedo	Gomma	Kersa	Total
Variables	N= 25	N= 25	N= 25	N= 25	N= 75
Feed shortage	27.05	71.19	38.82	50.74	44.59
Initial capital	16.47	27.11	32.94	23.88	25.00
Disease	25.88	1.69	17.65	9.10	14.86
Market	21.28	-	1.18	-	6.42
Labour	9.41	-	9.41	16.42	9.12

Major Constraints of Cattle Fattening in the Study Area: There are diverse constraints identified. Feed shortage (44.59%), initial capital (25%), disease (14. 86%), market (6.42%) and labour (Herder) (9.7%) were among the reported constraints (Table, 10). As far as feed related problems are concerned the study participants mentioned that land scarcity grazing land is diminishing. On the other hand they responded that there were no agro-industrial by product to purchase for fattening. Some of the households reported that they lack capital to expand and carry on a better scale of fattening. Because Ethiopian government had declared that all children that attain education age must learn and due to this reason, some had faced critical problem of herding livestock.

CONCLUSION

There were different traditional practices to fatten cattle. Grazing land and crop residues were the major feed resources used to fatten cattle. The fattening animals were protected in a simple house attached to the house holding

living home. There are various aspects that should be improved to maximize the output of cattle fattening and thus there is a dire need to provide training for the farmers by the responsible body.

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