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Survey on major diseases affecting dairy cattle in Bahir Dar Dairy farms, North Western Ethiopia

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Abstract

This explanatory survey was conducted in Bahir Dar dairy farms from May 2014 to January 2015 to assess major diseases and mortality of dairy cattle in Bahirdar, Ethiopia. A single-visit-multiple subject formal survey technique was used to collect data from 79 small-scale dairy farming households were selected by using simple random sampling technique and was interviewed using pre-tested, structured questionnaire. Dairy cows were managed in closed houses with different floor type, wall type and roof type. Also they were managed under zero grazing in Bahir Dar dairy farms and semi grazing practice around Bahir Dar dairy farms. Internal parasite (13.8%), Anthrax (6.9%), Lumpy skin disease (6.9%), Bloating (5.2%) and Black leg (3.4%) were identified as the most frequently occurring diseases in the study area. Overall mortality of calves, heifers, cows and bulls over the last 12 months was 0.506 ± 0.272 , 0.038 ± 0.192 , 0.139 ± 0.524 and 0.025 ± 0.158 , respectively. Therefore, there should be improved animal husbandry practices and veterinary services to alleviate cattle health constraint in the study area.

Keywords: Internal parasite, anthrax, lumpy skin disease, bloating and black leg

1. Introduction

The livestock sector in Ethiopia accounts for 16% of the national (and 27-30% of the agricultural) GDPs, and 13% of the country's export earnings^[1]. Female cattle constitute about 55.45% of the national herd. Of the total female cattle population, dairy and milking cows' total 31,443,399, 11.46% dairy cows and 20.07% milking cows^[2]. And also in Ethiopia about 300,000 crossbred or upgraded cows are used for milk production under relatively improved management conditions in urban and peri-urban areas. The total milk production per year from cattle is 0.8 million tons out of 1.0 million tons from all the species put together in Ethiopia^[3]. According Yilma report, a total of 2.9 million liters of milk were produced from about 9.6 million cows at national level but Ethiopia far below recommended daily milk intake at 17 lt per capita, and even below the African-wide average in per capita consumption^[4]. However, the contribution of the dairy sector to the total household income is substantial. As reports shows, milk and milk products contributed 20-36% to the total farm income of smallholder farmers in the central highlands^[5] and up to 46% contribution to the household income in the Southern Ethiopia^[6]. Like most developing countries, Ethiopia's increasing human population, urbanization trends and rising household incomes are leading to a substantial increase in the demand for livestock products, particularly milk and meat. In order to meet the growing demand for milk in Ethiopia, milk production has to grow at least at a rate of 4 percent per annum^[7].

As many reports indicate diseases is one of major factors which have been affecting the dairy industry^[8,9]. Asaminew^[10] reported that the major constraints associated with milk production in Bahir Dar Zuria and Mecha districts were feed shortage, disease prevalence, poor genetic potential of local cows for milk production, inadequate artificial insemination services, and lack of milk collection center and shortage of farm labor.

Now a day small scale dairy farms of in and around Bahir Dar have been shifting from local dairy cattle to crossbreed dairy cattle, on which producing with indigenous breeds^[11]. However, milk production from crossbreed cattle often does not satisfy the increasing demand of milk due to different constraints of which disease is one of the major factors. Identifying cattle health constraints is important to design appropriate strategies that would help reduce disease prevalence and effects on sustainable milk production. Therefore, this study was initiated to assess the common cattle diseases affecting dairy farms presented in and around Bahir Dar.

2. Materials and Methods

No ethical approval was required as it is a survey based study; however, after obtaining consent from all the participants involved in the study, the data were collected.

2.1 Study area

This study was conducted at dairy farms found in and around Bahir Dar zuria district of Amhara region from May 2014 to January 2015. It includes two administrative districts (Bahir Dar town and Bahir Dar Zuria district). The area is characterized by uni-modal rainfall pattern, with rainfall distributed over the growing season (mid-May to mid-October).

Bahir Dar is the capital of Amhara National Regional State, located at 11° 35'N latitude and 37° 23'E longitude and situated at 580 km North West of Addis Ababa. It is surrounded by Lake Tana to the North, Yelmana Densa district to the South, River Abay and Dera district to the East and Mecha and Achefer Woredas to the West. It has mid altitude type of agro-ecology and located at an altitude of 1750-2300 m.a.s.l with an average ambient temperature of 28-30°C and it receives mean annual rainfall of about 800 mm (minimum) to 1250 mm (maximum) [12,13].

2.2 Description of the Farms, Sampling Procedure and sample size

Dairy farms were selected using simple random sampling technique. A total of 79 dairy farm owners were randomly selected in the study area and interviewed based on their voluntariness of farm attendants or owners for interview.

Dairy cows were managed in closed houses with different floor type like mud, Iron sheet, wood and stone, with different wall type like earthen, wood, cement and stone and with different roof type like iron sheet and plastic sheet. Dairy cows also managed under zero grazing in Bahir Dar dairy farms and semi grazing practice around Bahir Dar dairy farms. Most dairy farms clean twice a day and had ventilation. The main feed which dairy farms used was crop residue, hay, fallow grazing and concentrate feed. There has been supplementation of extra feed for their dairy cattle especially for lactating dairy cows all over the year. Cows are hand milked with twice per day milking frequency. The main source of water used in dairy farms was spring water, underground water, river water and pipe water. The breeding methods used in dairy farms were both artificial insemination and natural mating. Replacement of stock of the farms was mainly from their own stock. There was no regular vaccination but farmer get veterinary service when ever their animals sick by per time veterinarian.

2.3 Data collection

The selected respondents were interviewed using pre-tested, structure questionnaire. Questionnaire data was collected using a single visit multi subject formal survey technique [14]. Questioner was prepared to collect information about: socio economic house hold characteristics, major animal diseases and mortality, and farm attributes, such as: management system, system of housing livestock, hygienic practices on the farm and sources of replacement stock. All respondents were representative for their farm they may be owner, relatives or farm attendant. Each farm had their own per time veterinarian who diagnose and treat whenever they cattle sick and residents give us information based on what their per veterinarian told them and their indigenous knowledge of animal disease.

2.4 Statistical analysis

The data was analyzed using statistical package for social science (SPSS) software, version 20.0. Descriptive statistics such as means, frequency distribution and percentage were used.

3. Results and discussion

3.1 Household characteristics

Major household characteristics of the respondents are shown in Table 1. Results show that the average age of the respondents was 38.32 ± 12.44 years. The marital status of respondents 13.9%, 82.3%, 2.5% and 1.3% were single, married, divorced and widowed respectively. This indicates the majority of respondents were married and it has positive effect on stability and control and managing husbandry practice. Whereas educational status of the respondents was 49.4%, 16.5%, 21.5% and 12.7% was illiterate, read and write, elementary school and college school graduate and this shows the majority of respondents were low level of education and may lead low use of dairy innovations like use of modern dairy farming. There was also 74.7% of respondents used the farm as secondary source of income whereas 25.3% of respondents were use the farm for primary. This shows most of the dairy farm owners did not spend their full time in the farm. Therefore, dairy farms managed by laborer and it leads loss of farm ownership result improper dairy cattle management. From total respondents 50.6% were female and 49.4% were male. Therefore, gender equality in relation to owning dairy farm was relatively equal in the study area.

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

Variables	N	Mean \pm SD
Age	79	38.32 \pm 12.44
Sex (%)		
Female	40	50.6
Male	39	49.4
Marital status (%)		
Single	11	13.9
Married	65	82.3
Divorce	2	2.5
Widowed	1	1.3
Educational status (%)		
Illiterate	39	49.4
Read and write	13	16.5
Elementary school	17	21.5
High school graduate	10	12.7
Farm as a source of income (%)		
Primary source income	20	25.3
Secondary source income	59	74.7

N = number of respondents

3.2 Major Diseases Identified

Major disease was identified based on local name of diseases and their clinical sign described by respondents. Therefore, major disease which can cause illness and death of dairy cattle in the study area were listed at Table 2. According to the perception of respondents' internal parasite (13.8%), Anthrax (6.9%), Lumpy skin disease (6.9%), bloating (5.2%) and Blackleg (3.4%) were major diseases for morbidity and mortality of dairy cattle in the study area. Whereas the majority of respondents (26.6%) do not clearly understand disease, which was the causes of illness lead to death of their dairy cattle. It is may be due to most of respondents (57%) have not been taken training on major dairy farm diseases and animal husbandry practice. Also may be those respondents,

who was not spent their full time in their dairy farm will not have full information about clinical sign and name disease. Internal parasite was major problem in the study area relative to other disease. It may be due to most dairy farms practice semi grazing. This result agrees with the finding of Belay ^[15], who reports prevalence of internal parasite was 14.8% in dairy cattle in Jima town. According to Lebbie ^[16] gastrointestinal parasites are an economically important causing lowered fertility, reduced work capacity, involuntary culling, a reduction in food intake and lower weight gains, lower milk production, treatment costs and mortality in heavily parasitized animals. Anthrax and Lumpy skin disease were also secondary important disease for the study area. Most dairy farmers complain on access of vaccination, they could not get regular vaccination to their dairy cattle for important contagious diseases from district government clinics. However, whenever the diseases occurred dairy farmers can get veterinary service for diagnosis and treatment private veterinarian.

Table 2: List of common disease which can cause morbidity and mortality in the study area on the basis of farmer's perception

Disease type	N	%
No idea	21	26.6
Internal parasite	8	13.8
Anthrax	4	6.9
Lumpy skin disease	4	6.9
Bloating	3	5.2
Blackleg	2	3.4
Pneumonia	1	1.7
Diarrhea	1	1.7
Physical injury	1	1.7
Trypanosomosis, Mastitis and Ticks	1	1.7
Mastitis, Bloating and Calves diarrhea	1	1.7
Blackleg, Lumpy skin disease, and Anthrax	1	1.7
Bloating and Internal parasite	1	1.7
Mastitis and Ticks	1	1.7
Blackleg and Internal parasite	1	1.7
Mastitis, Blackleg and Internal parasite	2	3.4
Trypanosomosis and Anthrax	2	3.4

N = number of respondents

3.3 Mortality

Overall mortality for the last 12 months was 0.506 ± 0.272 , 0.038 ± 0.192 , 0.139 ± 0.524 and 0.025 ± 0.158 of calves, heifers, cows and bulls, respectively. It shows that more calves died rather than other group of dairy cattle. This result agree with the results of Hossain ^[17] and Belay ^[15] who reports that calves had higher mortality rate compared with young and adult cattle. It is high due to poor management practice for calves and high susceptibility to diseases than other dairy cattle age categories. It also agrees with the finding of Ferede ^[18] who reports calf mortality rates up to one year of age can go as high as 50% in the tropics due to bad management, poor adaptation of exotic breeds to the prevailing tropical environment and endemic diseases. All respondents get animal health services when their cattle become sick through private veterinarian. However, public veterinary provide irregular vaccination service for some dairy farms. 67.1%, 91.1% and 50.6% of respondents practice seasonal vaccination, deworming and spraying their dairy cattle, respectively. Some of respondents (43%) took training about animal health and husbandry delivered by ministry of agriculture (27.8%) and Andassa livestock research center (15.2%).

Table 3: Mortality of dairy cattle based on households' response in the study area

Variables	N	Mean \pm SD	Minimum	Maximum
Calves	79	0.506 ± 0.272	0	2
Heifers	79	0.038 ± 0.192	0	1
Cows	79	0.139 ± 0.524	0	4
Bull	79	0.025 ± 0.158	0	1

N = number of respondents

4. Conclusion

The study shows Internal Parasite, Lumpy Skin Diseases and Anthrax were major diseases affecting dairy cattle production in the study area. It could be suggested for the problem of internal parasite would be by increasing proper animal management, avoiding grazing practice and start cut and carry feeding and strategic deworming practice. The outbreak of lumpy skin disease and Anthrax could be controlled through improving veterinary services with respect to adequate vaccination. Training should be given on husbandry practice and major dairy cattle diseases and their control and prevention practice for dairy farmers of the study area.

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