Assessment of Beef Cattle Fattening in Selected Districts of Hadya Zone, Southern Ethiopia

Tsegay Lijalem*   Amanuel Daniel   Tegsse Ermias
Department of Animal and Range Sciences, Agriculture College, Wolaita Soddo University P.O. Box, 138
Wolaita, Ethiopia

Abstract

The study was conducted in the southern nation, nationality and people regional government in Hadya zone (Misrak Badawacho Woreda), Ethiopia to assess beef cattle production(feed resources, opportunities and constraints). In the present study, stratified and purposive sampling method were used; a total of 110 households were selected for survey study. To collect the data both primary and secondary data sources were used and the collected data were analyzed statistically using SPSS (version 20) for windows. The study showed that the main purposes of beef cattle production in the study area were for income generation(42.72%), draught power(31.81%), for asset(14.54%), for home consumption (9.09%) and for social value(9.09%). According to the respondents, major feed availability in the study area were natural pasture, crop residues, *atela, frushika*, maize grains, enset, sugar cane stalker, sweet potato and maize stalker. The study also showed that frequency of supplementing beef cattle were varied due to seasons of year, feed types(available), locations(agro-ecology), capacity of the farmers, duration of fattening. In the overall result of the study, most of respondents watered for their cattle from river (33.63%), tape water, (25.45%) , pond (12.72%), rain fall (10.9%) and well (8.18%) sources in order of their importance. The main beef cattle production constraints were feed shortage, lack of management, drought (10%), improved breed, disease, scarcity of land and lack of knowledge. It is concluded that beef cattle fattening is one of the important strategy to improve the income of the farming community and nation as a whole via utilizing seasonally available feed resources by improving utilization efficiency through training and extension advice with the help of agricultural development organizations.
Keywords: Beef, cattle, Ethiopia, feed sources, production, constraint, opportunity

Introduction

Livestock production is an integral part of Ethiopia agricultural system. Livestock contribute a lot to the national economy and the livelihood of the people (CSA, 2009). The sub sector contributes 12 and 33% to the total Gross Domestic Product (GDP) and agricultural Gross Domestic Product (GDP), respectively, and also accounts for 12-15% of the total export earnings, the second in order of importance following coffee and provides livelihood for 65% of the population (LMA, 2001). Live stock in Ethiopia provides draught power, income to farming communities, means of investment and important sources of foreign exchange to the nation of the country, the total house hold cash income from crop and livestock products (Ayele et al., 2003).

Ethiopia has the largest livestock population in Africa. In spite of having large and diverse animal genetic resources, the production of livestock, in particular, in beef cattle remains very low in Ethiopia for various reasons such as inadequate nutrition, poor genetic potential, inadequate animal health services and other management related problems (Lobago, 2007). According to NBE (2001/2002), from 1998-2002, there are only five licensed export slaughter houses in total have a capacity of handling 7,600 sheep and goats and 200 cattle/day. There are also five meat processing plants (all belong to ELFORA)located in different parts of the country and have considerable processing capacity, but are not fully operational due to high packing costs and lack of markets for the products (NEPADCAADP, 2005).

Enhancing the ability of poor small holder farmers and pastoralists to reach markets, and actively engaging them is one other most pressing development challenges. Remoteness results induced farm gate prices, return to labor and capital, and increased input costs. This in turn, reduces incentives to participate in economic transactions and results in subsistence rather than market oriented productions system. Sparsely populated rural areas, remoteness from towns and high transport costs are physical barriers in accessing markets (Holloway and Ehui, 2002). For market development, dynamic relationship between demand and supply is pre requisite, but the small holder and pastoral live stock production is not market oriented. Under these conditions, farmers have no incentives to improve the quality of their animals through appropriate management practices. Moreover, appropriate assessment should be taken to understand the current situation of management (feeding) of fattening cattle system in Ethiopia.

However, in the current study area, in southern Ethiopia in particular in Hadya zone, there has no enough information on fattening of cattle including; management(feeding), opportunities and constraints. Therefore, understandings of these points are important for the cattle ownership as these information could provide insight towards the designing and improvements of strategies to alleviate the shortage of the quality live animal (cattle) supply in the markets. There is also need to assess whether and how the existing beef cattle fattening and beef

cattle production system can provide sustainable and adequate live animal supply which connect the demand for domestic consumption and the demand for export markets. Consequently the producer may get reasonable benefit from the fattening activity as appropriate improvement strategies could be help to introduced. Accordingly, the current study was focused on assessment of beef cattle fattening (production).

Material and methods
Description of the study area
The study was conducted in Misrak Badawacho Woreda of Hadya zone, Southern Ethiopia. This area is located 332 km far from Addis Ababa and 121km farm from Hawassa and 97km far from Hadya zone. The study area is located between $7^0$69N $7^0$00 latitude and $38^0$89 E $38^0$6 longitude.

Annual rain fall is 801mm-1400mm mean; annual temperature range 17.5^0c-22.5^0c and elevation is 1500-2500m above sea level. The study area consists of large number of livestock: cattle 81653; sheep 52392; goat 16237 and equine 18121. The total population of the study area has an estimation of 217,477; out of 102970 are male and 114507 are women (MBWARDO un published, 2005).

Sampling method
In the current study area, stratifying and purposive sampling method were used. There are 39 kebeles in the study area (Misrak Badawacho woreda) of which, 5 kebeles (districts) were selected purposively from each agro-ecologies (mid land and low land) thereby a total of 10 kebeles were selected. In the same manner, 11 household were selected purposively from each selected kebeles. Thus, a total of 110 households were selected for survey study.

Method of data collection
The data were collected from primary and secondary source of data. The primary data collected directly through interview by preparing questionnaires for the cattle owner, field workers and other experts where as secondary data were selected from written documented materials such as published books, articles, and un published paper.

Methods of data analysis
The collected data were analyzed by using SPPS (version, 20). Descriptive statistics such as
mean, percentage were used to summarize the data, represented in Table.

Results and discussion
Livestock population in the study area
The livestock population is presented in Table 1. As revealed in Table 1, the total populations of poultry were significantly larger in number than other livestock. While cattle, sheep, goat, donkey, mule and horse were ,respectively, second, third, fourth, fifth, sixth and seventh larger in number in the study area. The study also indicated that livestock population were relatively vary across agro-ecologies. In the mid land areas, the population of sheep, poultry, mule, horses were higher while cattle, goat, and donkey were higher in the lowland areas. This might be due biological nature variation which exist among different animals to adapt the specific environment for instance in most cases sheep prefer high/mid land areas while goats prefer sandy lighter drier areas(low land areas). However, Asrat et al. (2013) from Bodit Ethiopia reported as cattle were larger than other animals, followed by goats, chicken and equines. Moreover, Kedija *et al*. (2008) from Mieso district Oromia Regional State, Ethiopia who reported that in average 5.69 ± 0.35 heads cattle holds individual households.

Table 1: Average livestock species composition in the study area

Livestock	Mid land			Low land			Total		
	Mean	Max	Min	Mean	Max	Min	mean	max	min
Cattle	2.52	3	1	4.12	4	2	6.64	4	2
Sheep	1.5	3	1	1.21	2	1	2.71	3	1
Goat	0.62	1	1	1.23	2	2	1.85	3	2
Poultry	4.02	4	2	3.3	3	2	7.32	3	2
Donkey	0.23	2	1	0.32	2	1	0.55	2	1
Mule	0.21	2	1	0.14	1	1	0.35	2	1
Horse	0.15	2	1	0.09	1	1	0.24	2	1
Total	9.27	17	8	10.41	15	10	19.66	19	10

Purposes of keeping cattle
In Table 2, the purpose of keeping cattle is presented. According to the respondents, keeping of cattle has multiple purpose; in mid land areas, more farmers were keeping of cattle for income generating (45.45%) while in low land areas, most respondents were keeping cattle for income generating (40%) and draught power(36.36%) then after they fattened and sold it. In the over result of the study, about 42.72%, 31.81%, 14..54%, 9.09 and 9.09% of the respondents were keeping cattle for income generating, draught power, for social value, home consumption and for asset, respectively, in the study areas. The result of current study also supported by Ayele et al.(2003) who indicated that livestock in Ethiopia provide power for farming, income generating and are means of investment.

Table 2: Purpose of keeping cattle

Major purpose	Mid land		Lowland		Total	
	No=55	%	No=55	%	No=110	%
For home consumption	6	10.9	4	7.27	10	9.09
Income generating (sale)	25	45.45	22	40	47	42.72
For asset	5	9.1	3	4.45	8	14.54
Draught power	15	27.27	20	36.36	35	31.81
For social value	4	7.27	6	10.90	10	9.09
Total	55	100	55	100	110	100

Beef cattle feed sources and feeding systems

As it was revealed in the Table 3, the major feed sources for beef cattle were varied from season to season and across agro-ecologies. In mid land area, major feed source during wet season were natural pasture, sugarcane, *frushika*, crop residue while during dry season crop residues, *atela*, sweet potato, maize stalker and natural pasture were major feed sources in order of their importance. On the other hand, in lowland areas, natural pasture, *atela*, *frushika* and maize grain were major feed source in wet season while *atela* and crop residues were major feed sources in dry season in order of their importance. In similar to current findings Gezu et al.(2014) in Lemo and Soro districts of Hadya zone, Southern Ethiopia reported that natural pasture (grasses), crop residues (wheat straw, barely straw, teff straw, sorghum and maize stover), concentrate (wheat bran and noug seed cake) and others (enset waste and browse trees) are major feeds resources during summer(rain) season .While crop residues, natural pasture and aftermath grazing are the major feed resources for dry season, in their descending order. Tolera et at.(2012) also reported from highlands of Ethiopia, natural pasture and crop residue are major feed resources for livestock. Moreover, Belete (2006) in Fogera Northern Ethiopia who found the private and communal grazing land, crop residues of teff, rice, finger millet, barley, chickpea, maize stalk, hay, agro-industrial by products and aftermath are the main available feed resources for livestock production; these results are also in similar to findings of present study.

According to interviewed respondents, in the overall result of the study, the famers used three types of feeding system namely; cut-carry system, only grazing and both grazing and cut-carrying in order of their importance. More farmers used grazing to feed their cattle in low land areas. This was due to availability of grazing land in lowland areas is better than in mid land areas while cut and carrying feeding system were more in mid land areas in the study area(Table 3). This related due to shortage land for free grazing in mid land areas as most lands are converting to crop production in high land areas. However, Getachew (2002) and Solomon (2004) reported that grazing is the predominant form of ruminant feeding system in most parts of the extensive and smallholder crop-livestock farming areas in Ethiopia.

According to the respondents, frequency of supplementing beef cattle were varied due to seasons of the year, feed types(available), locations(agro-ecologies), capacity of the farmers, duration of fattening; supplementation frequency is less in wet seasons and crop harvesting season. Moreover, poor farmers(weak) less frequently feed their beef cattle. Accordingly, some farmers fed their animals twice a day(in evening and morning) while some other gave only once a day, three times a day and ad libitum (Table 4).

Table 3: Beef cattle feed sources and feeding systems

Major feedtypes	mid land		Low land		Total	
	Wet season	Dry season	Wet season	Dry Season	Wet season	Dry season
	(No=55(%)	(No=55(%)	(No=55(%)	(No=55(%)	(No=110 (%)	(No=110(%)
Natural pasture	18.18	9.09	21.81	24.45	20	17.27
Crop residues	10.90	18.18	9.09	14.54	10	16.36
Sugar cane	10.90	14.54	5.452	3.63	8.183	8.9
Stalker	12.72	7.27	3.63	3.63	8.18	5.45
Atela	10.90	12.72	18.18	21.81	14.54	17.27
Sweet potato	9.09	10.90	3.63	3.63	7..27	7.27
Frushika	12.72	12.72	12.72	9.094	13.63	9.09
Maize stalker	5.45	10.90	9.09	12.72	7.27	11.81
Maize grain	9.09	7.27	10.90	3.63	10	6.36
Improved forage	-	-	-	-	-	-
Total	100	100	100	100	100	100

No= respondents number, *atela*= residual of local alcohol, *frushika= by-products of grains*

Table 4: Feeding of beef cattle

Feeding systems	Mid land No =55	%	Low land No=55	%	Total No=110	%
Only grazing	13	23.63	22	40	35	31.81
Cut-carry system	36	65.54	24	43.63	60	54.54
Both grazing and cut-carry	6	10.90	9	16.36	15	13.63
Total	55	100	55	100	110	100
Supplementing frequency						
Only once a day	12	21.81	13	23.63	25	22.72
Twice a day	24	43.63	25	45.45	49	44.54
Three times a day	13	23.63	10	18.18	23	20.90
Ad libitum	6	10.90	8	14.54	14	12.72
Total	55	100	55	100	110	100

No= respondents number

Watering sources and watering of beef cattle

As shown in Table 5, water sources for cattle were varied due to season; during summer (wet seasons) there is ample water source while during dry season, most rivers, ponds and well are drying off. In the overall result of the study, most of respondents watered for their cattle from river (33.63%), tape water, (25.45%), pond (12.72%), rain fall (10.9%) and well (8.18%) sources in order of their importance. In lined with present study Asrat et al. (2013) reported from Bodit, Ethiopia; rivers, tape water and spring are importance's of water sources for dairy cattle. Dessalegn (2015) also reported similar result in Bench-Maji Zone, Southwest Ethiopia farmers had used rivers, springs, borehole water and dam/pond and rain water as main sources of water for their cattle during the dry and wet season. Teshager et al. (2013) had reported similar result from Ilu Abs Bora Zone of Oromia Regional State, South Western Ethiopia; the main sources of water for cattle are river, pond, and pipe line. According to Table 5, watering frequency of beef cattle was varied due to season and agro-ecologies. In mid land areas, most of the respondents watered for their beef animals once a day (25.45%) while in the low land area they watered their beef cattle twice a day (22.72%) in morning and afternoon because in low land area the environment is hotter. Basically, the study showed that water requirement mostly depends on feed type, temperature of the environment, age of the animal and usage of the animal for different purposes. In similar to the result of present study, Teshager et al. (2013), Tsedeke (2007) and Asrat et al. (2013) households provide water to their animals once a day, twice a day and ad libtum.

Table 5: Source of water and watering frequency

Source of water	Mid land No =55	%	Lowland No=55	%	Total No=110	%
River	14	25.54	23	41.81	37	33.63
Pond	8	14.54	6	10.90	14	12.72
Rain fall	10	18.18	2	3.63	12	10.9
Well	5	9.09	4	7.27	9	8.18
Tape water	8	14.54	20	36.36	28	25.45
Total	55	100	55	100	110	100
Watering frequency						
Once a day	28	50.90	18	32.72	46	41.81
Twice a day	20	36.36	25	45.45	45	40.9
Three times	-	-	-	-	-	-
Ad libutum	7	12.72	12	21.81	19	17.29
Total	55	100	55	100	110	100

No= respondents number

Beef cattle production opportunities and constraints

According to respondents, the major beef cattle fattening (production) constraints were shortage of feed availability due to lack of improved forage seed and proper conservation of feed when they are in excess amount in wet season because the supply of feed fluctuates across in study area. Even the less available feeds are poor in quality. The other factors which hindered production of beef cattle were lack of good management i.e. poor storage forage, improper feeding system like overgrazing. Frequent drought, poor breed potential, disease and others were also major constraints in the study area. Moreover, scarcity of land for grazing animal was problem for some farmers in high land areas and prevalence of diseases were common problem in the study area due to lack of proper health care, improper feeding and watering, bad harnessing and heavy work as the farmers depend on (agriculture) crop production in addition to livestock rearing. The current report of the study agreed to Carina (2013) study who found that in Ethiopia Beef cattle production is challenged due to shortage of animal feed (feed scarcity and quality deterioration of the feed during dry season), drought, shortage of land and fluctuation of

marketing. Abdi et al.(2013) from West Hararghe, Ethiopia reported feed shortage, animal health, market problem, land shortage, water shortage, capital shortage, market information, extended drought, little access to credit service, and feed costs are major constraints of livestock production which is also similar to result of current study.

However, if the above indicated constraints are properly addressed in way that adoption of improved forage, selection of breed which have better adaptation, proper usage of feed and over all managerial activities are improved. The study area has an opportunities/potential on market demand (40.9%) (N=45) and having comfortable environment including suitable climate and weather condition like rain fall, temperature, humidity and accessibility of meat demand and water availability (13.63%) (N=15), road access (5.45%) (N=6) in order of their importance. On the other hand, Hall et al. (2004) reported that growing populations, urbanization and economic growth in Ethiopia (developing countries) has good opportunities for beef cattle production as demand for livestock and livestock products become increases. This show that opportunities of beef cattle production varies between/ among location/regions as different factors could be influenced.

Conclusion and recommendations

Keeping of beef cattle has multiple purpose in the study area they used for work power, income generation, social value, assets and home consumption. Among major feed availability of beef cattle, natural grasses/atella (residual of local alcohol) and crop residues were dominant found in the study area. The common beef cattle production constraints were feed shortage, management, diseases, breed and drought. According to the results of findings the following points should be addressed:

➢ Capacity building training should be given for farmers to create awareness about beef cattle fattening program.
➢ The worada's agricultural and rural development office should have taken special attention to motivate on use of the farmers on feed conservation and improved forage.

References

Abdi E., kemal k., Yassin E. and Muleta D (2013) Cattle Production in West Hararghe: An Opportunity and Constraints Assessments in Darolabu, Odabultum, Gemechis and Chiro Districts, Oromia Regional State, Ethiopia. International Journal of Livestock Production Research Vol. 1, No. 1, April 2013, PP: 01- 15.

Adgna T., Yami A. and Alemu D (2012).Livestock Feed Resources in Ethiopia: Challenges, Opportunities and the Need for Transformation. Ethiopian Animal Feed Industry Association.

Asrat A, Yilma Z, Nurfeta A (2013). Characterization of milk production systems in and around Boditti, South Ethiopia. Livestock Research for Rural Development. Volume 25, Article #183. Retrieved June 9, 2015, from http://www.lrrd.org/lrrd25/10/ayza25183.htm.

Ayele S., Assegid W., Belachew H., Jabbar M. A. and Ahmed M M (2003) Livestock marketing in Ethiopia: A review of structure, performance and development initiatives. Socio-economic and Policy Research Working Paper 52. ILRI (International Livestock Research Institute), Nairobi, Kenya.

Carina P (2013) Challenges to Ethiopia's cattle and beef chain. The International Livestock Research Institute(ILRI) has published a report on the challenges faced by Ethiopia's live cattle and beef chain.

CSA (Central Statistical Agency) (2009)Livestock and livestock characteristics 2008–09 (Private peasant holdings). Statistical Bulletin No. 446. Addis Ababa, Ethiopia: CSA.

Dessalegn G. (2015) Assessment of Production and Reproductive Performances of Cattle and Husbandry Practices in Bench-Maji Zone, Southwest Ethiopia. Global Journal of Animal Scientific Research. 3(2):441-452 2015.

Getachew E (2002) An assessment of feed resources, their management and impact on livestock productivity in the Ginchi watershed area. M.Sc. Thesis, Haremaya University, Ethiopia.

Hall D.C., Ehui S, and Delgado C (2004).The livestock revolution, food safety, and small-scale farmers: Why they matter to us all. Journal of Agricultural and Environmental Ethics 17: 425-444.

Holloway G. and Ehui S (2002) Expanding Market Participation Among Smallholder Livestock Producers. Socio-Economics and Policy Working Paper 48. ILRI (International Livestock Research Institute), Nairobi, Kenya. 35pp.

Kedija H., Azage T., Mohammed-Yousuf K., and Berhanu G (2008) Traditional cow and camel milk production and marketing in agro pastoral and mixed crop–livestock systems: The case of Mieso District, Oromia Regional State, Ethiopia. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 13. ILRI (International Livestock Research Institute), Nairobi, Kenya. 56p.

Livestock Marketing Authority (LMA) (2001) Study on Causes of Cross–Border Illegal Trades in South, Southwest and Eastern Ethiopia, Market Research and Promotion Department, Addis Ababa, Ethiopia.

Lobago F (2007) Reproductive and Lactation Performance of Dairy Cattle in the Oromia Central Highlands of Ethiopia with Special Emphasis on Pregnancy Period. Doctoral thesis, Swedish University of Agricultural Sciences, Uppsala.

National Bank of Ethiopia (NBE) (2001/2002) Annual Report. In New Partnership for Africa's Development (NEPAD) – Comprehensive Africa Agriculture Development Programme (CAADP) Ethiopia: Investment Project Profile "Live Animal and Meat Export" – Preliminary Options Outline. 3pp.

New Partnership for Africa's Development – Comprehensive Africa Agriculture Development Programme (NEPAD–CAADP) (2005) Ethiopia: Investment Project Profile "Live Animal and Meat Export" – Preliminary Options Outline.

Solomon T (2004) performance of cattle marketing system in southern Ethiopia with special emphasize Borena Zone. M.Sc. Thesis, Haremaya university, Haremaya, Ethiopia.

Teshager A., Belay D. and Taye T(2013) Smallholder Cattle Production Systems in Three Districts of Ilu Aba Bora Zone of Oromia Regional State, South Western Ethiopia. American-Eurasian Journal of Scientific Research 8 (1): 38-46.

Tsedeke k (2007) Production and marketing systems of sheep and goats in Alaba, Southern Ethiopia. M.Sc. Thesis, Hawassa University, Hawassa, Ethiopia.