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Financial Loss Due to Diseases in Dairy Farms in Bishoftu Town, Centeral Ethiopia

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Abstract: The aim of the survey was to quantify the financial loss associated with various health problems in the dairy farms and to assess major health problems of small holder dairy cattle under intensive production system in Bishoftu town, Ethiopia. A semi-structure questionnaire format was designed to estimate financial losses associated with treatment, disease and reproduction of dairy animals owned by small holders and large scale dairy farms with particular emphasis on major dairy animal health problems that cause major loss. About 133small holder dairy owner respondents and large scale were selected at random and interviewed using pre-tested, semi-structured questionnaire. It appeared from the study that mastitis (23.08%), injury (11.54%) internal parasites (10.58%), hypocalcaemia (10.58%) were identified as the most frequently occurring diseases. The results of the survey ranked mastitis as number one disease of dairy animal. The overall mortality of calves, cows and heifers over the last 12 month was 46.43%, 32.14 and 21.43% respectively. The average cost of drug, vaccine and veterinary service costed350.4, 534.44 and 383.67 Birr per farm, respectively while the cost associated with mortality was 8073.64 Birr per farm per annum. The average farm and animal level total health cost and veterinary service cost per year was also calculated to be 2968.50, 1268.54, 414.76 and 113.43 Birr, respectively. High feed price was the major constraints of dairy farm in the study area with average price of 71058.41 Birr per farm and 8261.16Birr per animal per year. Almost all of the dairy owners have access to modern treatment but no traditional treatment used because the owners are aware of modern treatment and its advantage to get effective measure. About 100(75.19%) of the owners get veterinary service from private veterinarian clinics, the rest 33 (24.8%) from public veterinary service and about 20(15.03) owners from both public and private. It was suggested that proper animal management, cleanliness and good hygiene on dairy farms and practices of mastitis control measures such as under disinfection and dry-cow therapy and adequate veterinary service would help to alleviate cattle health constraint in the study area.

Key words: Mastitis · Hypocalcaemia · High Feed Price · High Veterinary Service Cost

INTRODUCTION

Ethiopia has about 41 million heads of cattle that makes the country first in Africa [1]. Livestock production is an important component in local economies at both the national and farm household level, where cattle constitute the main livestock species kept by farmers. The main source of milk in Ethiopia is the cow and the cow's milk constitutes 83.4 % of the total annual milk output [2]. In view of its ability to generate significant amount of daily cash income and its contribution to the improvement of the livelihoods of very poor people, dairy production is becoming increasingly important in many developing countries including Ethiopia. The dairy sub-component has proved to be practically vital, especially in the smallholder sector where milk is an important source of protein to young children and supplementary income to often cash-starved farm households. The dairy cow is biologically efficient animal in converting inedible roughages to milk. A ruminant can obtain as much as 70% of thetotal feed intake from non-human food sources such as forages and non-protein nitrogen [3]. This places the dairy cow in a strong competitive position as a major supplier of high quality human food now and in the future.

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Dairy industry makes efficient use of resources and offers opportunity for profit to those concerned with the production, processing and distribution of milk and dairy products. Further to this, due to the large numbers of current and potential producers, the smallholder dairy production has the greatest potential and thus provides the best basis for increasing national dairy production. It is for these reasons that dairying in the developing countries is considered an important instrument of social and economic change and is identified with rural development [4].

For years or decades, Ethiopia ranked first in cattle population in Africa, but the dairy industry is not developed even as compared to east African countries like Kenya, Uganda and Tanzania. Regarding the dairy production, the national milk production remains among the lowest in the world, even by African standards [5].

Ethiopian cattle herd is mainly usedfor the milk production. Milk production can vary by regions of Ethiopia. This depicts that Oromia region produces 1.3 Billion liter per year making it the leading milk producing region. SNNP is the second largest milk producing region with an estimated total of 572 million liter that isfollowed by Amhara region and Tigraythat produce 506 and136.7 million liters. The least milk producing region is Dire Dawa producing 3.1 million litters annually. Average milk production is below the national average in those regions with the most dairy cattle: Oromia, Amhara, Tigray and SNNPRS regions produced1.2 liter. The average daily milk production per head in the Oromia region's was 0.6 liter [6].

Despite the large number of the livestock in Ethiopia the sector is characterized by low productivity and hence, income derived from this sector of agriculture could not impart significant role in the development of the country's economy [7]. The low productivity was attributed to the low genetic potential of indigenous cattle, poor nutrition and reproductive performance, inadequate management, high disease incidence and parasite burden. Some diseases influenced productivity and fertility of herds and others caused losses due to mortality and morbidity, loss of weight, slow down growth, poor fertility performance and decrease physical power.

Quantification of losses due to diseases in the livestock sector would adequately support the decision-making process in optimizing animal health management. In India, economic losses due to animal diseases were quantified [8]. The presence of disease resulted in lower output (e.g. lower milk yields), than expected and/or in higher levels of input use, e.g. more veterinary inputs [9]. The presence or absence of disease may have an effect not only on production but also on prices (for both outputs and inputs); for example, increased use of veterinary input to control disease was suggested to result in increased national output of livestock products, which in turn may result in lower prices for output [10].

In Ethiopia, the aggregate annual economic losses from animal diseases through direct mortality and reduced productive and reproductive performance were estimated at US$ 150 million [11](Yigezu, 2000).The uncontrolled diseases in Ethiopia caused devastating effects both to the producers and to the national economy [7]. Though many studies were conducted on the prevalence of various diseases in the dairy sector in Ethiopia, studies that are intended to estimate the financial losses due to various diseases are scant; therefore the current study is initiated to fill this knowledge gap.

Otte and Chilonda[12] defined the total cost of disease as a sum of direct and indirect production losses (L) and the control expenditures (E) and they suggested that the cost of a particular disease varied between production systems. Estimation of expenditures associated with a particular disease represents valuable economic information that provides data for a decision whether to use control measures and assessment of their benefits.Although efforts were made towards dairy development and various research projects have been undertaken in some parts of the country, the outcome and impact have not been satisfactory. Most development and research projects in dairying were conducted within and/or around Addis Ababa milksheds[13].

MATERIALS AND METHODS

Description of the Study Area: The study included small holder and large-scale commercial dairy farms that found in Bishoftu town. Bishoftu is located in the South East of Addis Ababa in MisrakShewa zone Oromia Region, about 47.9 km from Addis Ababa. It is also 9°N latitude and 4°E longitude with an elevation of 19m.a.s. The topography is generally flat with many small crater hills mountains. The climate is characterized to be bimodal two rainy seasons in the year. Main rainy season covers the period from July to September while the short rainy season "Belg" occurs between March and May. The average annual rainfall during the last 35 years is 825.4mm, the average daily temperature is 17.98° and the average relative humidity is 52.4%. Crop production is the dominant activity. Livestock also plays an important role in the farming system [14]. Many commercial dairy farms and small dairy holders are found in Bishoftu, who sell

their production to agro-processing industries and to cafes and hotels in the capital.Exotic breeds and cross breeds of Holstein Frisian and high productive local breeds such as Borana breed are mainly kept by dairy holders.

Study Animals: The study population includeddairy animals that are owned by small holders and large-scale dairy farms found in the town. From those farms, study sample farms were randomly selected for the survey and questionnaires were used to determine financial loss associated with diseases, reproductive problems as well as treatment costs. Different animal species and animal types (different age groups and sex groups) kept on farms were recorded with more emphasis on dairy cattle health problems and associated costs. Causes of those financial losses were also identified.

Study Design

Sample Size Determination: Simple random sampling was used to select study farms from the small holder dairy owners whereas all large scale dairy farms were included in the survey. About 133 small holders and large-scale dairy farms were selected randomly to quantify loss associated with their dairy animals. All dairy animals that are owned by small holder and large scale were considered as study animal.

Study Methodology

Questionnaire Survey: A single visit semi- structured questionnaire format was designed to estimate financial losses associated with treatment, death losses, production losses and reproductive problem of dairy animals owned by small holder and large-scale dairy farm with particular emphasis on major dairy animal health problems that cause major loss. About 133 small holder dairy owner respondents will be involved in the interview to determine the loss associated with their dairy animals. The questionnaire is framed in such way that small holder dairy owners could give information that are recent and easy to recall (financial losses during the last one year) and it was filled directly by interviewing randomly selected small holder dairy owners and large scale dairy owners from the town through the face-to-face interviewing technique.

The selected respondents were interviewed using pre-tested, structured questionnaire. The questionnaire was developed in according with the objective of the study and designed in a simple manner to get accurate information from the dairy farm owners. The questionnaire was mainly based on socio-economic household characteristics, mortality and access to veterinaryservices, drug cost, vaccine cost and veterinary service cost per year. Clinical symptoms perceived by the respondents were used for identification of a particular cattle disease.

Quantification the Amount of Loss: The amount of loss was quantified in such way that randomly selected small holder dairy owners and large scale owners will be interviewed to tell the amount of money they loss due to treatment in the past one year round and the associated disease causatives for the loss, died animals in the past one year round also included to calculated total health cost. To calculate the total cost it was grouped in to total health cost that include total drug cost, total vaccine cost, total veterinary service cost and total death cost and total veterinary cost that include all the above costs without death cost.

Data Collection and Statistical Technique: Data was entered and stored in Microsoft excel program. Descriptive statistics such as means, percentages and frequencies were used to summarize the data.

RESULTS

Household Characteristics: Out of 133 respondents 126 were small holder house and 7 were large scale farm as presented by Table 1, the majority of the owners are in the age group of 3-45 (51.13%) and farm management is often done by male individuals 89(67%).

The majority of the respondents are within education level of secondary school 53(39.85%), primary school 23.31% and college 23.31% are in second position next to secondary school. About 54.5% of household members are within the age group of 16-5 included under working age group. The high percent of male household owners have reported employee (3.16%) and dairy farming (21.43%) as primary occupation and the majority of female household heads use dairy farming 72.22% as primary activity. The majority of the dairy owners live in urban 95(75.4%) and the rest in peri urban 31(24.6%). As explained by the owners the high percent of them have their own house 18(85.71%), rent from private 1(.79%) and about 17(13.49%) rent from municipality.

Herd Composition, Livestock Management: The majority of the respondent own cattle, sheep, goat and somewhat equine, although according to the data collected the breed of the majority of their cattle were exotic 95(83.4%), cross breed 158(13.81%) and local breed 36(3.15%). The low number of local and cross breed indicate that livestock

Table 1: Socio- economic characteristics of the respondents in the study area

Variables	Categories	Frequency (%)	Primary occupation of husband and wife	Frequency (%)
Age of owners			Husband	
	<3	3(2.26)	Dairy farming	27(21.43)
	3-45	68(51.13)	crop cultivation	3(2.38)
	45-6	44(33.8)	Self employ	7(5.56)
	>6	18(13.53)	Government employee	38(3.16)
House hold head			NGO employee	2(15.87)
Sex	Male	89(67)	No work	29(23.1)
	Female	44(33)	Poultry farming	2(1.59)
Education level	Illiterate	18(13.53)	Wife	
	Primary	31(23.31)	Dairy farming	91(72.22)
	Secondary	53(39.85)	Crop cultivation	1(.79)
	college	31(23.31)	Self employ	6(4.76)
Household size			Government employ	5(3.97)
	<6	45(7.25)	Non gov employ	5(3.97)
	Jul-15	164(26.41)	No work	18(14.28)
	16-5	34(54.75)	Secondary in come	
	51-65	65(1.47)	Husband	
	>65	7(1.13)	Dairy farming	13(1.32)
			Crop cultivation	4(3.17)
			Self employ	1(.79)
			Non gov employ	2(1.59)
			No work	16(84.13)
			Wife	
			Dairy farming	4(3.17)
			Non gov employ	2(1.59)
			No work	12(95.24)

Table 2: Herd composition and husbandry related factors

Herd size by animal type	Overall	Small (1-4)	Medium (5-1)	Large (>1)
Lactating	451 (39.42)	85 (5.4)	171 (42.54)	195 (33.97)
Pregnant	24 (17.83)	33 (19.64)	62 (15.42)	19 (18.99)
Dry	32 (2.79)	4 (2.38)	5 (1.24)	23(4.)
Heifers	199 (17.4)	16(9.52)	76 (18.91)	17 (18.64)
Female calves	184 (16.8)	22 (13.1)	77 (19.15)	85 (14.81)
Male calves	14 (1.22)	4 (2.38)	3(.77)	7(1.22)
Bulls	42 (3.67)	2 (1.19)	7 (1.74)	33(5.75)
Ox	18 (1.57)	2 (1.19)	1(.25)	15(2.61)
Total cattle	1144	168 (14.69)	42 (35.14)	574 (5.17)

production in that area is highly concerned with gaining more products by using high producing cattle breed. The management condition also associated with herd composition, livestock management were almost all indoor type and the result shows out of 133 respondents (small holder and large scale), 131(98.5%) respondents use indoor type of management for their cattle and the rest 2(1.5%) use outdoor type of management.

As a result the farming system is almost all intensive type because the production system is mainly market oriented with profit maximization by improving management practices such as health condition, providing good feed type selected for producing animals, by improving sanitary condition and also taking immediate action to disease occurrence (calling veterinary doctors if problem happened to their animals). Data on herd composition shows that majority of owners have cattle with medium herd size 6(45.11%), small 55(41.35%) and large herd size 18(3.53%) The majority of the respondents 132(99.25%) use AI for breeding system.

Milking System and Purposes of Keeping Dairy Animals: The purposes of engaging in dairy farms in the area include 2(1.5%) for home only, 15(78.95) for market only and 26(19.55%) for both home and market, which shows the dairy production system in the area is market oriented. In the study area all of the owners indicate that milking system is manual with frequency of twice per day

Table 3: Average milk production per cow per day

Total daily milk production/day	Percentage of owners	Average sell of milk/day	No of lactating cow	Respondentsno	Average monthly income
<5	3(2.26)	2	<5	12(9.23)	337
5-1	11(8.27)	93.25	5-1	7(5.26)	8485.71
11-15	22(16.54)	166.25	11-15	1(.75)	14
>15	97(72.93)	2253.5	>15	5(3.76)	3

Table 4: Type of major feed stuff and its amounts used by the dairy farms

Feed type	`Proportion of respondents	Feed kg/year	Average price /kg	Kg feed/animal/year
`Communal grazing	2(1.5)			
Straw	13(97.74)	822898	2.4	82.4
Hay	23(17.29)	36575	2.38	95
Concentrate	125(93.98)			
Nug cake	9(67.67)	239611	6.2	275.41
Furusca	125(93.98)	919	3.5.	143
Atella	6(4.51)			
Poultry feces	96(72.18)	35165	2.6	592
Mixed	1(7.52)	24	3.95	384.9
Silage	2(1.5)	144	1	72

and about 2(1.5%) owners do not sell milk and milk product, whole milk is sold by 131(98.49%) owners. They sell the milk product to processing plant 111(84.73%), to restaurant 9(6.87%), to individual consumers 8(6.12%) and to intermediate supplier 3(2.29%) out of 131 owners that sell milk product.

The processing plant in the study area is well organized and not far from their home this is the reason why the majority of the owners sell their milk to processing plant. Out of 451 lactating cows indicated on the table of herd composition total daily milk of 4978L is produced, on this table of average milk production majority of the owners have lactating cows <5 with 337 average monthly income and total daily milk production of is >15Lwith average sell of milk 2253.5 birr for the majority of the owners. The price of milk also considered and those who sold to individual consumers with average sell of 11birr, those who sold to intermediate supplier with average sell of 1.5birr, those who sold to restaurant with average sell of 12.33birr and those who sold to processing plant with average price of 9.5birr.

Water Source and Frequency of Watering: In the study site they have water sources for watering animal like pipe water, hand dung well and borehole. The majority of the owners out of 133 respondents 115(86.47%) use pipe water for watering their animals and the rest 18(13.53%) use hand dung well and the frequency of watering is more of twice a day 91(68.42%) and the rest 42(31.58%) is trice a day. when shortage of water pipe encountered 3(22.56%) of respondents use borehole and hand dung well. According to the previous table availability of drinking water is not the major constraints of dairy farm in the area.

Livestock Feed: The majority of the respondents indicate that straw, hay, concentrate and poultry feces are the major livestock feed type. The respondents also reported that feed availability depends on seasons also there is price fluctuation depending on the availability. But feed shortage is not the main problem it is the medium and low problem as shown on Table 7 of identified dairy constraints to maintain market-oriented diary production. According to the result of the table the major feed those feed to the animals are straw, concentrate and poultry feces.

Sanitary Condition of the Barn: As observed during the field survey the housing condition of dairy farms were found to be in good condition with the majority of the barns had well-constructed roofs, walls and concrete floor. Animal houses are separated from their own houses and the majority of the respondents keep different specie animals in different houses. The sanitary condition of the also observed and the result on the table indicates that odor, waste drainage, adequacy of light and ventilation status of the barn is good, although the high degree of cleanness of floor and animal stocking rate relays on medium degree.

Table 5: Sanitary condition of barn

Conditions	Poor No (%)	Medium No (%)	Good No (%)
Odors		5(37.59)	83(62.4)
Waste drainage	5(3.76)	63(47.37)	65(48.87)
Cleanness of floor	2(1.5)	77(57.89)	54(4.6)
Cleanness of animal	4(3)	73(54.89)	56(42.1)
Adequacy of light	4(3)	52(39.9)	77(57.89)
Ventilation status		44(33.8)	89(66.92)

Table 6: Reasons of culling and their importance (%)

Culling criteria	Frequency	Percent
Disease	25	18.8
Low production	129	96.99
Reduced reproductive	65	48.87
Other		
loss of space	4	3.8
when male calve born	69	51.88
old age	35	26.32
old age andwhen male calve born	28	21.5

Culling Criteria of Livestock: Respondents sold livestock for different purposes for house hold expense and to replace them with more producing cattle, due to low production and diseases/outbreak, respectively. Respondents argue that they don't have specific time for selling livestock but mostly selling is under taken during holidays and cultivated season. Respondents reported that they cull animals from the herd based on age, sex, reproductive capability, diseases and production level. The result shows majority of the respondents sold their animals due to low production, reduced reproductive performance when male calve born and due to loss of space. But there are also minor reasons these are disease and when animal become aged.

The Severity of Major Constraints in Dairy Farms: In the study area the main problems of dairying are listed below in Table 7 and according to the degree of perceived severity. The result shows that out of 133 respondents 13(97.74%) have high degree problem of high feed price followed by shortage of land for expansion of dairy farm 87(65.41%) this indicate that they have interest to increase their income by increasing cattle number and for this purpose additional land is needed for expanding dairy farm but scarcity of land limit their desire to do so. The third high problem of dairy farm in the area is inadequate capital for dairy expansion 58(43.61%) these respondents need to expand dairy farm but they do not have enough capital apply their need.

According to the results, the high feed price is not a limiting factor for those who want to have dairy farms and for those who want to expand their dairy farm. The other factor limiting expansionof the dairy farms and affecting the economic returns from the farms was inadequate space for livestock housing 21(15.79%). In this result prevalence of disease play minor role in dairy farms of the area and it is included in the low degree of problem this is because of improved management conditions, including sanitary condition and good housings with well constructed barn with roof, wall and concrete floor.

Various Diseases That Had Occurred in Dairy Farms: A total of 14 health problems were recorded in the studied dairy farms. Among the diseases and health problems mastitis 24(23.8%), injury 12(11.54%), hypocalcaemia 11(1.58%), GIT parasite 11(1.58%), systemic infection 8(7.69%), uterine prolapsed 5(4.81%) and dystocia 5(4.81%) were frequently detected in the dairy farms.

Mortality of Livestock During the past One Year (25/213): During the past one year a total of 28 animals died from due to different causes. According to the respondent's explanation major reason for calve mortality was dystocia, reason for heifer mortality was urolathiasis and infection and the major reason for cow mortality was injury and uterine prolapsed. Over all observation of mortality of dairy cattle reveals that the number of died animals was very few compared to the total number of animals in all dairy owners, this indicate that good management condition including health care and good sanitary condition as explained on the table of sanitary condition.

Treatment and Prevention: Almost all of the dairy owners have access to veterinary service but no traditional treatment used because the owners are aware of modern treatment and its advantage to get good response. About 1(75.19%) of the owners get veterinary service from private veterinarians by calling the person when a problem observed in the farm, the rest 33(24.8%) get veterinary service from public veterinary service and about 2(15.3) owners get service from both public and private veterinary service. The owners complain that high cost medication since they are using private vet service as indicated on major constraints of dairy farms. Drug price is the medium problem for majority of the respondents 84 (63.16%). Among the preventive measures all of the owners vaccinate their animals. During the time of vaccination, professionals often come to their home to give the service and farm owners pay for them by collecting money by organizing farm owners in the neighborhoods as the medication is given to all nearby areas at the same time.

Table 7: Identified dairy problems/constraints according to their degree of importance

Reported constraints	High	Medium	Low	No problem
Feed shortage	14(1.53)	49(36.84)	51(38.35)	19(14.29)
High feed price	13(97.74)	3(2.26)		
Prevalence of disease	2(1.5)	5(37.6)	79(59.4)	2(1.5)
High price of veterinary drug	1(7.52)	84(63.16)	37(27.82)	2(1.5)
Inadequate veterinary service		9(6.77)	51(38.35)	73(54.89)
Inadequate drinking water	12(9.2)	5(3.75)	3(22.56)	86(64.66)
Inadequate water for hygienic activity	5(3.76)	11(8.27)	32(24.6)	85(63.91)
In adequate space for livestock housing	21(15.79)	62(46.62)	24(18.5)	26(19.55)
In adequate land for expanding dairy farm	87(65.41)	7(5.26)	16(12.3)	23(17.29)
Difficulty in livestock waste disposal	3(2.26)	31(23.31)	8(6.15)	19(14.29)
Inadequate capital for dairy expansion	58(43.61)	2(15.4)	39(29.32)	16(12.3)

Table 8: Frequencies of major diseases and health problems of dairy cattle according to therespondents' perception in the studied farms.

Health problems	Frequency	Percent	Treatment cost	Percent
GIT parasite	11	1.58	25	4.3
Uterine prolapse	5	4.81	225	4.83
Abortion	1	.96	35	.75
Actinomycosis	1	.96	5	.11
FMD	1	.96	75	1.61
TB	2	1.92	7	1.5
Bloat	4	3.85	2	.43
Colic	1	.96	4	.86
Dystocia	5	4.81	14	2.23
Foot root	4	3.85	129	2.77
Hypocalemia	11	1.58	191	4.98
Injury	12	11.54	265	5.59
Mastitis	24	23.8	12	21.88
Metritis	1	.96	2	.43
Respiratoryproblem	3	2.88	79	1.69
Simple indigesion	4	3.85	74	1.59
Systemic infection	8	7.69	28	6.1
Urination Problem	3	2.88	44	.94
Wound	3	2.88	7	1.5
Total	14	1.	4661	1.

Table 9: Major causes of mortality in dairy farms in the study area as perceived by the respondents

Variable	Frequency	Percent
Reason for calf mortality		
Injury	3	1.71
Dystocia	5	17.86
Infection	1	3.57
Simple indigestion	7	14.29
Reason for heifer mortality		
Urolathiasis	1	3.57
Dystocia	3	1.71
Simple indigestion	2	7.14
Reason for cow mortality		
Uterine prolapse	1	3.57
Hypocalemia	1	3.57
Kidney failure	1	3.57
Dystocia	3	1.71
Simple indigestion	2	7.14
Infection	1	3.57

Table 10: Average costs per farm and animal levels per year

Variable	No	Mean	Std	Min	Max
Average cost per farm					
Drug cost	133	35.4511	688.8793		4
Vaccine cost	133	534.4436	389.548	28	35
Vet service charge	133	383.6692	1653.17		18
Death loss	22	1276.91	6557.74	4	18273
Veterinary cost	133	1268.564	426.765	28	3965
Health cost	133	2968.54	6525.893	28	45
Feed cost	133	7158.41	15558.4	2838.3	12926
Average cost per animal					
Healthcost	133	414.758	142.414	1.4	6565
Veterinary cost	133	113.4287	12.1198	1.4	53
Feedcost	133	8261.161	2939.391	36	15597.6

Financial Loss Associated with Various Diseases: The loss due to various diseases and health problems were calculated for different veterinary costs including cost of drug, cost of vaccine and cost of veterinary service and total death cost. The loss due to various diseases was calculated and it is divided into total veterinary that including cost of drug, cost of vaccine and cost of veterinary service. Theother cost grouped as total l health cost includes the veterinary cost and costs associated with death loss. The average cost of drug was 35.45 birr while that of vaccine 534.44 birr. The farms also incurred average cost of veterinary service of 383.67 birr while the cost associated with mortality was 1276.9 birr per farm per annum.

The average farm level health cost and total veterinary cost per year was also calculated to be 2968.5 birr with an average of 414.76 birr per animal and 1268.54 birr with an average of 113.43 birr per animal per year, respectively. Among the diseases the frequency and treatment cost of hypocalcaemia and mastitis were higher than the others with 4.99% and 21.88% per year. Accordingly, the two diseases accounted for 62.87% of the total amount. This is because cost of treating hypocalcaemia is expensive about 1736 birr per treated animals per year also the frequency of mastitis is greater than other diseases with treatment cost 425 birr per head per year.

DISCUSSIONS

Disease situations can result in loss due to decreased milk production, culling of animals (cows), death of animals [15]. So to be proftitable, animal production requires good management of helatly animals. Almost all of farms studies use door management system (Zero grzing) in the study area. Cows are managed in closed houses that had ventilation with different types of floor structure throuhout the day. The feed on which the animals are fed include crop residue, hay, commerical concentrate. Other feed sources such as poultry feces, silage and “Mixin” (which prepared from mixture of wheat bran, concentrate and others). Cows are hand milked with twice per day milking frequency. Majorty of the animals are watered from pipe with adequate amount since dairy cattle do not tolerate water deprivation, so adequate and clean fresh drinking water should be available at all times. Milk production influences the water requirement of the animals. And thus decreased water intake reduces milk production [16]. The major technique for breeding system is Artifical insemination also few use natural mating. The majority of the respondents sold their animals due to low production, reduced reproductive performance when male calve born and loss of space. But there are also minor reasons these are disease and when animal ecome aged. There was regular vaccination and the majority of the owners call private veterinary doctor for treatment when ever disease occurred.

The large percent of age and family size of the repondents wa within the age group of 3-4 and 165 respectively. This shows that majority of the houseld members are within active age group and may be useful as labor source. The table also shows that 86.47% of the owners were grouped under primary school, secondary school and college education level which shows that the majority fo owners in the study area were literate. The majority of the farm heads were male 67% wheras female 33% showing that dairying in Bishoftu town is manly male domain. It is observed that the majoiruty of the respondents 75.4% leave in the urban and the rest are peri urban also 18 (85.71%) owners had their own house. Dairy farming experience of the respondents ranges from less than 5 years 24 (18.5%) to more than 15 years 34 (25.56%) and the range 5-1 years 49 (36.84%) is greater than the rest.

The main objective of milk production in the study area was for sale 15(78.95%), which means dairy production system in the area is market oriented and majority of owners sell milk and milk prouduct to processing plant 111(84.73%). Now a day, there are few milk processing plant in Bishoftu that is well organized and not far from their home this is the reason why the majority of the owners sell their milk to processing plant. The presence of processig plant has many advantages to the dairy owners such as selling institutions are potential catalysts for stimulate smallholders' entry into the market and promote growth in rural communities [17]. The indigenous cows, which are generally low milk producers, are the major soruce of milk in ethiopia and they account for 97% of the country's annual milk production and 75% commerical milk production [18]. But according to the results of the present study, majority of cattle were exotic 95 (83.4%) suggesting that the exotic breed composition of urban and peri-urban farms is increasing. [19] also reported that different dairy development projects were launched in different parts of the country. The distribution of exotic dairy cattle, particulary the Holstein Friesian, in different parts of the country, especially around the major urban areas, also contributed to the further development of dairying in ethiopia which agrees with present study. The reslut of herd composition shows that majority of owners have cattle with medium herd size 6(45.11%). The majority of the respondents 132(99.25%) use AI for breeding system.

Different health problems and diseases were observed during the field survey. These diseases have associated with different level of prodution losses. As explained by [2] disease can affect production efficiency of dairy farms by reducing reproductive and productive performances, or by reducing the life of expectance or contributing, to reduce culling value of the cow as also observed in this the study. Disease was not perceived by farmers as the major treat to the dairy cattle production in the study area. Most of respondents regarded diseases as low and medium for dairy farms, while they gave more weight to high feed price in the study area. The sanitary condition of the barn was observed and the odors, waste drainage, adequacy of light and ventilation status of the barn were found to be good. This may be considered as a reason for perceived low disease problem in the study area. Since production and management of milk cows include general aspect of husbandry practice, environmental hygiene, housing, health care, body condition, management of lactationand management of fertility [21]. Among the diseases and health problems mastitis 24(23.8%), injury 1(9.62%), hypocalcaemia 13(12.5%), GIT parasite 7(6.73%), systemic infection 8(7.69%), uterine prolapsed 5(4.81%) and dystocia 6(5.77%) were frequently detected in the dairy farms. According to respondent's observation dairy cattle in the study area, mastitis was reported the most frequent disease compared to the others in the study area resulting decreased milk yield, premature culling of cows, milk discard and high treatment cost. The reason for high report of mastitis is medium hygiene of floor of the barn and medium problem of space for livestock housing for the majority of the respondents as indicated on the table 5 and 8.

The frequency of mastitis perceived in the present study has variation with report of (Belay *et al.* [22]) who reported mastitis frequency 19 (35.2%) on survey of major disease affecting dairy cattle in Jimma town. The reason for this is the presence of mastitis control measure such as good sanitary condition, as well as good management condition and to be profitable animal production [21] in the study area. Hypocalcaemia was reported as the second most important disease due to highly producing dairy animals involved in the study area. Parturient paresis is a metabolic disease of mature high producing dairy cows predominantly during the first 488hrs of parturition [16].

Gebre-egziaber, *et al* [23]reported that gastro intestinal helimenthiasis commonest disease affecting cattle in crop-livestock production system areas of Ethiopia but low occurrence was observed in the study area. The lowest occurrence of GIT parasite in this may be due to intensive management system of the animals and better deworming practices. But Belayneh [24] and Tesfahiwot [25] reported thatGIhelimenthisis from Ginchiwastershed and Adaliben woreda as major animal health problems of small holder cattle production.

In this survey reproductive problems such as dystocia 5.77% and abortion 2.88% were important health problems of cattle as mentioned by respondents. This may be due to uncontrolled breeding, production and management systems and prevalence infectious agent. Kassahun [26] and Yesuneh [27] reported the prevalence of abortion in different parts of Ethiopia to be 6.3% and 2.23% respectively. The prevalence of dystocia in the present study is comparable to the prevalence reports of 7.5% [28] and 7.8% [29] from farms in Holleta. The high occurrence of dystocia may vary due to the fact that several factors such as age and parity dam, as well as breed of the sire may influence its occurrence [7].

The overall mortality of calves, cows and heifers over the last 12 months was 46.43%, 32.14 and 21.43% respectively. It was found that more calves died than the other groups of dairy cattle. This might be due to poor management practices of calves and their increased susceptibility to diseases and environmental stresses than older animals. This is in agreement with findings of Gebre-egziabiher *et al.* [23] who reported decreasing mortality as age of the animal increases, mortality decreased probably because of improved adaptation of animals to both climatic and nutritional factors. As shown in Table 1, the respondents reported that mortality due dystocia and simple indigestion was identified as the major causes of loss of calves in the study area. It was found that dystocia resulted in death losses of calve 17.86%, heifers, 1.71% and cows 1.71%. Similarly, simple indigestion affected 14.29%, 7.14% and 7.14% of calves, heifers and cows, respectively.

Almost all of the dairy owners have access to modern animal health core and none of them used traditional treatment. Because the owners are aware of the importance of veterinary service compared to traditional remedy. About 75.19% of the owners get veterinary service from private veterinarians (on call) when health problem is observed, the rest 33(24.8%) get veterinary service from public veterinary service and about 2(15.3) owners use both public and private veterinary service. The owners complain that high cost of medication since they use the private services and thus cost of medication was considered as major constraints for dairy farms. As explained by Payne and Willson [3] disease prevention has to be adjusted to the management system and the disease pattern in the herd, among the preventive measures used in the study area all of the owners vaccinate their animals annually and they pay the cost of vaccine.

In the study area various diseases affecting dairy cattle and its financial impact were studied. Accordingly, the results show that disease affects the return from the dairy owners by increasing the cost of drug, vaccine and veterinary service in addition to loss due to mortality and decreased production performances. According to Gray [31] disease is one of the major setbacks to the profitability of dairy farm. As reported by Ganeshkumareta *et al*. [8] quantification of losses due to diseases in the livestock sector would adequately support the decision-making process in optimizing animal health management. In this study it also gives information, improving the management system will reduce the loss. The average cost of drug per farm was 35.45 birr while that of vaccine was 534.44 Birr. The farms also incurred average cost of veterinary service of 383.64 Birr while the cost associated with mortality was 874.71birr per farm per annum. The average farm level total health cost and total veterinary cost per year was also calculated to be 2968.5 and 1268.54 Birr, respectively while the average animal level health cost and veterinary cost were 414.76 and 113.43 Birr per per year, respectively.

Among the diseases, the frequency and treatment cost of hypocalcaemia and mastitis were higher than others with 4.99% and 21.88% of the total disease occurrence. Accordingly, the two diseases accounted for 62.87% of the total amount. It is also explained by other author that mastitis cause heavy economic loss to dairy farms [32]. According to the authors, mastitis is known as a disease that causes heavy economic losses to milk producers and to the dairy industry by reducing the quantity and quality of milk output, increased veterinary expenses due to excessive use of medication, increased risk of residues in the milk and meat. [33] reported that the estimated economic losses from mastitis in the urban and peri-urban areas of Addis Ababa (Ethiopia) to be US$ 58 per cow per lactation but in this case the cost of treatmentmastitis was 425Birr per head per year and cost of treating hypocalcaemia was found to more expensive (1739 Birr per treated animals per year).

CONCLUSION AND RECOMMENDATIONS

It appeared from the study that mastitis, hypocalcaemia, GIT parasite and injury were the major diseases affecting dairy cattle production in the study area. It could be suggested that problem of mastitis would be alleviated through proper animal management, cleanliness and good hygiene on dairy farms and practices of mastitis control measures such as udder disinfection and dry-cow therapy and internal parasites would be alleviated by spraying and deworming). As hypocalcaemia was the most important disease due to highly producing dairy animals involved in the study area prevention should be done by maintaining low level of calcium and magnesium in feed during dry period. As the consequence these diseases affect the return form the dairy farms in the study area. So, improved disease control may maximize the profit gain from the sector.

Livestock owner need to be introduced with the basic knowledge of animal health management

Development of proper animal health delivery system that could be extended to all livestock owner

To alleviate high feed price that is the major constraints of dairy farm introducing alternative forage developments (cultivated pasture) is mandatory but the majority or the owners were form urban area there is no enough space to cultivate pasture.

Using data generated from this study, which could be serve as basic line information, strategic disease control scheme should be develop to fight against infectious, parasites and metabolic diseases.

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