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Status of Dairy Cattle Production in Borena and Guji Zone, Ethiopia

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Abstract:

This survey was aimed to ascertain the status of dairy cattle production from selected towns of Borena and Guji Zone, Ethiopia. A purposive survey of households was conducted from selected towns during the study period. Overall mean cattle herd size of the study area was (16.4), and of this (63%) are female. Natural pastures, crop residue, concentrate feed (wheat bran), Non conventional feeds and hay was the major feed sources in the area respectively. About 98.6% of surveyed households use bull as natural sources of services and 1.4% uses Artificial Insemination. Majority of dairy cow owners (77.8%) select best dairy cow from available stock; based on family back ground (79.2%), Breed of animal (61.7%), Physical appearance (38.9%) and Tail length (27.8%). Overall average daily milk yield per cow was 2.08 Litre/day and (55.6%) female are responsible for milking operation. 98.6% of households sell milk informally, with average price ranges from 1.83 to 2.75, 7 to 9.5 and 14.92 to 16 ETB per Liter; ten years back, five years back and at 2014 G.C, respectively. Majority (90.3%) of households use open burn while 9.7% uses traditional free stall type of house. Only 65.3% of farmers; vaccinate their livestock within six months interval. Majority of respondents (68.1%) have interest and potential to buy and adopt dairy technology in the area. And because of feed shortage, lack of training, less access to AI, lack of formal milk market structure and lack of improved forage cultivation practices livestock production in the study area was majorly constrained. Therefore, appropriate technical support and capacity enhancement require instantaneous action.

Keywords: Dairy, Cattle, and livestock production

1. Introduction

Livestock production is an integral part of Ethiopian agricultural system and the sub-sector is estimated to contribute about 12-16% of the total GDP and 30-35% of total agricultural GDP (Halderman, 2004). Of this, the dairy industry is essential and it is potentially the largest rural employer in highlands and pastoral/agro-pastoral areas (livestock Cooperative Agreement, 2010). Beside this, with continued urbanization and growing population size, the dairy industry become a major player in agricultural development (SNV, 2008). However, in generally; because of the breed types are almost entirely of the zebu cattle that are low sources of milk, various influence of environmental factors on the health (Longenbach *et al.*, 1999; Miller *et al.*, 2000, CARE, 2009, CSA, 2013), and the limited impact of Ethiopian government dairy development policy on the growth of the sector as a whole, even in the areas where the private sector investments in the dairy industry encouraged (Staal *et al.* 2008). the performances of the subsector become poor (CSA, 2011 and 2013) and farmers are not economically benefited out of it in the extent at which ought to be.

Beside these challenges on the sector, there is a great potential to develop smallholder dairy schemes in peri-urban and urban areas of Ethiopia (Belay *et al.*, 2011). As dairying play significant role in the lives of the urban and peri-urban poor households (Yitaye *et al.*, 2007), proper policy implementation of the dairy sector can therefore contribute significantly to poverty alleviation as well as, availability of food and income generation. So, in order to attain sustainable dairy development; understanding the current dairy production performances of the particular area and implementing appropriate intervention is a pre-requisite.

Therefore, this study was carried out with the objectives of;

- Identifying and prioritizing researchable issues which make an impact on the development of dairy sector
- Understanding factors influencing dairy production; constraints and opportunities, and
- Forwarding suggestions for the development of dairy sector.

2. Materials and Methods

2.1. Description of the Study Areas

Borena is found in southern part of the Oromia Regional State, Ethiopia. The capital town of the zone is Yabello, which is far away 575 km from Addis Ababa, Ethiopia and this zone has a total population of 962,489 of which 878,161 is rural. It is composed of 13 woredas. Its average elevation equals 1287 meter (CSA, 2011).

Guji Zone is also found in southern part of the Oromia Regional State and south eastern part of the country. The capital town of the zone is Nagelle, which is far away 604 km from Addis Ababa. This zone is located between 38⁰ – 40⁰ East longitude and latitude 4⁰-5⁰ on the North, and the altitude ranges from 500m up to 3500m above sea level (*Guji Zone land and environment protection office, 2012*). The climate conditions of this zone are dega, woina dega and kolla climate conditions and accounts 13%, 19% and 68% of the total districts, respectively.

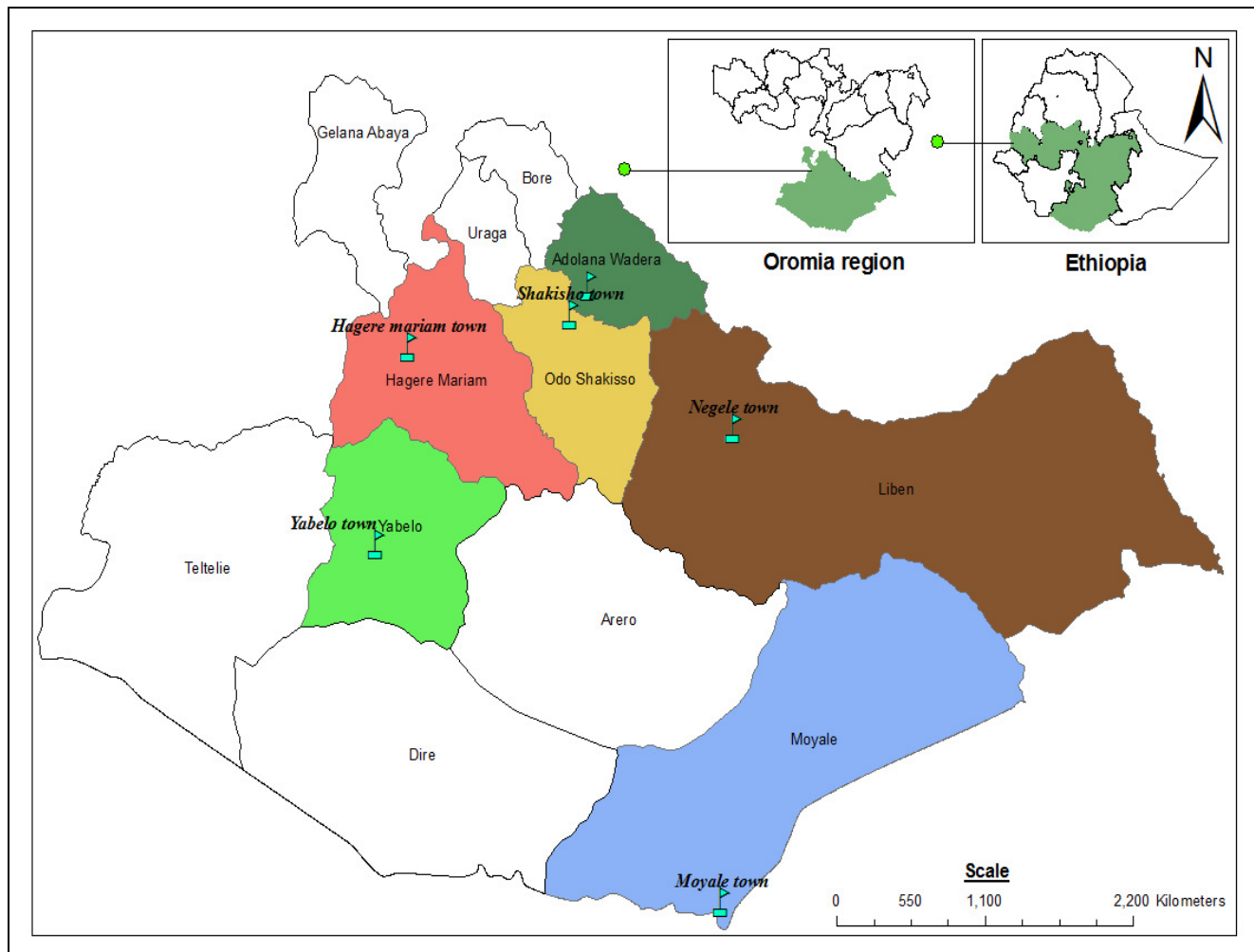


Figure 1: Location of the Study Areas

2.2. Sampling Techniques, Data Collection and Analysis

Survey was conducted to ascertain the status of dairying in Borena and Guji Zone with semi structured questionnaire prepared, using available secondary data. To carry out a broad and multi-level diagnosis, a purposive survey of households was conducted in six selected towns (Bule Hora/ Hagera mariam), Yabello, Moyale; and Shakiso, Adola / kibre Mengist and Nagele Borena from Borena and Guji zones respectively) based on their representativeness to each administrative zones. About 12 farmers (households) were purposively selected and interviewed from each location based on their involvement in dairy production activities, with 72 total sample sizes. And the question posed to the farmers; aspects of livestock holding, dairy cattle production and productivity, available feed resource and milking patterns and marketing, constraints associated with dairy production and its opportunities in the sector. Data was analyzed using simple descriptive statistics (SPSS, 2013; Version 20) and Excel.

3. Results and Discussion

3.1. Livestock Holding in the Study Area

3.1.1. Herd Size

The mean numbers of livestock across the study area are shown in Table (1), the highest average cattle herd size per sampled household was reported from yabello (25.7) while lowest from Shakiso (12.8). The mean number of livestock per house hold in the present study was above the observations (10.13±4.09) for sigimo district of Jima zone (Oumer sheriff *et al*, 2013) and higher than the report of (khadija, 2007), which was 5.69 in Mieso district.

There was a significant ($P \leq 0.05$) variation among different woredas for different species of animals holding with respect to their age and sex categories. In one of the woredas in the study areas, there was significantly large average number of female, lactating (3.5) and dry off cow (5.2), cattle heifer (4.6) holding in Yabello than the other woredas.

The mean number of cross breed per house hold in all age and sex was null except for kibremengist and shakiso. This could be due to no access for exotic or cross breed cattle, and poor extension services. CSA (2013) indicated that 98.95 percent of total cattle in the country are local breeds.

The remaining are hybrid and exotic breeds that accounted for about 0.94 percent and 0.11 percent, respectively. Overall cattle herd size of the study area (16.4) was above the report (7.87± 3.02) for jima zone (Oumer sheriff *et al*, 2013) and (12.1) for Danno district of west show a zone (Jiregna, 2007).

3.1.2. Cattle Herd Composition and Structure

The current result showed that in the study areas farmers keep more female (63%) than male animals (Figure 2). This could be to get milk for their family today while ensuring the birth of future animals for tomorrow. According to (Ulfina *et al*, 2013), overall herds size in west Oromia are composed of mostly adult cows which together with heifers and female calves account for nearly two half of the animals in the herd and these values appeared to be comparable to the ones obtained in this study. Similarly, (CSA, 2013) reported that there is higher proportion of female (55.48%) as compared to male (44.52%) at national level in large ruminants

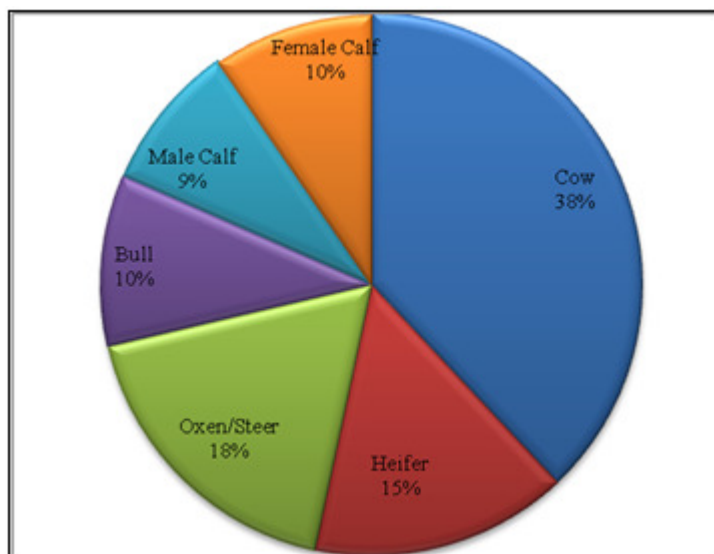


Figure 2: Total Cattle Herd Structure and Composition in the Study Area

3.2. Trends of Different Types of Livestock

Trends in livestock, in the current study are shown in Figure 2. Overall except for yabello there was a decline in trend of cow in the study area. These exceptions could be due to level of livelihood dependency on cow for milk. This report was in line with the studies conducted by (Dejene, 2014) in Borena Zone. Out of the total interviewed farmers in Ada'a, (55%) of the respondents indicated, the average herd size was decrease as compare to the previous year (Girma and Verschuur, 2014). Samson and Frehiwot (2014) reported that, from 1995/96 to 2012/13 the cattle and shoat population grew from 54.5 million to over 103.5 million with average annual increment of 3.4 million. The livestock population of the country will continue to grow which is completely conflicting with the current study. The trend of sheep indicates that the respondents had more or less equal number of sheep all over the study areas. However, the trend indicates that the number of got decreases through time.

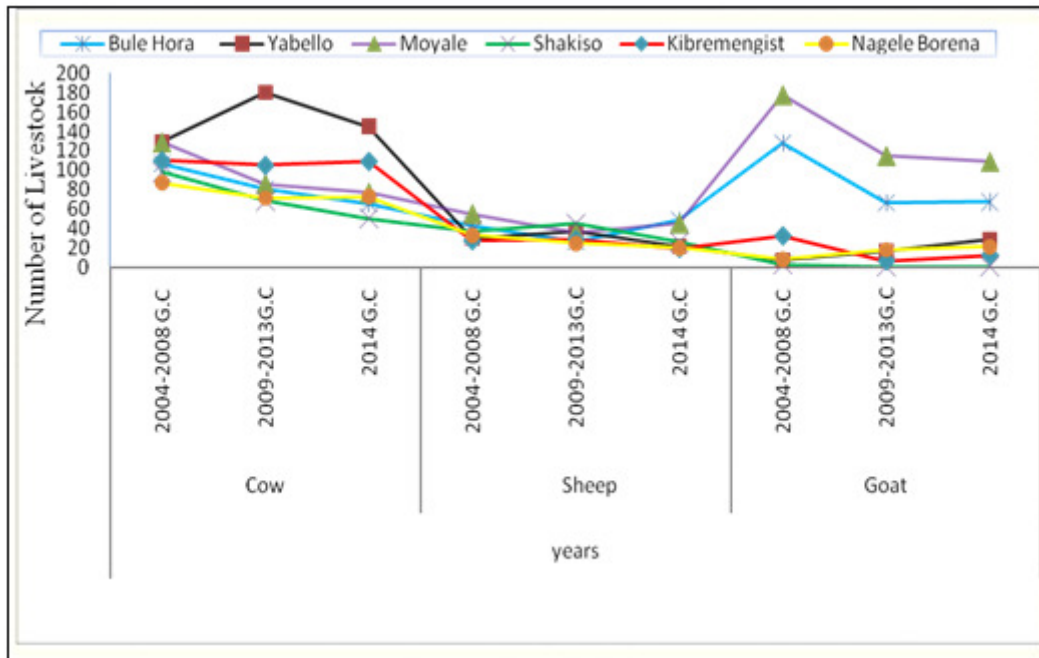


Figure 3: Cow, sheep and goat population trend in the Study Areas

3.3. Cattle Husbandry and Management Practices

3.3.1. Feed Resources and Feeding

Table 2. Shows that in the study area, farmers were fed their animals a variety of feed materials, majorly grazing natural pastures (95.8%), crop residue (84.7%), concentrated feed (wheat bran) (63.9%), non conventional feed (38.9%) and hay (30.6%). CSA, (2011) reported that, feed usage experience of holders in the rural areas of the country, green fodder (grazing) is the major type of feed (about 58.67%) followed by crops residue that is 29.19%. However, according to (Workneh and Ulfina, 2011) about 85% of respondents in Ambo town indicated that there was no grazing land for their cows.

3.3.2. Livestock Breeding and Management

3.3.2.1. Breeding Methods in Study Area

From surveyed households 98.6%, use bull as natural sources of services; of this about 86.1% use unselected bull, 12.5% use locally selected bull and the rest (1.4%) use artificial insemination(AI) (only in Shakiso) (Figure 3). In Fogera wored, about 90.6% of farmers use natural mating and only 9.4% have access to artificial insemination (Belete *et al*, 2010). The small numbers of improved breed in the country is an indication of the low level of the usage of modern technological packages like artificial insemination and bull services (Cooperative Agreement, 2010).

In Bule Hora and Moyale, 100% of respondents use locally unselected bull for breeding purposes. These could result in poor performances of the sector, and breeding management becomes an overall constraint to peri-urban dairy production system of the area. This is may be because of lack of extension services and trained person in the sector to insist community to use locally selected or unselected bull. Also (Ulfina, 2013) reported that Lack of artificial insemination service and selected bulls leads to the inadvertently use of bulls with unknown pedigree which eventually poses threats of inbreeding.

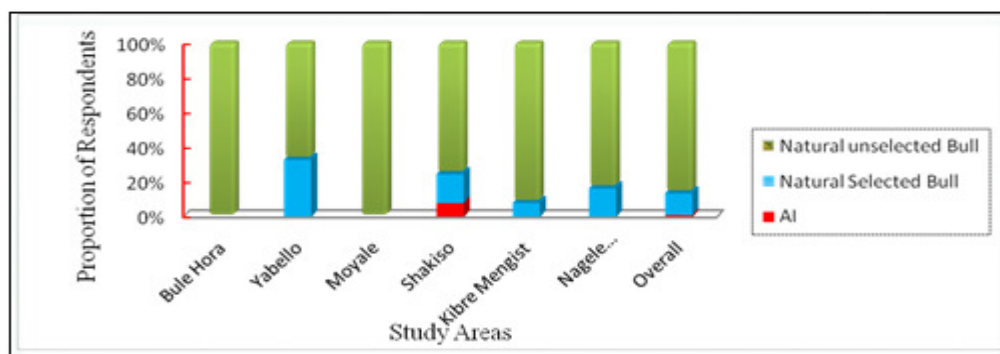


Figure 4: Breeding Methods in the Study Areas

3.3.2.2. Preferred Morphological Performance Characteristics by Dairy Cow Owners

About 77.8% of dairy cow owners select best dairy cow from available stock (Figure 4). Pedigree (79.2%), Breed (61.7%) appearance of animal (38.9%) and tail length (27.8%) are considered as the best morphological characteristics to select potential dairy cow for milk production. However, tail length of animal was less preferred by farmers (8.3%) at Shakiso and Kibre mengist to select paramount dairy cow from the stock

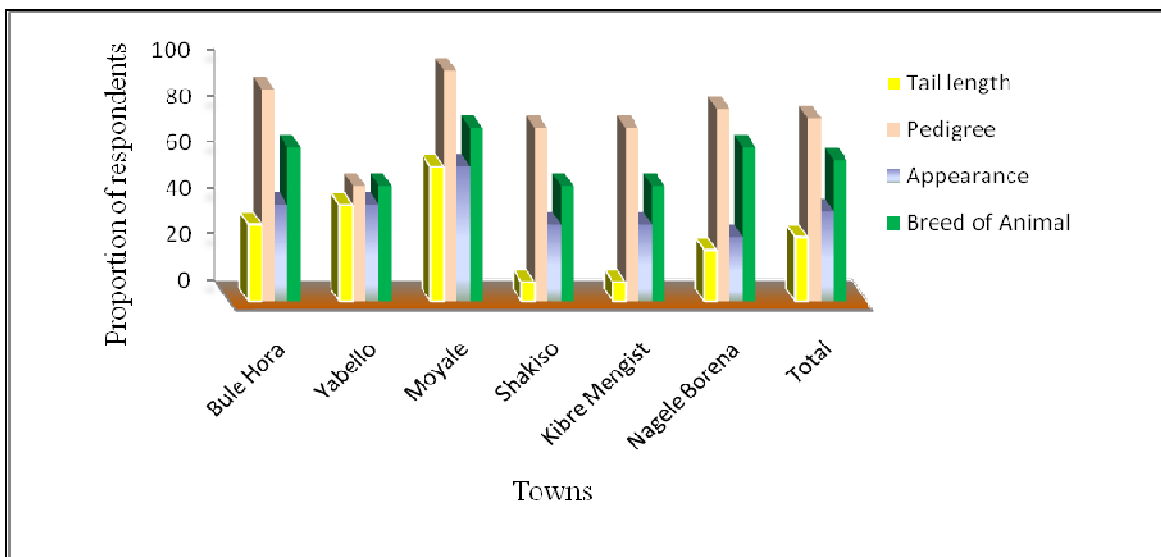


Figure 5: Morphological characteristics considered as indicators of high milk yield potential

3.3.3. Milk Production, Milking Practice, and Marketing

3.3.3.1. Milk Production and Milking Practices

The overall average daily milk yield per cow was 2.08 litre/day (Figure 5). The low production could be due to a number of factors including lack of proper supplementary feeding of the dairy cattle, poor nutritive value of pastures and forages offered to the animals and lack of dairy husbandry training to boost productivity. According to (Tsegay, 2015) reported that, in average, 1.5-liter milk per day was obtained from each dairy cows in Sidama Zone which was lower than the present finding, and in Ethiopia the average milk yield per cow per day is about 1.85 liters (CSA, 2011). Milking operation in the study area is almost undertaken within a week after calving (94.4%) and the remaining 5.6% of farmers start milking after a month (Table 3). About 55.6% of the respondents indicated that females are more responsible for milking operation, which was in line with previous report (Haile *et al.* 2012 and Abebe *et al.* 2012).

In the current study the degree of udder and teat cleaning is relatively better (54.2%). However, it is possible to appreciate limited knowledge of the small holder farmer on the importance of udder and teat sanitation. FSA (2006) reported that, cleaning of the udder before milking is important to remove both visible dirt and bacteria from the outer surface of the udder.

The majority of household (97.2%) in the study area reported that, milking was carried out twice a day (Table 3). It is in line with the study of (Lemma *et al.* 2005, Asrat, 2009 and Workineh, 2011). With the exception that milking operation is only limited to once per day during the last stage of lactation. However, it also depends on the month of calving, feed availability and milking experience.

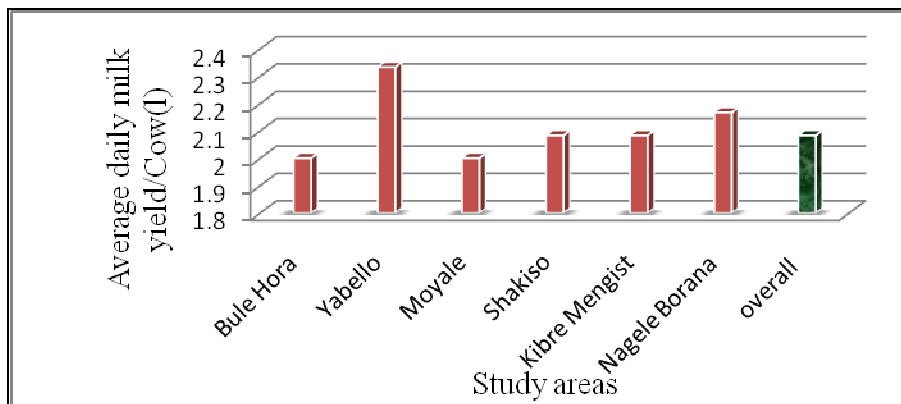


Figure 6: Average daily milk yield in the Study Areas

3.3.3.2. Milk Marketing and Trend of Milk Price

3.3.3.2.1. Milk Marketing

In Ethiopia, informal small-scale markets control over 90% of marketed milk in the country. Similarly, 98.6% of respondents sell their milk informally (Table 4). They sell their products informally to neighbors and direct consumers. It is in agreement with the studies of (SNV, 2008; Land O'Lakes, 2010; Workneh, 2011 and AGP, 2013) indicated that majority of rural, semi urban and urban milk is still supplied to consumer through the informal means. Also Eyassu and Doluschitz (2014) reported that, there was no formal milk marketing system both in the urban and peri-urban areas of Dire Dawa.

Even if about 80% Smallholder dairy owners in the study area knows, as informal milk marketing cannot insure real market; still they utilize the existing practice. It is in agreement with the report of (Lemma *et al*, 2005); dependable system is not yet developed to market milk in Ethiopia. Among the interviewed households, 12.5% are not sure whether the informal marketing they are utilizing could bring real market or not.

3.3.3.2.2. Trend of Milk Price

Trends in milk price in the current study are shown in Figure 5. Overall there was an increment of milk price per-litre between different years' category and there was only slight variation in average price per-litre between different surveyed areas within different years in the same categories. According to the respondents, ten years back the average milk supply to consumers per day ranges from 1.83 to 2.75 birr per liter. In line with this (Desta, 2002) reported that the price of milk in Addis Ababa varies from birr 2.50 to 2.75 per liter. Five years back the price of one litre of milk in average ranges from ETB 7 to 9.5. In agreement with the present finding, (Shewangizaw and Adisu, 2014) reported that, the price of milk is 8 to 9 ETB per litre on average during the wet and dry season respectively in year 2011/12. Also, Land O'Lakes (2010) reports indicated that, the price of raw milk per liter in different town of Ethiopia ranges from ETB 5.00 (in Debre Birhan and Fiche) to ETB 12.00 (in Humera). This different report indicates that as there are no uniform extension services in terms of market information and less technical training in the country in order to support their business successfully. Similarly, according to (GOE, Master Plan, 2007), in Ethiopia Dairy extension services are inadequate in the milk sheds to deliver necessary on-farm advice to producers. Also transaction costs such as lack of information about markets, lack of negotiating skills, and lack of collective organization are other impediments to market access (Ahmed, *et al.*, 2003). These all reports are in agreement with (Land O'Lakes, 2010) report, in Ethiopia market prices are free to move with market forces and there are no published price controls on milk.

The optimum price point for milk as reported by consumers at present is in the range of ETB 14.92 to 16 on average. Therefore, to take this advantages there is a need to strengthen existing farmers.

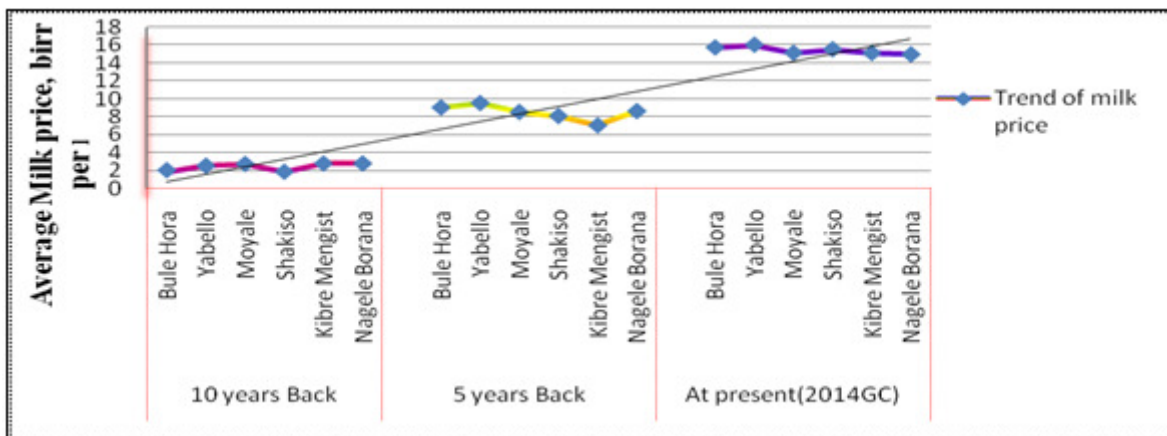


Figure 7: Average milk price trend in the Study Areas

3.3.4. Housing and Cleaning Practices

As indicated in Figure 7. About 90.3% of households use open burn while 9.7% uses traditional free stall type of house. Proper and clean housing environment is a prerequisite to produce milk and milk products of acceptable quality. In generally, about 52.8, 37.5 and 9.7% of the respondents' clean burn once, twice and thrice per a week respectively in the study area.

Rate of cleaning barn by farmers at Moyale (83.3%), Yabello (75%), and Nagele Borena (58.3%) was take place less frequently (once in a week) compared to other study woreda's. this could be because of these woreda's were situated in dry land environment, and there is less chance to create wet and muddy pens, and microbial growth which can be the risk of occurrence diseases and milk contamination.

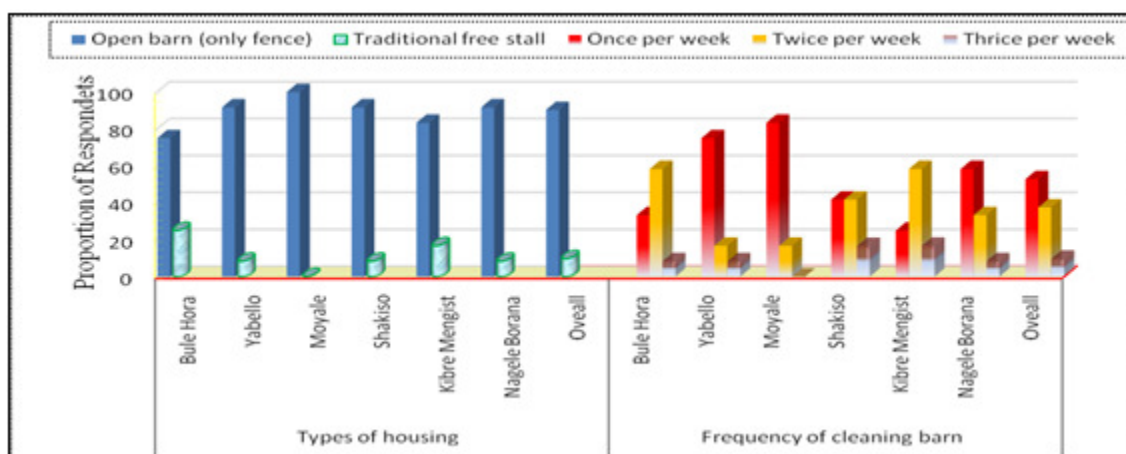


Figure 8: Types of housing and frequency of barn cleaning in the Study Areas

3.3.5. Livestock Health Management Practices

Animal health and improved management is the major constraints of dairy development in Ethiopia which cause poor performance on animal. The animal health care system relies heavily on veterinary measures systems continue to cause high mortality and morbidity (Ketema, 2013) and Routine preventive measures were provided by government veterinary clinics that provide vaccination services. All farmers in the study area revealed that vaccination of livestock take place as pre-informed by government authority.

The result showed that about 4.2%, 65.3%, 26.4%, 1.4% and 2.8% of respondents reported that, they vaccinate their livestock within three months, six months, a year, greater than two-year interval and only during out break respectively (Table 5).

Traditional medication was not as such practiced except in Kibremengist (about 25%). In contrary to the present report (Workneh and Ulfina, 2011) noted that, most of the respondents (60%) in Ambo town treat their animals by using traditional medication.

In the study area, 91.7% of respondents had reported that they treat livestock health disorders; both by purchasing drug from nearby clinic for internal parasite and by trekking animal to health center. However, exceptionally about (1.8%) of respondents from Yabello treat their animal by themselves. This indicates that, the delivery system of animal health services to dairy farmers is considered inadequate.

Class of Animal		Study Area {Mean(± SD)}						Total
		Bule Hora	Yabello	Moyale	Shakiso	Kibremengist	Nagele Borana	
Indigenous								
Cows	Pregnant	1.5 ±1.0	3.6 ±4.2	1.5 ±1.0	1.8±1.1	1.5±0.9	1.6±1.2	1.9±2.1
	Lactating	2.3 ±0.6	3.5 ±2.5	2.5 ±0.6	1.0±0.9	1.9±1.8	1.8±0.6	2.2±1.6
	Dry - off	1.5 ±1.4	5.2 ±8.2	2.3 ±1.3	1.0±1.3	0.3±0.9	1.3±1.3	1.9±3.7
Heifers		2.1 ±1.2	4.6 ±3.2	2.1 ±1.0	2.0±1.6	1.7±1.3	2.3±2.1	2.5±2.1
Oxen / steer		2.3 ±2.0	2.6 ±3.4	0.9 ±1.2	3.8±1.5	3.4±1.2	4.8±6.4	3.0±3.3
Bull		0.9 ±1.2	2.8 ±5.5	1.5 ±0.6	0.6±0.9	0.4±0.8	3.9±5.0	1.7±3.3
Male calves		1.4 ±1.0	1.7 ±1.6	1.7 ±0.8	0.9±1.0	1.3±1.4	1.3±1.0	1.4±1.2
Female calves		1.7 ±1.0	1.7 ±2.3	1.7 ±1.2	1.2±1.0	1.3±1.8	1.3±0.9	1.5±1.5
Exotic Animal								
Cow	Lactating	---	---	---	0.3±1.1	0.7±2.3	---	0.2±1.0
	Dry off	---	---	---	---	0.2±0.6	---	0.0±0.2
Heifer		---	---	---	---	0.3±0.9	---	0.0±0.3
Male calves		---	---	---	---	0.3±1.2	---	0.0±0.5
Female calves		---	---	---	0.2±0.6	0.5±1.7	---	0.1±0.7
Overall mean		13.7	25.7	14.2	12.8	13.8	18.3	16.4

Table 1: Mean (±SD) for number of cattle per household across the study areas
SD: Standard deviation

Feed Type	Study Areas {N (%)}						Total (N=72)
	Bule Hora	Yabello	Moyale	Shakiso	Kibre-mengist	Nagele Borena	
Roughage							
Natural Pasture	11(91.7)	11(91.7)	12(100)	12(100)	11(91.7)	12(100)	69(95.8)
Hay	4(33.3)	6(50)	7(58.3)	(33.3)	1(8.3)	12(100)	22(30.6)
Crop residue (Teff straws, maize Stover, Wheat, and Barley straw)	9(75)	9(75)	10(83.3)	11(91.7)	11(91.7)	11(91.7)	61(84.7)
Concentrate Supplement (s)							
Energy supplement (wheat bran)	7(58.3)	8(66.7)	6(50)	8(66.7)	7(58.3)	10(83.3)	46(63.9)
Non Conventional Feeds							
(Attella: local brewery and liquor residue, Khat left over, inset and Banana leaf)	3(25)	5(41.7)	1(8.3)	7(58.3)	6(50)	6(50)	28(38.9)

Table 2: Major Feed type and proportional utilization of feed resources by sampled farmers in the Study Areas
HH=House Hold N=Number of respondents %= proportion of respondents

Practices	Study Areas {N (%)}						Total (N=72)
	Bule Hora	Yabello	Moyale	Shakiso	Kibre mengist	Nagele Borana	
Start milking after calving day							
Within a week	12(100)	12(100)	12(100)	11(91.7)	10(83.3)	11(91.7)	68(94.4)
Within a Month	----	----	----	1(8.3)	2(16.7)	1(8.3)	4(5.6)
Feed provision while milking							
Yes	10(83.3)	9(75)	8(66.7)	11(91.7)	9(75)	10(83.3)	57(79.2)
No	2(16.7)	3(25)	4(33.3)	1(8.3)	3(25)	2(16.7)	15(20.8)
Milker							
Family	Male	----	1(8.3)	----	----	----	1(1.4)
	Female	10(83.3)	5(41.7)	11(91.7)	9(75)	3(25)	40(55.6)
	Both	2(16.7)	6(50)	1(8.3)	3(25)	9(75)	31(43.1)
Precaution (to clean teat and udder)							
Use warm water	3(25)	4(33.3)	----	3(25)	1(8.3)	1(8.3)	12(16.7)
Use Cool water	1(8.3)	----	----	6(50)	3(25)	----	10(13.9)
Use towel only	----	3(25)	----	----	----	----	3(4.2)
Use warm water and towel	----	1(8.3)	----	3(25)	3(25)	1(8.3)	8(11.1)
No at all	8(66.7)	4(33.3)	12(100)	----	5(41.7)	10(83.3)	39(54.2)
Frequency of milking per day							
One time	----	----	----	1(8.3)	1(8.3)	----	2(2.8)
Two times	12(100)	12(100)	12(100)	11(91.7)	11(91.7)	12(100)	70(97.2)

Table 3: Milking, feed provision while milking and hygienic practices followed during milking by farmers in the study areas
N=Number of house hold

Study area	{N (%)}				
	Marketing System		If informal, Is it insuring real market?		
	Formal	Informal	Yes	No	Not sure
Bule Hora	----	12(100)	----	12(100)	----
Yabello	----	12(100)	----	12(100)	----
Moyale	----	12(100)	1(4.5)	11(91.7)	----
Shakiso	----	12(100)	----	9(75)	3(25)
Kibre mengist	1(8.3)	11(91.7)	----	6(50)	6(50)
Nagele Borana	----	12(100)	4(33.3)	8(66.7)	----
Overall (N= 72)	1(1.4)	71(98.6)	5(6.9)	58(80.6)	9(12.5)

Table 4: Milk marketing systems in the study areas
N=Number of house hold

Health Variables	Study area {N (%)}						
	Bule Hora	Yabello	Moyale	Shakiso	Kibre mengist	Nagele Borane	Total(N= 72)
Vaccination							
Yes	12(100)	12(100)	12(100)	12(100)	12(100)	12(100)	72(100)
Vaccination interval							
3 month	----	----	----	3(25)	----	----	3(4.2)
6 month	7(58.3)		10(83.3)	8(66.7)	11(91.7)	11(91.7)	47(65.3)
A year	3(25)	11(91.7)	2(16.7)	1(8.3)	1(8.3)	1(8.3)	19(26.4)
> 2 year	----	1(8.3)	----	----	----	----	1(1.4)
Only during out break	2(9.1)	----	----	----	----	----	2(2.8)
Treatment by							
Traditional medication	----	----	----	----	3(25)	----	3(4.2)
Purchasing Drug	1(8.3)	----	1(8.3)	----	----	----	2(2.8)
Both purchasing drug and trekking to Health center	11(91.7)	11(91.7)	11(91.7)	12(100)	9(75)	12(100)	66(91.7)
Farmer by themselves	----	1(8.3)	----	----	----	----	1(1.4)

Table 5: Livestock health management practices in the study areas
N = Number of respondents per house hold

3.4. Opportunities and Challenges

3.4.1. Opportunities of Dairy Cattle Production

Improved feeding is crucial to provide satisfactory environment for animal growth and feed supplements stimulate higher milk productivity (SNV, 2008). 95.8% of respondents have interest to invest in dairy sector if improved feed is available. Therefore, feed is the very important asset to participate in dairy sector for this matter. And also 94.4% Of respondents need improved dairy breed in their stock; if milk got ready market and good out let. About 68.1, 13.9 and 11.1 and 6.9% respondents have interest and potential, have interest but no potential, they have interest if credit available and do not have both interest and potential to buy and adopt dairy technology respectively.

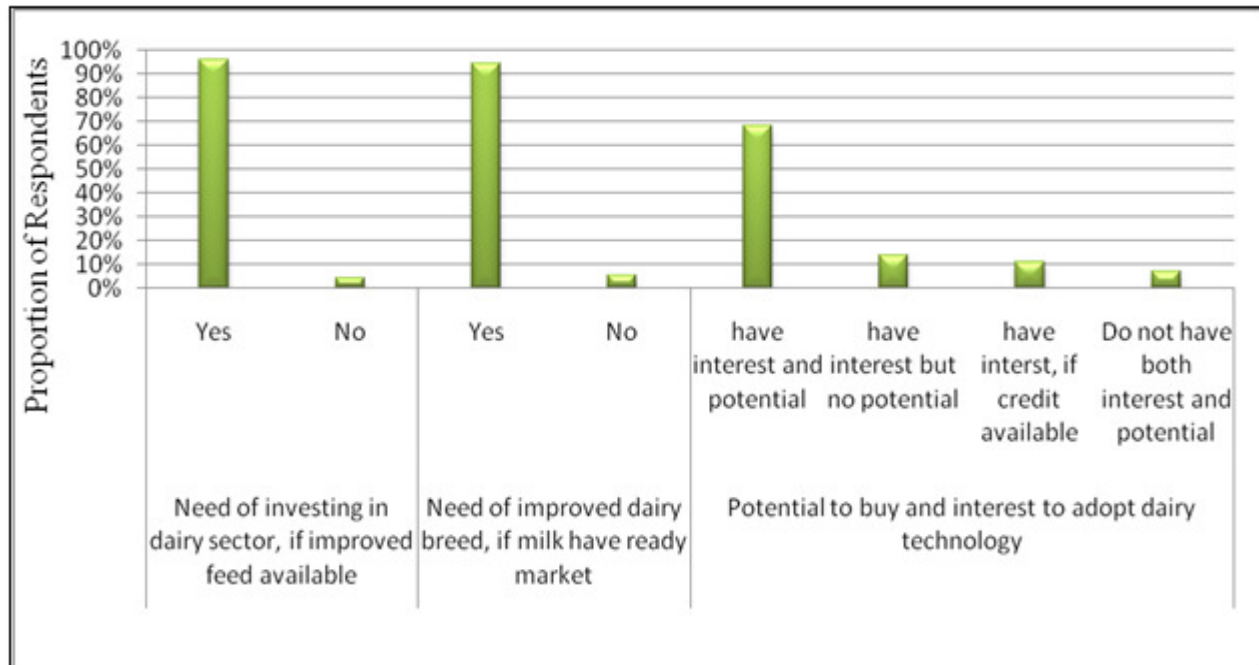


Figure 9: Opportunities in the Study Areas for dairy sector development

3.4.2. Challenges of Dairy Cattle Production

Large proportion (98.6%) of the respondents believes as feed is major constraint affecting livestock production in the study area (Figure 10). Similarly, (Ahmed *et al.*, 2003) reported that, inadequate supply of quality feed is the major factors limiting dairy productivity in Ethiopia Especially the important problem reported by the respondents was availability of feed type mentioned in (Table 2) and its accessibility. According to the respondents, about 93.1% of feed types mentioned are not available sufficiently all year round.

Similarly, the major factors responsible for the low productivity of Ethiopian livestock in general and the dairy sector in particular are inadequate nutrition in terms of its quality and quantity (Mesfin *et al.*, 2009; Yilma *et al.*, 2011 and Eyassu and Doluschitz, 2014). Additionally, effective and adequate extension services and advice on animal nutrition and feeding management, and dairy production efficiency are not always available to the dairy farmer in Ethiopia (Yilma *et al.*, 2011 and SNV, 2008).

According to the respondents, improved forage cultivation is generally less developed in the study area. In-line with this finding, the (CSA, 2011) reported, very small amount of improved feed (only 0.25 percent) was used as animal feed in the country. About 94% and 56.3% of respondents doesn't not practiced sowing of adaptable improved forage, and hay conservation for livestock respectively. Hence, improving nutrition through adoption of sown forage and better crop residue management can substantially raise livestock productivity.

Beside these, during field survey the main constraints for small dairy holders are unavailability of proteinaceous concentrate, constituting important part of the diet in the market (Table 2). However, out of total number, (86.1%) of small holder dairy farm owners indicated that, they do not participate in dairy production and management training and only about 13.9% of respondents have got chance to participating in training.

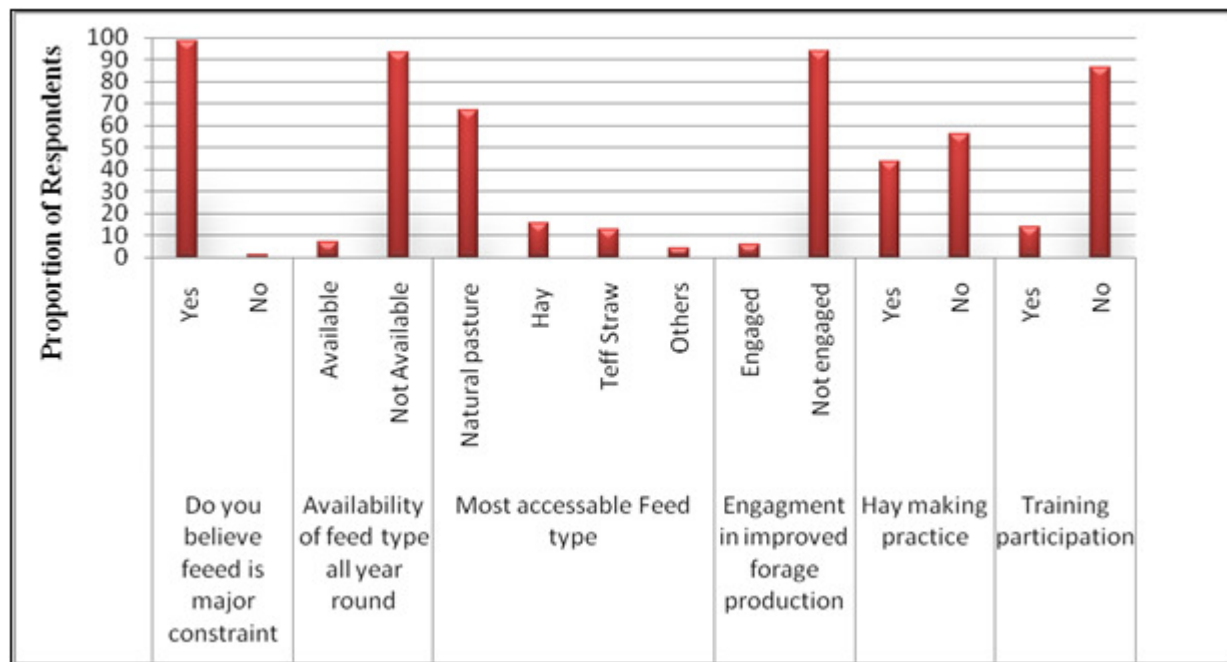


Figure 10: Feed access, conservation, and training challenges

As shown in figure (3). Breeding method dominantly utilized by farmers across all the study area are naturally unselected bull from local breed, whereas naturally selected bull from local breed were practiced by few farmers and in Shakiso exceptionally, AI is practiced to improve genetic performance of indigenous breed. As reported by (Yilma *et al.*, 2011), the improved crossbreed, grade and pure exotic dairy cattle are usually in short supply and when available, the high cost is a major problem and the absence of effective breeding programs is also another constraint to the dairy development in the country.

The about 11.1% respondents do not have the financial means required to make the initial investment (Figure 7) and acquire the associated technological inputs. Financial support or credit facilities to smallholder farmers who intend to enter into commercial dairy farming are very much limited in the country (SNV, 2008 and Yilma *et al.*, 2011). This may be capital requirements for smallholder dairy producers are high and especially constraining for farmers (SNV, 2008).

4. Conclusion and Recommendation

Natural pastures, crop residue, concentrate feed (wheat bran), non conventional feeds and hay was the feed source. However, Availability and quality is major constraints affecting livestock production in the study area. Unselected bull used majorly as natural sources of services this is an indication of the low level of the usage of modern technological packages. The most important preferred morphological characteristics to select high milk producer dairy cow were family back ground. Farmers have interest to invest in dairy sector and adopt dairy technology this is an opportunity that has to be used.

Therefore, Improvement of routine management activities through provision of training in dairy husbandry to the small-scale dairy farmers, the adoption of market oriented dairy production technology and applying breed improvement strategies like Artificial Insemination (AI) and distribution of improved breeds and/ or Provision of the good quality heifers and multiplication centre is incredibly important; to exploit the optimum level of milk production. Further development of milk marketing structure will create the incentive to improve production. Introduction of forage and the development of extension activities connected with forage cultivation, to further improve production and productivity of livestock.

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