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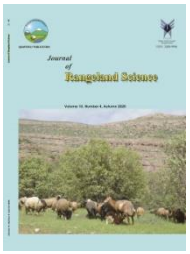

Research and Full Length Article:

Assessment of Feed Resources in Urban and Peri-urban Areas of Mid and High Land of Bale, Ethiopia

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Abstract. The survey was conducted in Urban and peri urban areas of mid and high land of Bale, Ethiopia during September 2016 to June 2017 with the objective of identifying available feed resources, its utilization methods and constraints related to feeding. The three major towns of Bale zone Ginir, Goba and Robe and the villages surrounding them that have a border with the town were included. A total of 180 households was selected using both purposive and random sampling techniques. Out of the total respondents, 66.1% indicated feed and feeding system as primary constraints. In peri-urban, the principal dry season feed resources available to livestock in the study area include crop-residue, stubble grazing, natural pasture and hay in their descending order. Milled grain, Agro-industrial byproduct and by product of local beverage "atela" are the main supplements used. In urban, feeds are mostly purchased from flour milling and oil producing houses. Despite high price and shortage of supplementary feeds, about 80% of the total respondents are supplementing concentrate to their dairy cattle. The total average protein and energy supplement provided per day for lactating cow is 0.94kg and 1.22kg, respectively which cost 0.93$ and 0.91$ in average in urban and peri urban area to produce the total average milk of 3.65 litters. The overall average daily dairy production output is 1.94$ birr and the average net profit is 0.07$ and 1.02$ per day/cow for local and hybrids, respectively. Feed quantity and quality problem was the first ranked, followed by lack of improved breed and health problem. Hence, to bring a meaningful increase in livestock productivity, livestock should be supplemented with a reasonable quantity and quality feeds. Similarly, the traditional husbandry practice, management of natural pasture and feeding value of crop residues should be improved.

Key words: Feed resource, Peri-urban, Feeding constraints

Introduction

The livelihood of people in urban and rural area of Bale in Ethiopia is influenced by livestock in various ways. In rural area, partially mechanized crop production seeks the draught power from animals particularly equines and cattle. Cattle, particularly oxen are used as draft animal in cultivation of crops. In urban and rural areas, cattle is the main source of milk. Urban areas are the main holders of human population that needs different Agricultural products in variety. Livestock products are the most important components of human food of which milk plays an important role in providing a balanced diet for both adults and infants. Nowadays, the population of town dwellers is spectacularly increasing without significant changes in milk yield. According to the population projection of Ethiopia by Central Statistical Agency (2013) by the end of 2017, the population of Robe and Goba town increased by 15.21% in average that were 62,167 and 44,884, respectively in 2014 without satisfactory effort made to improve the production and productivity of milk and dairy cows in the area.

Livestock feed is one of the most important constraints affecting production and productivity. The value chain study by SNV (2008) in peri-urban producers of Ethiopia indicated that the most important problems of the dairy cattle are feed and health which covers up to 29% and 22% of the total dairy product sale respectively, in which the margin (return) from the sale was only 14% of the milk sales price. In Goba and Robe, more than 80% of the respondents on the study of Artefecial Insemination service efficiency in urban and peri-urban areas indicated feed shortage as the primary problem and more than 48% of them indicated the problem associated with bloating (Aliyi, 2015). Nowadays, different agro-industries are emerging in urban areas of Bale which could be a promising livestock feed source. Related to this there is also an indication of inappropriate feed utilization in which cow death and bloating problems are frequently reported. Urban and peri-urban production system of Bale high and midland was also not studied in a way that can support further development plans and strategies and open pathway for further studies. Therefore, the objective of this study was to assess the availability of feed resource and feeding constraints in the study area

Material and Methods

Study sites

The study was conducted in three major towns of Bale zone Ginnir, Goba and Robe and the villages surrounding them. The intra-urban farmers are considered as urban whereas farmers outside the town administration are considered as peri-urban. The towns were selected based on their human populations, which influence the demand and availability of milk supply and existing dairy enterprises that produce milk and supply to the nearby towns.

Robe town is located in the North West part of Bale zone at a distance of 430 km from the regional state and country center Addis Ababa. The total land coverage of the town has 12km^2. CSA (2013) was estimated as the population of Robe town and Sinana woreda would be 65,284 and 144,301 in 2015. The town is located at 2400 m above sea level with annual mean temperature of 12.5^{o}C which experienced cool temperature and receive 1100 mm annual rainfall.

Goba town is located in the North West of the zone. It has a distance of 15km from zonal capital Robe and at 445km from the regional state and country center Addis Ababa. The total land coverage of the town is 15km^2. The town has one AI center, delivering service for both urban dairy producers and farmers around the town. CSA (2013) was estimated as the population of Goba town and Goba woreda will be 47,135 and 49,597, respectively in 2015.

The town is located at altitude of 2500m above sea level with a mean annual temperature of 12.5^{o}C which experienced cool temperature and receive 1100mm of rainfall on average.

Ginir town is located in Ginir district, which is one of the administrative parts of Bale zone that occupied about 2,384 square kilometers of land. The capital of the district (Ginir) has a distance of 133 km from zonal capital Robe and 633 km from centers of a country called Addis Ababa. CSA (2013) was estimated as the total population district and urban residents could be 170,218 and 28,289, respectively by the end of 2015. The lowest and highest altitude of the district extends from 1200-2406 m above sea level. The annual average temperature is 25.45^{o}C whereas the minimum and maximum temperature is 23.2^{o}C and 27.7^{o}C, respectively. The area is bimodal rainfall with annual average rainfall of 700 mm whereas the minimum and maximum rainfalls are 200 and 1200 mm, respectively.

Types and Sources of Data

The study was based on primary and secondary data. Primary data related to the socio-economic characteristics of the milk producers such as educational level, land size, livestock owned and also production system related information like feed, cattle breed type, reproduction traits and other service related data were gathered from the sampled dairy producers. Besides, information regarding feed production system and storage system was compared with standard forage production. Some data collected from the district livestock agency, experts and other stakeholders of the area were used as a supportive idea for the data from the interview of dairy producers.

Sampling Method and Sample Size

For this study, both purposive sampling and random sampling techniques were employed for data collection. The target population was defined as dairy producers in and around the selected towns. Sample sizes were determined by the following formula Thrusfield (2005).

$$\mathbf{Total(n)} = \mathbf{Z\alpha^2 Xp}\frac{\mathbf{(1-p)}}{d^2}$$

Where:

P (expected prevalence) = 0.5

d (desired absolute precision) = 0.073

Z*α*= 1.96.

Based on this formula, the total number of farmers to be sampled was 180. In this study, the data were collected from both primary and secondary sources using structured questionnaires (survey) and different reports as described here below.

Data Collection and Analysis

Primary information was collected from targets using semi-structured questionnaires and observation. The survey started with questionnaires which were developed and pre-tested to check appropriateness and clarity of the questions.

Primary data collected from urban and peri-urban dairy farmers across the three towns (Goba, Robe and Ginir) included socio-economic characteristics of the milk producers such as educational level, land size, livestock owned and also production system related information like feed, cow breed types, reproductive traits, Milk yield and other services related information was gathered from the sampled milk producers. In addition, information was obtained from District Agricultural officers, extension officers and others outside the formal sample to supplement the data.

Information on major feed resources and feeding systems, seasonal availability and opportunities and constraints of feed resource in the area was collected. Descriptive statistics were employed using SPSS 20.0 (Statistical Package for Social Sciences) to describe various variables in the feed resource production systems.

Result and Discussion

Household Characteristics

Household characteristics of the respondents in the study area are presented in Table 1. There were significant differences (P<0.01) with respect to sex, educational status and age of the respondents across the study area. The total households involved in the study (23.9%) were headed by females. Concerning educational status, majority (62.2%) of the respondents had completed primary education while about 12.8% were illiterate. More than 90.0% of the respondents were aged higher than 40 years while 17 to 25 year aged participants were less than 3.3%. This indicates that less number of youngsters are participating in dairy cattle production. Out of the total participants, 28.3% of them are using dairy as their primary income source in which Goba is the highest 67.2% number of respondents (Table 1).

Table 1. Characteristics of the respondents in three towns and two production systems

Household Characteristics	Classes	Ginir		Robe		Goba		Total		P-Value
		No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
Production system	Urban	29	49.2%	30	50.0%	31	50.8%	90	50.0%	ns
	Pre.urban	30	50.8%	30	50.0%	30	49.2%	90	50.0%	
	Total	**59**	**100**	**60**	**100**	**61**	**100**	**180**	**100**	
Sex	Male	54	91.5%	23	38.3%	60	98.4%	137	76.1%	<.000
	Female	5	8.5%	37	61.7%	1	1.6%	43	23.9%	
	Total	**59**	**100**	**60**	**100**	**61**	**100**	**180**	**100**	
Age	17-25	0	0.0%	6	10.0%	0	0.0%	6	3.3%	<.000
	25-33	6	10.2%	2	3.3%	1	1.6%	9	5.0%	
	32-40	2	3.4%	0	0.0%	0	0.0%	2	1.1%	
	>40	51	86.4%	52	86.7%	60	98.4%	163	90.6%	
	Total	**59**	**100**	**60**	**100**	**61**	**100**	**180**	**100**	
Marital status	Unmarred	4	6.8%	6	10.0%	0	0.0%	10	5.6%	<.002
	Marred	50	84.7%	54	90.0%	61	100	165	91.7%	
	Widow	5	8.5%	0	0.0%	0	0.0%	5	2.8%	
	Total	**59**	**100**	**60**	**100**	**61**	**100**	**180**	**100**	
Education	Illiterate	5	8.5%	18	30.0%	0	0.0%	23	12.8%	<.000
	Primary	36	61.0%	35	58.3%	41	67.2%	112	62.2%	
	Secondary	18	30.5%	7	11.7%	20	32.8%	45	25.0%	
	Total	**59**	**100**	**60**	**100**	**61**	**100**	**180**	**100**	
First income source	Crop production	50	84.7%	42	70.0%	20	32.8%	112	62.2%	<.000
	Livestock prod.	0	0.0%	10	16.7%	41	67.2%	51	28.3%	
	Employed	9	15.3%	0	0.0%	0	0.0%	9	5.0%	
	Pit trade	0	0.0%	8	13.3%	0	0.0%	8	4.4%	
	Total	**59**	**100**	**60**	**100**	**61**	**100**	**180**	**100**	

Herd size

Average number of cattle owned per household and breed distribution across town and production system are presented in Table 2. The average number of hybrid dairy cattle per household was significantly different (p<0.05) across the production system. Total hybrid cattle holding per household in the urban area was somewhat higher than peri-urban households. Average hybrid cattle herd size was 3.36 in urban households and 2.83 in peri-urban households. Proportion of cattle holding in both urban and peri-urban in the current study was slightly lower compared to the value reported by (Solomon *et al.* 2009) in Sinana/Dinsho district of Bale highlands. This may be due to few improved breeds of dairy cattle was reared in urban and peri-

urban areas than other rural areas of Arsi-Bale highlands where more cattle are kept for the draught power purpose. Herd size of local bred dairy cows in peri-urban households was 5.16 on average, which was 2.93 in urban areas.

Table 2.Average number of cattle per household

Production System/ Town	Cattle breed	No.	Cattle No. per household	S.E	F-value	p-value
Urban	hybrid cattle	90	3.36	0.39	3.57	0.060
Pre.urban	hybrid cattle	90	2.30	0.40		
Total	hybrid cattle	**180**	**2.83**	**0.28**		
Urban	Local cattle	90	2.93	0.34	17.38	0.000
Pre.urban	Local cattle	90	5.16	0.41		
Total	Local cattle	**180**	**4.04**	**0.28**		
Robe	hybrid cattle	60	1.27	0.32	46.74	0.000
Goba	hybrid cattle	61	5.92	0.55		
Ginir	hybrid cattle	59	1.22	0.25		
Total	hybrid cattle	**180**	**2.83**	**0.28**		
Robe	Local cattle	60	4.05	0.47	15.80	0.000
Goba	Local cattle	61	2.30	0.42		
Ginir	Local cattle	59	5.85	0.44		
Total	Local cattle	**180**	**4.04**	**0.28**		
Robe	Total cattle	60	5.33	0.43	18.377	0.000
Goba	Total cattle	61	8.21	0.16		
Ginir	Total cattle	59	7.07	0.37		
Total		**180**	**6.88**	**0.21**		

Livestock production constraints

In the study, out of the total respondents, 66.1% of them indicated feed and feeding system problems as the primary constraints of the area as indicated in table. 3. Bloating, sudden death, stunt growth, low milk production and general health problems were among the main problems raised related to feed and feeding. This agrees with a study by FAO (2012) which indicates animals fed on imbalanced diets frequently have a higher load of parasitic infestations that will utilize vital essential nutrients and cause health problems, stunt growth and poor productivity. Parasitic load in dairy animals affects growth, milk production and general health. Lack of the improved breed was also among the main constraints ranked second in the area whereas lack of health, milk marketing and cattle management problem was 3rd, 4th and 5th constraints raised, respectively in the area.

Table 3. The prioritization of livestock production constraints in the study area

Livestock production constraints in the area	**Production systems**						**Rank**
	Urban		**Peri urban**		**Total**		
	NO.	**%**	**NO.**	**%**	**NO.**	**%**	
Feed and feeding problem	63	70.0%	56	62.2%	119	66.1%	1
Lack of improved breed	52	19.8%	48	53.3%	100	55.5%	2
Health problem	27	30.0%	20	22.2%	47	26.1%	3
Milk marketing problem	22	18..0%	30	3.3%	53	24.4%	4
Cattle management problem	10	11.1%	26	29.0%	36	20.0%	5

Related to cattle management system, more than 90% of the participants in urban areas were keeping cattle in their house made up of local material. Only 5% of the

participants were using good standard houses for their cattle. In peri urban production system, only 16% of the participants were keeping their animals in a separate house.

Table 4. Supplementation regime by season in the study area

Towns	Production system	Supplementation						No supplementation	
		During Dry season		During Wet season only		Both dry and wet season			
		NO.	%	NO.	%	NO.	%	NO.	%
Robe (N=60)	Urban (N=30)	2	6.67	0	0.00	28	93.33	0	0.00
	peri-Urban (N=30)	0	0.00	0	0.00	28	93.33	2	6.67
Goba (N=60)	Urban (N=30)	0	0.00	0	0.00	28	93.33	2	6.67
	Peri-Urban (N=30)	0	0.00	0	0.00	18	60.00	12	40.00
Ginir (N=60)	Urban(N=30)	0	0.00	0	0.00	24	80.00	6	20.00
	Peri-Urban (N=30)	8	26.67	0	0.00	18	60.00	4	13.33
	Total (N=180)	10	5.56	0	0.00	144	80.00	26	14.44

Feed Resources and Feeding System

In the study area, the availability of feed resources has no significant variation in an urban production system with season with respect to quality, quantity and type of feed except the price of the feed. But in Peri-urban production system, the feed resource availability and quality had varied with the season. In peri-urban, the principal dry season feed resources available to livestock in the study area included crop-residue, stubble grazing, natural pasture, hay agro-industry by products and byproducts of local beverage *"atela"* in their descending order of magnitude. At urban, most of the time feeds are purchased from flour milling and oil producing houses.

The most common supplement feeds are oil seed cakes, wheat bran for houses by products, wheat short and other by product of local beverage. Whereas during the wet season, the principal feed resources were natural pasture, crop-residue, hay and stubble grazing in their descending order of intensity of use by producers in peri-urban. Almost all respondents of urban householders were dependent on the purchasing of Agro-industrial byproducts and local beverage. However, livestock production was constrained from getting year round feed supplies both in quality and quantity across the study area. This may be due to failure of feed management and inappropriate feeding system.

Farmers feed their animals by mixing different concentrate feeds with roughages. In this study area, dairy cows were fed with a mixture of crop residue and wheat short, wheat bran and byproduct of local beverage *"atela"* and oil factory by-products like linseed cake. However, oil seed cakes are not preferred by farmers for lactating cows since they have their own perception on harmful effect of oil seed cake on butter quality and cow fertility. The percentage of respondents supplementing in both dry and wet seasons was almost the same in urban and peri-urban. The availability of byproduct of local beverage *"atela* and malt industry by product feed is highly scarce in all towns where a survey was carried out since the malt industry was not found in the area and most of the local residents were not making local beverage since it was prohibited by the Muslim religion.

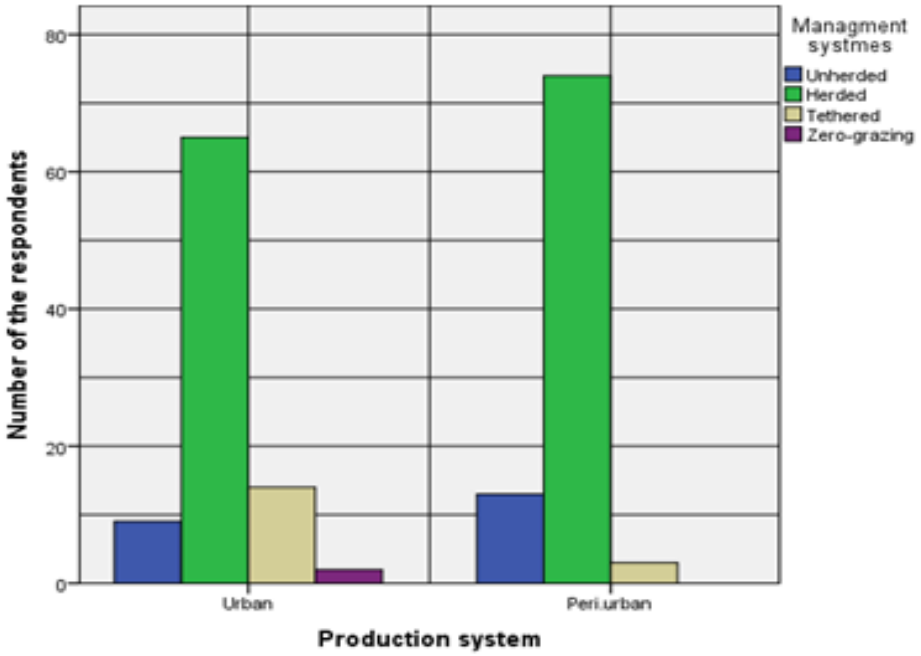

Fig. 1 Responses of the participants on Wet Season Dairy cattle managment systme in the study area

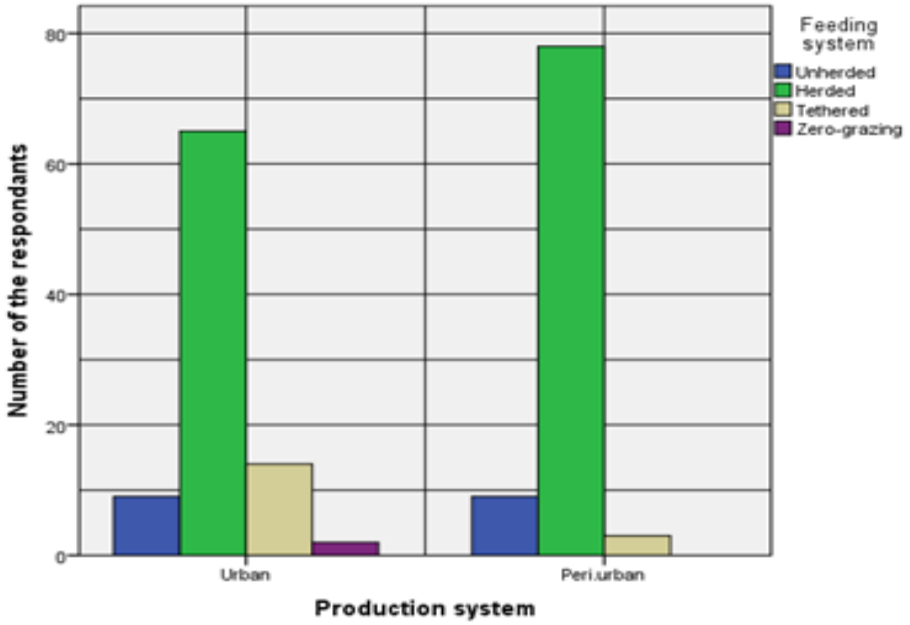

Fig 2. Responses of the participants on Dry Season Dairy cattle managment systems in the study area

More than 65% of the respondents in both urban and preri urban lactating dairy cattle are herded with other cattle (Figs. 1 and 2). According to the responses of the participants, the total mean supplements of the protein 0.94 kg and energy 1.22 kg/day for dairy cow are below the standard stated by FAO (2012). The amount of protein and energy source supplements provided for dairy cow was significantly varied ($p<0.05$) within towns and production systems. The amount of supplements provided for their

cattle was relatively higher in urban compared to peri urban.

Table 5. Responses of the participants on their daily supplements per lactating cow in kg

Production System/ Town	N	Supplements Cow/day kg	SE	p-vale
Urban	90	1.25	0.08	0.634
Peri urban	90	1.19	0.09	
Total	180	1.22	0.06	
Urban	90	1.07	0.03	0.001
Peri urban	90	0.81	0.07	
Total	180	0.94	0.04	
Robe	60	1.14	0.08	0.001
Goba	61	1.02	0.02	
Ginir	59	1.95	0.28	
Total	180	1.22	0.06	
Robe	60	0.67	0.07	0.001
Goba	61	1.02	0.02	
Ginir	59	1.27	0.13	
Total	180	0.94	0.04	

Cost of milk production

The value chain study by SNV (2008) in peri-urban producers of Ethiopia indicated that the most important problems of the dairy cattle are feed and health, which covers up to 29% and 22% of the total dairy product sale respectively. This study revealed that one lactating cow costs 31.14 birr(0.92$) in average to produce the total average milk of 3.65 litters. The main energy supplement feed used in peri-urban is wheat bran whereas the most common protein source supplement is linseed cakes (Table 6). The cost of energy source feed is relatively small in peri-urban area compared to urban; this is due to farmers in peri-urban area using another alternative such as maize and barley flour produced by their own. Barley straw and hay are among the most common roughage feeds used in the study area. Dairy producers in urban, relatively cost, higher than peri-urban this is related to purchasing and transportation.

Table 6. Responses of the participants on their daily cost of feed per lactating cow

Production system	Types of feed fed within a day	N	Cost feed/cow/day in birr.	S.E.	p-value
Urban	Energy source feed	90	4.18	0.30	0.636
Peri urban	Energy source feed	90	3.97	0.32	
	Total	180	4.07	0.22	
Urban	Protein sources feed	90	9.13	0.60	0.095
Peri urban	Protein sources feed	90	7.53	0.74	
	Total	180	8.33	0.48	
Urban	Roughage feed	90	16.91	1.10	0.524
Peri urban	Roughage feed	90	15.88	1.05	
	Total	180	16.39	0.76	
Urban	Mineral supplied	90	0.88	0.10	1.00
Peri urban	Mineral supplied	90	0.88	0.07	
	Total	180	0.88	0.06	
Urban	Cost of water	90	0.43	0.08	0.49
Peri urban	Cost of water	90	0.50	0.07	
	Total	180	0.47	0.05	
Urban	Health and other costs	90	0.1258	0.02	0.36
Peri Urban	Health and other costs	90	0.1076	0.01	
	Total	180	0.1167	0.01	
Urban	Production cost/cow/day	90	31.66	1.56	
Peri Urban	Production cost/cow/day	90	30.87	1.67	
	Total cost/cow/ day	180	31.14	1.57	

* Each feed type costs are calculated from daily consumption per cattle multiplied by the current cost of feed in kg/g/Liter/Quintal in the market

Despite the daily high cost of production 31.41 birr(0.92$) per cow was used by the producers, the overall average milk yield per day/cow is only 3.6 litters (Table. 7). The yield is only 1.95 liter for local cows and 5.35 liter for hybrid cows. This is slightly better than the national average 1.9 milk yields of local cows and less than current national average milk that is 6 liter per cow per day for hybrid cows, respectively.

Table 7. Responses of the participants on their daily total milk yield per cow in liter

Production System/ Towns	Dairy cows breed types	N	milk yield cow in L)	SE	p-value
Urban	Hybrid cow	90	5.69	0.41	0.201
Peri urban	Hybrid cow	90	4.86	0.48	
	Total	**180**	**5.35**	**0.31**	
Urban	local cow	90	2.32	0.17	0.001
Peri urban	local cow	90	1.7	0.06	
	Total	**180**	**1.95**	**0.08**	
Robe	Hybrid cow	60	6.5	0.93	0.008
Goba	Hybrid cow	61	5.17	0.37	
Ginir	Hybrid cow	59	4.76	0.57	
	Total	**180**	**5.35**	**0.31**	
Robe	local cow	60	2.23	0.16	0.001
Goba	local cow	61	2.17	0.00	
Ginir	local cow	59	1.46	0.08	
	Total	**180**	**1.95**	**0.08**	
Average Overall		**180**	**3.65**	**0.19**	

*Mean variation is significant at F-value < p-value at α=0.05

The overall mean total sale of the milk per cow per day in the study area as 65.90 birr is significantly varied ($p<0.05$) in a production system and also across towns (Table.8). The highest milk sale per day per cow is observed in urban area as 92.53birr(2.72$) and 132.69 birr(3.90$) in Robe town.

Table 8. Response of the participants in their daily milk sale per cow in birr

Production Systems/ Towns	Cattle breed	N	Mean (Production output in birr)	S. E	P-value
Urban	Hybrid cow	90	92.53	8.41	0.037
Peri urban	Hybrid cow	90	66.64	8.09	
	Total	180	82.10	6.14	
Urban	Local cow	90	41.65	3.03	0.000
Peri urban	Local cow	90	28.49	1.23	
	Total	180	33.50	1.54	
Robe	Hybrid cow	60	132.69	14.75	0.000
Goba	Hybrid cow	61	62.05	4.48	
Ginir	Hybrid cow	59	100.26	14.25	
	Total	180	82.10	6.14	
Robe	Local cow	60	33.35	2.99	0.897
Goba	Local cow	61	32.55	0.00	
Ginir	Local cow	59	34.51	2.34	
	Total	180	33.50	1.54	
Overall, dairy output/day/cow		180	65.90	6.47	

According to the value chain study by SNV (2008) in Ethiopia, the margin (return) from the sale was only 14% of the milk sales price. In this study, the overall average production output was 65.9birr(1.94$) Table 8. The overall average daily production cost

per cow in the area was 47.25% of the average total sale (Table. 9), which was below 51% by SNV (2008). The margin of the total mean of the total sale per day per cow was 34.76%, which was 2.9 times higher than the previous study by SNV (2008). This is related to the most of the dairy producers, both in urban and peri urban having food crop field and utilizing straw and other farm by-product for low cost.

This study also revealed that the production cost was rapidly increased due to dramatically increasing of livestock feed and health service cost**.**

Table 9. Overall production cost and return from the sale in the area/cow

Production System/ Towns	Cattle breed	N	Production output in birr)	cost of production /cow/day in birr)	Net profit birr /day/cow	Production cost
Urban	Hybrid cow	90	92.53	31.66	60.87	34.22%
Peri urban	Hybrid cow	90	66.64	31.14	35.5	46.73%
	Total	180	82.1	31.14	50.96	37.93%
Urban	Local cow	90	41.65	31.14	10.51	74.77%
Peri urban	Local cow	90	28.49	31.14	-2.65	109.30%
	Total	180	33.5	31.14	2.36	92.96%
Robe	Hybrid cow	60	132.69	31.14	101.55	23.47%
Goba	Hybrid cow	61	62.05	31.14	30.91	50.19%
Ginir	Hybrid cow	59	100.26	31.14	69.12	31.06%
	Total	180	82.1	31.14	50.96	37.93%
Robe	Local cow	60	33.35	31.14	2.21	93.37%
Goba	Local cow	61	32.55	31.14	1.41	95.67%
Ginir	Local cow	59	34.51	31.14	3.37	90.23%
Town	**Total**	180	33.5	31.14	2.36	92.96%
Overall dairy output/day/cow		180	65.9	31.14	34.76	47.25%

Conclusion and Recommendation

- Livestock play a significant role in the Urban and peri urban residents of Bale zone. However, husbandry practices are almost not yet to improve inadequate feed resources, both in quantity and quality, especially during the dry season where the main limiting factors of livestock production are.
- Feed quantity and quality problem was the first ranked, followed by lack of improved breed and health problem. Problems related to feeding techniques and high cost of livestock feed in which cost of production was 47.25% of the total average milk sale in the area was highly stressed during focus group discussion.
- Hence, to bring a meaningful increase in production and productivity cattle should be supplemented with a reasonable quantity and quality feeds. Similarly, traditional husbandry practice, management of natural pasture and feeding value of crop residues should be improved.
- Poor productivity of the local breeds might be highly related to poor genetic potential of the cattle or lack of appropriate genetic improvement techniques. Hence, improvement of the productivity of indigenous breeds through selection program in rural area and improving the potential of the hybrid breed cattle in urban should be induced in the area.

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