

CHALLENGES OF DAIRY PRODUCTION AND MARKETING IN URBAN AND PERI-URBAN AREAS OF AMHARA REGION, ETHIOPIA

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✉Supporting Information

ABSTRACT: Dairy production is an important component of livestock farming in Ethiopia. The huge and diverse livestock population, varied and favorable agro-ecology is good for dairy production to answer the demands for dairy products in urban and peri-urban areas. The aim of the study was to assess the challenges of dairy production and marketing in urban and peri-urban areas of Amhara region. Therefore, a total of 885 households were randomly selected for interview. In the dairy farm, the major feed resources used by the households were natural pasture (4.5%), concentrate feed (60.9%) and both pasture and concentrate feed (34.1%). According to the information stated by the respondents industrial by products (6.0%), hay (20.5%), straw and brewery by products (0.7%) were used as important feed resources, while 97% of the overall respondents stated that water available was accessible throughout the year. Whereas, the major challenges for dairy production interims of diseases in the current studied areas were mastitis (11.5%), ectoparasite infestation (10.6%), lumpy skin disease (2.7%) and foot mouth disease (1.9%). In addition, milk production and marketing system in the areas were highly challenged by disease prevalence, feed scarcity feed quality, and distant traveled to sell milk and seasonal price variation. Developmental constraints were also reported like lack of infrastructure and finance, poor education of households, seasonality of supplies and the lack of market and marketing infrastructure and facilities. On the same time reproductive problems like sterility, abortion, immature birth, retained placenta, repeat conception and dystocia with the proportion of 3.6, 23.7, 1.8, 9.9, 17.9, 9.1 and 34% respectively were reported. Therefore, feed scarcity throughout the year, disease prevalence and veterinary service problem are some of the identified challenges. So, appropriate research work, development, policy and crosscutting interventions should be taken in to account to make improve the dairy industry

Keywords: Dairy Production, Marketing, Urban, Peri Urban, Amhara, Ethiopia.

INTRODUCTION

Reproduction, long-standing culture of dairy products consumption, and favorable policy are indicators of the importance and potential of dairying in the country. Cattle play a significant role in the socio-economic aspects of the life of the people of Ethiopia. In addition to the products like meat and milk cattle provide draught power for cultivation of the agricultural lands of many peasants. Skins and hides are also important components of the livestock sector in generating foreign export earnings (Tamiru and Abebaw, 2010). According to CSA (2012/13) about 53.99 million cattle's, 25.5 million sheep and 24.06 million goats, 1.91 million horses, 6.75 million donkeys, 0.35 million mules, 0.92 million camels, 50.38 million poultry and 5.21 million bee hives are reported in Ethiopia. Ethiopia maintains huge number of livestock population. Despite the huge number of cattle and their economic importance, breeds the productivity is low due to the constraints of disease, nutrition, poor management, lack of marketing facilities and opportunity, inadequate animal health services, uncoordinated development programs between various levels of government institutions and /or non-government organizations and poor performance low genetic potential of indigenous breeds (Lobago et al., 2006).

The development and sustainability of urban and peri-urban dairy production systems require a relatively large initial investment and long term commitment. In addition, the major technical and non-technical constraints associated with these dairy production systems such as availability and cost of genetic materials, breeding systems, feed resources, feeding systems, animal health, processing, marketing, public health, waste handling, managerial and policy issues need to be addressed (Abera, 2016). In Ethiopia dairy production depends mainly on indigenous livestock genetic resources; more specifically on cattle, goats, camels and sheep. Cattle has the largest contribution (81.2%) of the total national annual milk output, followed by goats (7.9%), camels (6.3%) and sheep (4.6%) (CSA, 2009). Despite its potential for dairy development, productivity of indigenous livestock genetic resources in general is low, and the direct contribution to the national economy is limited. In the other hand, Ethiopia has a huge potential for dairy development in Africa. The large and diverse livestock genetic resources, existence of diverse agro-ecologies

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suitable for dairy production, increasing domestic demand for milk and milk products, better market opportunity, and proximity to international markets indicate the potential and opportunities for dairy development in the country. However, dairy development has been hampered by multi-faced, production, system-specific constraints related to genotype, feed resources and feeding systems, access to services and inputs, low adoption of improved technologies, marketing and absence of clear policy support to the sector.

Thus, in order to mitigate challenges that limit productivity and thereby exploit the untapped potential, it is necessary to characterize and analyze dairy production and marketing systems, identify major constraints along the value chains and devise pertinent and practical strategies to alleviate the problems to improve the dairy production and marketing systems in the country. Therefore, objective of this project is: to assess the overall dairy production and marketing challenges in urban and peri-urban areas of Amhara Region, Ethiopia.

MATERIALS AND METHODS

Study area

This study was conducted in the selected milk shade areas of Amhara region (Gondar, Bahir Dar, Debre Tabor, Debre Markos, Debre Birhan and Dessie) towns and their surroundings.

Study population

The considered population was urban and peri-urban residents and institutions (farms, milk processing plants, associations, distributors and others) of the selected towns, who are directly/or indirectly working with the dairy industry. These residents and institutions recorded had house number in their administrative area. Then, study subjects households were randomly selected in which the survey conducted after the selection of the houses and each household was surveyed only once.

Research design

Cross-sectional study design was used to assess the challenges in dairy development and marketing on milk shade areas of Amhara Regional State. In this particular study, milk shade refers to the geographical location where milk is produced and transported a specific market centre. In this case, Gondar, Bahir Dar, Debre Tabor, Debre Markos, Debre Birhan and Dessie towns were considered.

Sampling technique and sample size

The sampling technique was stratified sampling in which the first selection was done randomly and selection from the next strata was systematically done. According to selection at town level was purposive and six towns, namely Gondar, Bahir Dar, Debre Tabor, Debre Markos, Debre Birhan and Dessie towns were selected. These towns were selected with a view that they have relatively high population size demanding high milk to be produced and transported their respective towns. Five Kebeles from each town and surrounding peri-urban area was selected randomly. The humans, farm owners, association members/managers, milk/milk product distributors and milk processors of selected Kebeles and towns were the units of the study. The sample size of the study was calculated by using the formula for the estimation of single proportion as shown below;

$$N = \frac{(Z\alpha/2)^2 \times P(1-P)}{D^2}$$

Where; N = Sample size; P = Proportion assumed (50%, no research conducted on this area); D = the margin of error between the sample and the population or Desired precision (5%); $Z\alpha/2$ = critical value at 95% confidence level of certainty (1.96). Therefore, the required sample size was: 384 subjects \times 2 design effect=768+20% non-response rate with the total sample size of 822 subjects

Data collection procedures

Data collection instruments. The questionnaire was pre-tested out of the study population and the questionnaire translated to Amharic (native language). The Amharic version pre-tested and standardized to ensure uniform understandings among the members of the team. Twelve data collectors were trained for three days about data management system and also about the questionnaire and ways of collecting data by the respective researchers. Data quality checking was conducted every day by the researchers via checking its completeness and errors in the questionnaire. Each day at least four questionnaires were crosschecked for its completeness.

Data processing and analysis

After completed check-up the data coded and entered to SPSS version 20.0 statistical packages for windows and analysis was made. The quantitative data was analyzed using descriptive statistics and the qualitative data was analyzed using descriptive statistics and compared as percentages, mean and others statistical tools.

RESULTS

Socio economic aspects of the study area

Frequently distributed dairy farm owners in the six milk shade towns of the study area were considered (Table 1). Among dairy farms having 3-10 and 1-2 milking cows were characterized by 46.2 and 45.1 percent's respectively. Most of the dairy farms (about 63.5%) were having cross-breed cows with open barn (32.4%), stall feeding method (60.9%), use mixed feeding method (pasture, industrial byproducts, hay and straw) (66.8%), while, dairy farms in and around Dessie town were better in using industrial by products for milking cows with the proportion of 23.2%. Similarly, hay and straw were found to be the most common feed (57%) for farms in Debre Tabor.

The interviewed dairy owners also stated that the total animal dairy population was about 63.5% cross breed, 16.7% local dairy cows and 15.8% were exotic (Table 2). Higher proportions of crossed and exotic breeds are indicated for better milk production trends in the area.

The type of housing used was open barn 287(32.4), partitioned barn 138(15.6), common house 248 (28), partitioned common house 201(22.7) and common house with human-beings 11(1.2) (Table 3). Less attention to the livestock sector due to traditional, attitude and poor milk product consumption trends were the major reason for housing constraints. Knowledge and skills on the management of dairy animals, and production of quality milk is associated to separate houses.

Feeding methods and type of feeds

The feeds were obtained from natural pasture land 40(4.5), stall feeding 539(60.9), pasture and stall feeding 302(34.1) and others 4 (0.4). In addition, industrial byproducts, hay and straw, brewery by products 53(6.0), 181(20.5) and 6(0.7) respectively were purchased feeds from different sources (Tables 4 and 5).

Breeding practice

Among the producers (47.7%) preferred AI for breeding purposes of their cows, while (30.3%) opted bulls for natural breeding of their cows. Both types of breeding methods were accepted (22.0%). From Table 6, it has been concluded that (64.3%) of the individuals did not prefer AI due to shortage of AI technicians (11.1%) and shortage of semen (7.6%) and also it has been recorded that about 46% of owners can use AI for breeding purposes, if the constraints are removed. The majority of livestock owners (66.1%) preferred local breeds due to less feed requirement (14.8%) and high disease resistance (3.5%). Breeding practices used in the area were AI, bull mating and both with the proportion of 47.7, 30.3 and 22 % in that order.

Major dairy production problems

Accordingly about 71.8% of livestock owners stated that feed shortage was serious issue while the remaining 27.8% of the respondents did enter into feed shortage. Generally, the majority of the respondents underlined that feed shortage was due to high price of feed. Whereas, except 0.3% of the respondents other interviewers indicated that water shortage is not the major problem in the area. Regarding milk production about 9.3% of dairy producers was used milk for their consumption. At the same time 48.1% of the produced milk was used for marketing purpose. The dairy producers prefer to sell out their milk produced to the individuals 341(38.5%) while 180(20.3%) to the merchants and also 77(8.7%) to the cooperative societies. The table 7 revealed that fresh milk was fetching highest revenue of their milk produced while 86(9.8%) revenue was being generated by preparing butter. Table 6 indicated that marketing was the major constraints 538(60.8%) to the milk producers. Only 315(35.6%) individuals were indicating no marketing problem. The distance of the market place was the major strategy faced by the milk producers. Only 29(3.3%) of the individuals was agreed with this problem. Due to spiritual reasons especially fasting period milk consumption was hampered 131(14.8%).

According to the result which indicated that the majority of the dairy producers 598(67.6%) complained about no extension activities in their areas by the concerned development agencies while only 284(32.1%) was agreed with the extension activities. The reasons for absence of extension services was lack of training and consultancy about feeding and management 191(21.6%), milk management 110(12.4%) and reproductive health management 109 (12.3%). The reasons for technology transfer on milk production were recorded as inadequate technologies on extension services 147(16.6%). The majority of the individuals 682(77.1%) responded that experience sharing was not sufficient while only 198(22.4%) accepted about experience sharing. The reason for no on- farm support might be due to lack of formal communication systems 272(30.7%), lack of perception on extension services 125(14.1%) and shortage of extension workers 108(12.2%). Type of diseases encountered by dairy producers was mastitis 102(11.5%), tick and lice infestation 94(10.6%) and LSD 24(2.7%). Table 8 revealed that major reasons for disease occurrence was due to insufficient animal health services 232(26.2%) followed by poor diagnostic services 128(14.5%) and shortage of animal health workers 63(7.1%). During the present investigation it has been found that the major reproductive problems was due to abortion 144(16.3%), repeat breeders 109 (12.3%) and retained

placenta 60 (6.8%). The majority of the dairy producers suggested that the major reproductive problems was solved taking their dairy animals to the nearby veterinary clinics 567 (64.1%) and 94 (10.6%) agreed that traditional healers solve the reproductive problems.

The data feedback collected from the dairy producers (Table 9) revealed that the major culling reasons for cows in dairy farms was due to aging 243(27.5%), inadequate space 56(6.3%), reproductive problems 54 (6.1%), low milk production 52(5.9%) and feed shortage 31(3.5%).

Table 1 - Number of milk cows in each farm in the study areas.

S/N	Study site	Number of milk cows/farm			Total (%)
		1-2 cows (%)	3-10 cows (%)	> = 11 cows (%)	
1.	Gondar	57(14.3)	66(16.1)	18 (23.4)	141(15.9)
2.	Debre Tabor	123(30.8)	26(6.4)	0 (0)	149(16.8)
3.	Bahir Dar	2(0.5)	129(31.5)	21(27.3)	152(17.2)
4.	Dessie	72(18.0)	69(16.9)	10 (12.9)	151(17.1)
5.	Debre Markos	39(9.8)	89(21.8)	25 (32.5)	153(17.3)
6.	Debre Birhan	106(26.6)	30(7.3)	3 (3.9)	139(15.7)
Total (%)		399 (45.1)	409 (46.2)	77(8.7)	885(100)

Table 2 - Distribution of milk cow breeds in the study areas.

S/N	Study Area	Local (%)	Cross (%)	Exotic (%)	Total
1.	Gondar	23 (15.5)	91(16.2)	27 (19.3)	141(15.9)
2.	Debre Tabor	30 (20.3)	115(20.5)	4(2.9)	149(16.8)
3.	Bahir Dar	3 (2.0)	127(22.6)	0 (0)	152 (17.2)
4.	Dessie	12 (8.1)	55 (9.8)	82 (58.6)	151(17.1)
5.	Debre Markos	58 (39.2)	81 (14.4)	13 (9.2)	153 (17.3)
6.	Debre Birhan	22(14.9)	93(16.5)	14 (10)	139 (15.7)
Total (%)		148(16.7)	562(63.5)	140(15.8)	885(100)

Table 3 - House type of milk cows in the study areas

No	Study site	House type of milk cows					Total (%)
		Open barn (%)	Partitioned barn (%)	Common house (%)	Partitioned common house (%)	With human-beings (%)	
1.	Gondar	36 (12.5)	10 (7.2)	67 (27.0)	18 (9.0)	10 (90.9)	141(15.9)
2.	Debre Tabor	31(10.8)	14 (10.2)	92 (37.1)	11(5.5)	1 (9.1)	149 (16.8)
3.	Bahir Dar	7 (2.4)	0 (0)	22 (8.9)	123 (61.2)	0 (0)	152 (17.2)
4.	Dessie	36 (12.5)	46 (33.3)	29 (11.7)	40 (19.9)	0 (0)	151(17.1)
5.	Debre Markos	103 (35.9)	27(19.6)	20 (8.1)	3 (1.5)	0 (0)	153 (17.3)
6.	Debre Birhan	74 (25.9)	41(29.7)	18 (7.2)	6 (2.9)	0 (0)	139(15.7)
Total (%)		287 (32.4)	138(15.6)	248 (28)	201(22.7)	11(1.2)	885(100)

Table 4 - Method of feeding of milk cows in the study areas

S/N	Study site	Method of feeding of milk cows				Total (%)
		Pasture land (%)	Stall feeding (%)	Pasture and stall feeding (%)	Others (%)	
1.	Gondar	4(10)	100(18.6)	37(12.3)	0(0)	141(15.9)
2.	Debre Tabor	2(5)	109(20.2)	36(11.9)	2(50)	149 (16.8)
3.	Bahir Dar	0(0)	118(21.9)	34(11.3)	0(0)	152 (17.2)
4.	Dessie	2(5)	111(20.6)	37(12.3)	1(25)	151(17.1)
5.	Debre Markos	24(60)	15 (2.8)	113(37.4)	1(25)	153 (17.3)
6.	Debre Birhan	8(20)	86(15.9)	45(14.9)	0(0)	139 (15.7)
Total (%)		40 (4.5)	539 (60.9)	302 (34.1)	4 (0.4)	885 (100)

Table 5 - Type of feed for milk cows in the study areas.

No	Feeding type	Study site						Total (%)
		Gondar (%)	D/Tabor (%)	B/Dar (%)	Dessie (%)	D/Markos (%)	D/Birhan (%)	
1.	Pasture	0 (0)	2 (1.3)	0 (0)	3 (2.0)	40 (26.1)	8 (5.8)	53 (6.0)
2.	Industrial byproduct	1 (0.7)	4 (2.7)	6 (3.9)	35 (23.2)	3 (2.0)	4 (2.9)	53 (6.0)
3.	Hay and straw	19 (13.5)	85 (57.0)	5 (3.3)	27 (17.9)	37 (24.1)	8(5.8)	181(20.5)
4.	Molasses	0 (0)	0 (0)	0 (0)	0 (0)	1(0.7)	0 (0)	1(0.1)
5.	Brewery byproducts	0 (0)	0 (0)	0 (0)	4 (2.6)	1(0.7)	1(0.7)	6 (0.7)
6.	1, 2 and 3	121 (85.8)	58 (38.9)	141 (92.8)	82 (54.3)	71(46.4)	118 (84.8)	591(66.8)
Total (%)		141 (15.9)	149(16.8)	152(17.2)	151(17.1)	153(17.3)	139(15.7)	885(100)

Table 6 - Reason of bull mating

S/N	Preference of bull instead of AI	Frequency (%)	Group percentage (%)
1.	Do not prefer AI	569 (64.3)	
2.	Shortage of AI equipment's	23 (2.6)	23 (7.3)
3.	Administrative and financial problems	55 (6.2)	55 (17.4)
4.	Poor heat detection	32 (3.6)	32 (10.1)
5.	Inappropriate time of AI	17 (1.9)	17 (5.4)
6.	Shortage of AI technicians	98 (11.1)	98 (31.0)
7.	No AI service	13 (1.5)	13 (4.1)
8.	Reluctance of AI technicians	11(1.2)	11(3.5)
9.	Shortage of semen	67(7.6)	67(21.2)
No	Are you ready to use AI if problems are solved?		
1.	Yes	407 (46.0)	
2.	No	414 (46.8)	
3.	No response	64 (7.2)	
No	Reasons for selecting local breeds		
1.	Those who select local breeds	585(66.1)	
2.	To obtain male calves	47(5.3)	
3.	Less feed requirement	131(14.8)	
4.	Easy for management	49(5.5)	
5.	High fat content	6(0.7)	
6.	High disease resistance	31(3.5)	
7.	2 or more of them	36(4.1)	
Total		885(100)	

Table 7 - Marketing problem

No	Type of problem	Frequency (%)	Group-percentage (%)
1.	No problem	321(36.3)	
2.	Far from market	29(3.3)	29(5.1)
3.	Seasonal variation of milk demand and supply	131(14.8)	131(23.2)
4.	Unsuitable market condition	172(19.4)	172(30.5)
5.	Culturally milk selling is unaccepted	3(0.3)	3(0.5)
6.	Low milk shelf life	1(0.1)	1(0.2)
7.	Low milk production	1(0.1)	1(0.2)
8.	2 or more of them	227(25.6)	227(40.3)
Total		885(100)	564(100)

Table 8. Major cattle diseases and status of reproductive health problems in farms.

No	Type of diseases encountered	Percentage (%)
1.	Ticks and Lice	94 (12.2)
2.	LSD	24 (3.1)
3.	Lameness	9 (1.2)
4.	Mastitis	102 (13.3)
5.	Hoof cracking	8 (1.0)
6.	FMD	17(2.2)
7.	Coughing	33(4.3)
8.	Anthrax	5(0.6)
9.	Others	2(0.3)
10.	all	476(61.8)
No	Reproductive problems	Percentage
1.	No reproductive problems	
2.	Sterility	22(3.6)
3.	Abortion	144(23.7)
4.	Immature birth	11(1.8)
5.	Retained placenta	60(9.9)
6.	Repeat breeder	109(17.9)
7.	Dystocia	55(9.1)
8.	All	207(34.0)
	Total	885(100)

Table 9 - Culling reasons of cows in dairy farms

No	Activities	Percentages
1.	No culling system	23(2.6)
2.	Diseases	17(1.9)
3.	Aging	243(27.5)
4.	Reproductive problems	54(6.1)
5.	Low milk production	52(5.9)
6.	Inadequate space	56(6.3)
7.	Feed shortage	31(3.5)
8.	Cash income	18(2.0)
9.	All	391(44.2)
	Total	885(100)

DISCUSSION

Dairying was a good source of income for urban and peri-urban producers which accounted for selling raw milk 426(48.1%), by products 32 (3.6%) and for house consumption 82(9.3%). Despite the fact that crop-livestock producers' are generated only the little share (23.1%) from dairying. The result not agree with finding that crop-livestock production systems are none market oriented in which most of the milk produced was retained for home consumption (Pervaiz et al., 2003). These characteristics were also noted by other authors for different production systems in some part of the country such as Wollega (Alganesh, 2002). According to Debela (2016) Oromia Regional State and Eyasu and Asaminew (2014) at Bahir dar zuria Mecha district in Amhara Regional State, hiring labor was very uncommon in urban areas, whereas herding and milking operation in the peri-urban production system as operated by hired labor.

Feed resources identified in the area included grazing land 53(6.0%), hay and straw 181(20.5%) industrial by products 53(6.0%), and brewery by products 6(0.7%) balanced homemade concentrates plant weeds, and non-conventional feeds like *Atella'*. Poor quality feed resources are affecting the fertility of cows and milk production. Ibrahim and Olaloku (2000) who also reported that feeding systems in smallholder dairying was primarily based on grazing of native pasture of low productivity. Etigen and Reaves (1978) also indicated that feed resources from crop residue (straw and stover) and pastures (both green and mature) was low digestibility. High population growth and density causing shortage of grazing land for livestock of production by smallholders. The un-availability and poor

quality of feed resources and in-efficient nutritional management were the principal constraints to dairy production. This was the case in an assessment of livestock research priorities for crop animal systems in rain-fed agro-economical zones of nine countries of South East Asia (Amin, 2014). Falvey (1992) indicated that within an integrated farming system where dairying is important components, one of the major constraints for production is feed and nutrition. ESAP (1995) indicated one of the factors affecting the adoption of crossbred dairy cows is lack of feed shortage. The development and sustainability of urban and peri-urban dairy production systems require a relatively large initial investment and long term commitment. In addition, the major technical and non-technical constraints associated with these dairy production systems such as availability and cost of genetic materials, breeding systems, feed resources, feeding systems, animal health, processing, marketing, public health, waste handling, management and policy issues need to be addressed (ILRI, 1996).

Rivers, pipe water, dams and wells, lakes, spring water were the main sources of water identified in the present study areas. Most of the households in urban and peri-urban areas obtained water from rivers and pipe water. Regarding the accessibility of the water, 97% of the interviewed dairy producers in both areas responded that they have an access to water throughout the year, and the rest (3%) reported that during the dry seasons there was a scarcity of drinking water in area during which they used spring water.

Majority of households in the study areas has open barn, partitioned barn, common house, partitioned common house and common house with human beings 287(32.4%), 138(15.6%), 248(28.0%), 201(22.7%) and 11(1.2%), respectively. In the peri-urban areas farmers kept their cattle within their own residence as night shelter. Based on the results from the respondents as well as my personal observation, types of shelter used by all the producers in the surveyed areas as designed in such a way that routine activities like feeding, watering, milking, waste management and other activities cannot be easily and effectively handled, and was found varied significantly respect of production. Dairy cattle breed in the study areas was indigenous zebu, cross and exotic breeds 183(20.67%), 562(63.5%) and 140(15.8%), respectively and have not been characterized well. Most of the foundation stocks of both areas were replaced from their own farm or purchased from open markets which revealed that producers were not curious and/or did not have access to the selection of dairy cattle. Local bulls as allowed freely in the herds to run on mating, and this was an indication for existing of uncontrolled mating in the studied areas. Provision of genetically potential dairy cattle and/or good breeding services as per the demands of producers was one of the prerequisites for the development of dairying (Azage and Alemu, 1998).

Traditional hand milking was the only type of milking practiced in the surveyed areas. Almost all dairy cattle producers in urban and peri-urban areas practiced partial suckling prior to milking, and there was no proper sanitary procedure to be followed during milking especially in peri-urban producers. At the time of milking, washing of teats was not practiced, and the producers believe that during calf suckling for milk let-down, the teat get washed by the saliva of calf. In Ethiopia, most smallholders dairy producers are milking twice (95.5%) per day (Sintayehu et al., 2008). The relatively higher proportion of early feed supplementation and early weaning observed in the urban producers' sides was associated with the assumption of profit maximizations from sale of milk that was otherwise used by calves.

Among the major problems, disease was identified as one of major constraints that pose major threat to cattle production in the current study areas of Amhara region. The major diseases of cattle identified in the studied areas as mastitis 102(11.5%), ticks and lice 94(10.6%), lumpy skin disease 24(2.7%) and FMD17(1.9%). Based on the respondents and personal observation in the study area, the loss of animals due to diseases was aggravated by shortage of veterinary professionals, accessibility of veterinary service in the area and lack of adequate transport facility as the major problems. The existing of such a poor performance of veterinary service indicated that regional government give less attention to the livestock sector in general. Livestock keepers therefore, tend to divert to traditional ethno-veterinary practices in the villages and make use of various herbs and/or illegal drugs to treat their animals. Many animal health problems result from the interaction among the technical and non-technical constraints themselves such as poorly fed animals develop low disease resistance and have fertility problem. Many of the disease constraints was also a consequence of the non-technical constraints e.g., insufficient money to purchase drugs or vaccines. Even if there are veterinary services delivered by the office of agriculture, only few farmers take their animals to the veterinary service. This is because of the fact that high cost for the medicine and low productivity of the animal which discourages farmers to use veterinary services (Getachew, 2003).

In regard to the type of product processed, butter was the primary dairy product traditionally processed by most of the peri-urban areas. Most of the households in peri-urban areas preferred churning to get butter and use buttermilk for household consumption, in addition to lack of accessing market for whole milk marketing. And this was not in the case of urban producers where majority of households did churn during fasting days where there was less demand for dairy products and because of preference of butter and other by-products, if all milk could not be marketed, and because of taboos against selling whole milk. Marketable dairy products in the study areas include whole milk 582(65.8%), traditionally processed butter 86(9.8%) cottage cheese 2(0.2%). Sale of milk to individuals 341(38.5%), merchants 180(20.3%), cooperatives 77(8.7%) and distributors 14(1.6%). Since informal dairy

marketing was the only means of marketing in the current studied area, there was no fixed price for each dairy product.

All dairy producers in the study area as constrained on unavailability of AI services 98(11.1%), shortage of semen 67(7.6%) and poor heat detection 32(3.6%). Abortion, retained placenta, repeat breeder, dystocia, immature birth and sterility 144(16.3%), 60(6.8%), 109(12.3%), 55(6.2%), 11(1.2%) and 22(2.5%) respectively, as serious reproductive problems affecting performance of dairy herds. Concerning to livestock extension service 191(21.6%) respondents said no training and consultancy about feeding and management of dairy cattle, 109(12.3%) no training on reproductive health and 110(12.4%) no training on milk management. Shortage of each to purchase replacement stock or cover animals and animal related expenses (such as veterinary, feed) was another problem in livestock production system. Getachew (2003) indicated that in Ginchi watershed among the other problems with expansions of smallholder dairy production are capacity problem and lack of adequate livestock extension service.

The dairy industry includes the production, processing and marketing of milk and milk products. There are several constraints to its development, e.g. lack of infrastructure and finance, poor education of households, seasonality of supplies and the lack of market and marketing structure and facilities. Because of lack of cooling facilities or lack of suitable equipment or utensils for milking and storing milk, milk deteriorates rapidly (ILCA, 1992).

CONCLUSION AND RECOMMENDATIONS

After reviewing the retrospective and current situations of the Ethiopian dairy sector, it might be appropriate to consider the following: research, development, policy and crosscutting issues in order to make improvement interventions for the development of the dairy industry. In general, milk production and marketing system as constrained by feed scarcity, disease, poor veterinary service, limited access to markets, less quantity of milk which related to poor breeding services and seasonal price fluctuation. Above all, feed scarcity, disease, and poor veterinary service are the most important constraints hindering the dairy development. Dairy marketing system identified in the study area was entirely informal marketing system, in which the producers sell dairy products directly to consumers and/or traders with no fixed price. The farmers are poorly organized into cooperatives and unions, while their products are sold at sub optimal prices. The poor infrastructure network, inadequate provision of veterinary services and lack of continuous supply of animal feeds throughout the year are among some of the challenges faced by dairy producers in the study area. However, the rapid urbanization of the zonal capital towns in Amhara region with that of human population increase, access of land and water for rearing dairy are an opportunity and prospects for the development of dairying in the study area.

Therefore, based on the above findings the following recommendation are made

- ✓ Provision of training to the farming communities is imperative so as to improve their knowledge and skills on the management of dairy animals and production of quality milk.

- ✓ Improving animal health services and drug supply system as well as strengthening diseases surveillance and reporting system.

- ✓ Cultivation of improved forage crops suitable for the different agro-ecological zones and farming systems with accompanied technologies should be encouraged.

- ✓ Promotion of efficient use of alternative feed sources such as silage, hay, crop and vegetable by-products and local beverage by-products are also essential.

- ✓ Policies on dairy should be comprehensive and focused on ensuring increased milk production. These should include: appropriate strategies on breeding (selection and cross-breeding), improved feed utilization systems and adequate veterinary services. The policies should establish an appropriate marketing infrastructure to ensure milk collection, processing, storage, and distribution, the quality of products.

DECLARATIONS

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Competing Interests

The competing interest is assured by copy right agreement and there is no computing interest in this research paper.

REFERENCES

- Tamiru T and Abebaw G (2010). Prevalence of ticks on local and crossbreed cattle in and around Asella town, southeast Ethiopia, *Ethiopian Veterinary Journal*, 14 (2), p. 79-89.
- Central Statistics Authority (CSA), (2012/13). Ethiopia agricultural Statistical report on livestock and livestock characteristics.
- Lobago F, Bekana M, Gustafsson H, Kindahl H (2006). Reproductive performance of dairy cows in smallholder production system in Selalle, Central Ethiopia. *Tropical Animal Health and Production*, 38: 333-342.
- Abera B (2016). Challenges and opportunities of investment on dairy sector of Ethiopia. A Review, Munich, GRIN Verlag, <https://www.grin.com/document/349085>.
- Central Statistical Authority (CSA), (2009). Report on livestock and livestock characteristics; Volume II, Agriculture Sample Survey 2008/09.
- Pervaiz K. Ahmed, Mohammed Rafiq, (2003). Internal marketing issues and challenges, *European Journal of Marketing*, Vol. 37 Issue: 9, pp.1177-1186.
- Alganesh T (2002). Traditional milk and milk products handling practices and raw milk quality in Eastern Wollega. MSc Thesis. Haramaya University, Ethiopia.
- Debela B (2016). Traditional butter preservation techniques and Comparison of their efficiency through Determination of microbial quality and Organoleptic properties of butter in west shewa Zone, Oromia regional state, Ethiopia. MSc Thesis. Ambo University. pp. 106.
- Eyassu S and Asaminew T (2014). Small-scale milk processing, utilization and marketing of traditional dairy products in bahir dar zuria and mecha districts, northwestern Ethiopia. *J. Food Technol. Res.*1(2):122-132.
- Ibrahim H and Olaloku E (2000). Improving cattle for milk, meat and traction. International livestock research institute (ILRI) manual 4 Nairobi, Kenya. 135 Pp 28-29.
- Etgen WM and Reaves PM (1978). Dairy cattle feeding and management. 6th ed. New York: Saunders. Pp. 274.
- Amin RU (2014). Nutrition; its role in reproductive functioning of cattle a review, 2(1),pp. 1-9.
- Falvey L (1992). Livestock Development Assistance: Australia's experience, paper presented to the sixth congress of the ASEAN- Australian association of animal production, Bangkok, Thailand, November 1992.
- ESAP (Ethiopian Society of Animal production), (1995). Ruminant livestock development strategy. Newsletter of the Ethiopian Society of Animal production (ESAP), vol.3, no.1 and 2, (Addis Ababa, Ethiopia).
- ILRI (1996). Annual project report, ILRI, Addis Ababa, Ethiopia 2-4.
- Azage T and Alemu G, (1998). Prospect for peri- urban Dairy development in Ethiopia, Ethiopian Society of Animal production (ESAP) publication No. 5. Addis Ababa. Ethiopia.
- Sintayehu Y, Fekadu B, Azage T, Berhanu G (2008). Dairy production, processing and marketing systems of Shashemene, Dilla area, South Ethiopia. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 9. ILRI (International Livestock Research Institute), Nairobi, Kenya. P 62.
- Getachew F (2003). Milk and Dairy Products, Post- and harvest Losses and Food Safety in Sub-Saharan Africa and the Near East. A Review of Dairy Sector -Ethiopia. FAO Prevention of Food Losses Programme. FAO, Rome, Italy.
- ILCA (International Livestock Center for Africa), (1992). Annual Report. Addis Ababa, Ethiopia, Pp. 2-11.