Research Article

Major Animal Health Constraints of Market Oriented Livestock in Kersa Woreda, Southwest Ethiopia

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Abstract | A cross-sectional study was conducted in Kersa Woreda of the Oromia Regional State, Southwest Ethiopia, with the objective of characterizing the livestock production system and investigating the major livestock health problems in the studied area. A simple random sampling method was used to select 180 households for the study. A structured questionnaire was used to collect data. The survey results revealed that mixed crop-livestock production system is the predominant system in the area. In the studied area pasteurellosis, GIT parasitosis, fasciolosis, mastitis and calf diarrhea were the most important diseases in cattle while ovine pasteurellosis and GIT parasitosis were the most important in small ruminants. Colic and respiratory problems were considered important in equine while African Horse Sickness is the most important disease in horse. In poultry Newcastle disease was the most devastating disease. Modern veterinary medicaments (82.80%) were known and used by most of the farmers, but traditional medicines were also used to a significant extent (16.70%). The present survey established that livestock development in Kersa Woreda is constrained by several animal diseases and warrants different stakeholders to take necessary measure to help improve productivity and market success of local farmers.

Keywords | Animal health, Kersa Woreda, Livestock, Parasitic diseases, Veterinary medicaments

Editor | Kuldeep Dhama, Indian Veterinary Research Institute, Uttar Pradesh, India.
Received | March 29, 2015; **Revised** | May 14, 2015; **Accepted** | May 15, 2015; **Published** | February 17, 2016
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Citation | Ebrahim F, Feyera T, Abera B (2016). Major animal health constraints of market oriented livestock in Kersa Woreda, Southwest Ethiopia. Adv. Anim. Vet. Sci. 4(2): 92-98.
DOI | http://dx.doi.org/10.14737/journal.aavs/2016/4.2.92.98
ISSN (Online) | 2307-8316; **ISSN (Print)** | 2309-3331

INTRODUCTION

Agriculture in Ethiopia is the foundation of the country's economy, accounting for half of gross domestic product (GDP), 80% of exports and 85% of total employment (CSA, 2010). Livestock is an integral part of agriculture. Livestock is a major part of African agricultural production and consumption systems. Animals and animal resources also occupy a very special place in poverty reduction programmes in many African countries. Besides its significant contribution to agricultural Gross Domestic Product (GDP) (on average 30% of agricultural GDP in Sub-Saharan Africa and its invaluable contribution to the food security of the poor), livestock play a crucial role in social relations within communities and in inter-state trade. Meat, milk and eggs constitute around 65%, 27% and 8%, respectively, of the value of edible livestock products (SOFA, 2009).

Ethiopia's estimated livestock population is often said to be the largest in Africa. In the country, there were approximately 50.8 million cattle, 25.5 million sheep, 22.78 million goats, 2.0 million horses, 0.38 million mules, 6.2 million donkeys, 1.1 million camels and 49.3 million poultry excluding the Afar and Somali Regions (CSA, 2010). Ethiopia's great livestock potential is not properly exploited due to different factors such as traditional management system, limited genetic potential, lack of appropriate disease control policy and lack of appropriate veterinary services (Genet et al., 2012). Animal diseases are considered as a major health problem and cause a significant economic loss in countries where livestock production is an important segment of the agricultural practice (Amene et al., 2012).

Infectious animal diseases that are endemic, or common in a region, generate a variety of significant adverse economic consequences. Most directly, mortality, morbidity, barrenness, and miscarriage in production animals reduce technical efficiency. Costly treatments and altered management practices to ameliorate these losses also reduce profitability

(Bennett and Ijpelaar, 2005). Diseases have numerous negative impacts on productivity and fertility of herds (losses due to mortality and morbidity, loss of weight, depressed growth, poor fertility performance, decrease physical power and the likes (CACC, 2003). Thus, knowing the status of major problems that constrain livestock development no doubt contributes to initiating projects that can help improve productivity and market success of Ethiopian farmers; aiming at contributing to reduction in poverty of the rural poor through market oriented agricultural development (ILRI, 2006). Therefore, this study was intended to characterize the livestock production system and provide base line information on the major animal health problems that contribute to poor livestock productivity in Kersa Woreda.

MATERIALS AND METHODS

Study Area

The study was conducted in Kersa Woreda of the Oromia Regional State, Southwest Ethiopia. It is found 346 km southwest of Addis Ababa at latitude of about 7013'-8056' N and longitude of about 35052'-37037' E, and at an elevation ranging from 1740 to 2660 meters above sea level.

The study area receives a mean annual rainfall of about 1530 millimeters which comes from the long and short rainy seasons. The annual mean minimum and maximum temperature during the study period were 14.40 and 26.70 degree Celsius respectively. The climatic condition is Weinadega and the area is characterized by a humid tropical climate of heavy annual rain fall that ranges from 1200-2000mm/year with an average of 1600mm/year and 70% of which is received during the rainy season, which lasts from the ends of May to early September the mean annual maximum and minimum temperature of the area ranges from 25°C to 30°C and 7°C to 12°C, respectively (Tolosa and Tigre, 2006).

Sampling Procedure and Sample Size

A purposive selection method has been done to select the peasant association based on accessibility to transport and difference in geographical location. Accordingly, six peasant associations namely; Babo, Girma, Kallacha, Morawa, Tikurabullu and Tikurbalto were purposely selected as study sites. From each peasant associations 30 households were randomly selected which then made a total of 180 households to be included in the study. All livestock and poultry owned by selected respondents were considered as study animals, consequently, there were a total of 1924 animals sampled constituting 715 cattle, 132 goats, 236 sheep, and 154 equine and 687 poultry.

Data Collection

A detailed questionnaire format was designed to generate information related to animal production (Demographic features of respondents and their land use pattern, livestock herd size, livestock function, feeding practice and availability, management systems such as watering, housing, breeding and record keeping, labour use and livestock marketing) with particular emphasis on major livestock health problems in the area and measures taken by the farmers against livestock diseases and trend of using modern veterinary services. The questionnaire was pre tested before its full implementation and adjusted for clarity to shorten the time it takes while administering and minimize recall bias and it was filled directly by interviewing randomly selected farmers from different villages of the six peasant associations.

Focus Group Discussion

The focus group discussion was done with 10 key respondents from each peasant associations identified by peasant associations development agents. Points considered during the discussion were disease occurrence and trend for the last few years and constraints of livestock production. The major livestock problems such as major diseases, major feed types in the area, and other issues on livestock production have been raised for discussion to collect basic information. Consultation of the Woreda veterinary professional to identify the major livestock health problems in their area and about the health services coverage of the Woreda. The cases were classified by species in to diseases affecting cattle, goat, sheep and equine.

Data Management and Analysis

The data collected were entered in to MS-Excel 2000 computer program. Qualitative data from individual observation were analysed following the frequency procedures of SAS version 9.1 (2005). The analysis and summarization of the data was made using descriptive statistics.

RESULTS

Demographic Features of Respondents

Demographic feature of respondents shows that most of the interviewees (91.70%) were male and the rest female (8.30%). Their educational back ground indicated that 42.20% (n=76) were illiterate, 25.60% (n=46) had religious knowledge, 25% (n=45) had primary school education and 7.20% (n=13) were secondary and above (Table 1). Respondent's family size proportion showed 137(53.73%) and 118(46.27%) have family members less or equal to 15 years of age and greater than 15 years of age, respectively. The average family size was 1.42 persons from which more than half (53.72%) was under 15 years old.

Purpose of Keeping Livestock

The most important product of cattle was milk (100%). There were also households producing meat (9.30%) and hides (6.39%) from cattle. The most important function of cattle was provision of traction power (99.41%). Goats and sheep were kept for sale (100%) and meat production

(31.87%). Donkeys were kept solely for loading (100%) and mule for transportation (100%) purposes.

Table 1: Demographic features of respondents

Variable	Category	Frequency (Proportion)
Sex	Male	165(91.70%)
	Female	15(8.30%)
Educational Status	Illiterate	76(42.20%)
	Religious	46(25.60%)
	primary school	45(25%)
	secondary and above	13(7.30%)
Family size	<15 years	137(53.73%)
	=>15 years	118(46.27%)

Animal Management

Some of the animal owners (15%) house different species of animals within one house, which is separated from their own house and 85% of the respondents, house the same species of animals in different houses, which are separated their own home. Regarding breeding, most of the respondents (97.20%) use uncontrolled natural mating and only 6.70% of the respondents use selected bulls (controlled natural breeding) to reproduce cattle.

In the study areas they have water sources for watering animal like rivers, streams, ponds and well. Majority of the owners use stream (45%) and river (33.90%) for watering animals. These water sources are not available throughout the year. They encounter shortage of water mostly during the dry season especially from January to March. At these time farmers use rivers by moving along distance to adapt water shortage problems.

Feeding Resources and Feeding Practices

Natural pasture (100%) and Stover (72.20%) were the most frequently used feed resources in the study area. Cereal straws were also significantly used in the area (60%). The respondents also reported that feed availability depends on seasons. Feed shortage is the main problem especially during dry season in the study area to maintain market oriented livestock development extension. Natural pasture was more available in the wet season (100%) while crop residues are available in the dry season (71.10%). Most of the farmers supplement livestock with minerals (89.40%) only in the wet season (88.90%) (Table 2). Among the interviewed farmers, 63.90% had communal grazing land and all (100%) of interviewed farmers used grazing land on year round basis.

Livestock Culling Criteria and Disposal of Cadaver and Abortion Materials

The most common reasons of culling livestock mentioned by farmers were old age (39.53%), financial problem (34.88%), bad behavior (11.62%), disease (9.3%), and poor productivity (4.65%). Majority of the respondents (78.3%) said that dead animals, after birth fluids and aborts were simply thrown away in the nature. Giving to scavenger animals (dogs) 22(12.20%) also mentioned as a disposing means, and burring 17(9.50%) to some extent.

Table 2: Major livestock feed resources in the study areas

Feed resource	Frequency of farmers	Availability	
		Dry season	Wet season
Natural pasture	100(180)	0	100(100)
Cereal straw	77.20(139)	92.1(128)	7.90(11)
Stover	81.70(147)	17(25)	83(122)
Minerals	89.40(161)	0.6(1)	99.40(160)

Health Problems Identified

The information generated through the questionnaire survey and focus group discussion indicated that diseases are one of the most important limiting factors of livestock keeping in the area. They also indicated that the disease dynamics is aggravated by many factors like, inadequate veterinary service, season, agro-ecological and minimum attention to animal health by government and non-government bodies. Scarcity and shortage of livestock feed are also known to be limiting factors to animal production by making animals unproductive and susceptible to many diseases (Table 3).

According to the Woreda animal health professionals the main problems affecting the livestock keeping in order of appearance is shortage of feed/ grazing land, water shortage and diseases respectively. Lack of transport followed by lack of drugs and vaccines are the major problems faced in the treatment of livestock and the drugs that are available are costly in the Woreda because of that owners use traditional healers. Furthermore, the respondents reflected that they need to have the knowledge how to improve feed shortage, e.g. using cultivated pasture and they had comments like, the drug that the animal health professional use privately is not the correct drug, but drug like soft drinks.

Occurrence of Abortion in the Last Two Years

About 17.22% of the farmers encountered abortion in the past two years. The most frequent abortion occurred in bovine (54.54%), caprine (21.21%) and ovine (15.15%) and equine (9.09%). Mostly abortions occurred in early and late gestation period. The season's encountered abortions are autumn and summer.

Control Measures Against Livestock Diseases

Although the majority of the farmers on the study area have access to modern veterinary service (82.8%, n=149), a considerable proportion of respondents, 16.70% (n=30) use traditional healer for many different abnormalities and diseases conditions such as infectious diseases, parasitic diseases and non-infectious cases. From the proportion of respondents who use traditional healer, infectious cases

Table 3: Major diseases of livestock mentioned by sampled farmers

Name of the disease	Local name	No of farmers described the disease as;					Overall Rank
		1st	2nd	3rd	4th	5th	
Calves							
Calf scour	Gara Kasa	144	31	2	1	2	1
Mites	Chitto(dora)	23	129	21	3	3	2
Pastuerellosis	Gororsa Loni	9	16	81	13	20	3
Cow							
Pastuerellosis	Gororsa Loni	28	121	30	0	1	1
Mastitis	Jigo	123	33	19	3	5	2
Fasciollosis	Cori	15	31	123	2	2	3
Ox							
GIT parasites	Rammo Gara	20	50	110	0	0	1
Pasteurellosis	Gororsa Loni	21	103	55	1	0	2
Fasciolosis	Cori	130	25	10	6	3	3
Shoat							
GIT Parasites	Rammo Gara	133	24	23	0	0	1
Pasteurellosis	Gororsa Hola	27	131	15	3	2	2
Orf		20	22	120	9	3	3
Donkey							
Respiratory problem	Kufa	119	40	12	5	3	1
Colic	Cininna	48	80	34	8	3	2
Wound	Mada	7	39	115	4	0	3
Horse							
AHS	Busa	12	36	10	8	6	1

Table 4: Response to cost treatment and vaccination at the study area

Degree of cost	Treatment		Vaccination	
	Frequency	Percentage	Frequency	Percentage
Expensive	140	77.80	28	15.60
Moderate	39	21.70	31	17.20
Cheap	1	0.50	121	67.20

(51.85%) are the most treated using traditional medicament followed by parasitic cases (37.03%). Non-infectious diseases (11.11%) including, surgical cases were handled traditionally to some extent. Modern treatment is given in the Serbo veterinary clinic at Serbo town; there was no other private veterinary clinic in the area and there were only private drug shops. From the proportion of respondents who use modern veterinary services, 42.20% mentioned transport/distance to the veterinary clinic as a main problem faced when they want to treat or vaccinate their animals. Drugs and vaccine shortage, lack of modern clinical services and the non-ethical practices of professionals were mentioned by 22.80, 20 and 15% of the respondents respectively.

Veterinary Service

Most of the respondents (82.80%) have access to modern veterinary service and 17.20% have no access to modern veterinary service. Cost of treatment and vaccination and proportion of Respondents is described in (Table 4). The survey also indicated that 6.70% (n=12) of the Respondents reported to the government body when outbreak / diseases were encountered. Of these, 2.80% (n=5) respondents ascertained that government has interfered to halt the outbreak/ diseases.

DISCUSSION

Characteristics of the Livestock Production System

This survey showed that mixed-livestock production is the most practiced production system in the area. Shortage of land is mentioned to be one of the constraints for the livestock development in the area, since food crop cultivation is given first priority; land allocated for grazing is very limited. Cattle are the dominant livestock species present in the area. Sheep and goats also comprised a good proportion of the livestock species. The farmers kept cattle mostly for traction power and milk although the yield of the local Zebu is not significant, which is not exceeding the house hold consumption (Kuastros, 2007). Use of local bulls for breeding is the primary option for most farmers (86.63%).

This figure is more or less similar to the survey report of Kuastros (2007), conducted in Alaba woreda which reported that 75% use local bulls for breeding. This may be attributed to shortage of AI service coverage in the area.

Based on the result of this study livestock diseases and their consequences have severe impact on the small holder farmers' livelihood directly and in directly. Animal diseases have also been indicated as public health hazards (Assegid, 2000). It is also indicated that major constraints to alleviate animal health problems include low quality and inadequate animal health services, minimum attention to the services, low and/or no private sector involvement, moreover, the animal health of the Woreda is also exacerbated by different factors like feed and water shortage, poor management, dirty water, traditional treatment practices.

Livestock Health Problems

Cattle

Septiceamic Pasteurellosis (Hemorrhagic Septicemia or Bar bone) was observed in cattle as the main infectious disease in the study area. This might be due to animals` movement for searching of feed, water and to be sold for market during drought period. In addition to these there are predisposing factors such as stress, excessive cold (due to high altitude ranges) that can favour the bacteria to multiply and then evade the lower respiratory tract from which infection is triggered. Radostits et al. (1994) also indicated that the disease is common when animals are exposed to wet, chilly weather or exhausted by heavy work.

Mastitis was also the second most important disease affecting cows as mentioned by 97% of the interviewed farmers. Cows are at risk of acquiring mastitis when there is improper milking and poor udder health management like preventing teat from lesion causing agent like tick infestation (Quinn et al., 1994). Mastitis was one of the most economically important multi-causal infections of cows in the study area.

In the present study calf diarrhea is mentioned by farmers as a serious health problem affecting calf. Calves could be infected by environmental bacteria such as *Eshershi coli*, *Salmonella* species as well as virus like *Rota virus, Corena virus*, and feed change. The importance of calf diarrhea was also reported by previous authors (Busato et al., 1997). Several factors affect the health and vigor of calf in the early period of calf hood. Among these factors inadequate feeding of colostrums, farm hygiene and environmental conditions are the most important.

The survey result also revealed that many parasitic diseases were observed as common health problems of livestock. Among the parasitic diseases, Gastro-intestinal tract parasitic infestation was found frequently causing mainly loss of body condition, emaciation and weak in draught power of cattle. The high occurrence of parasitic diseases in the study area could be due to low deworming practices and the increasing of irrigation lands in the Woreda at which reproduction and development of the parasites and their intermediate host is favored. Derib (2005) reported that gastro-intestinal helmenthiasis is the commonest disease-affecting cattle in other crop-livestock production system areas of Ethiopia. Fasciolosis is one of the common endoparasites that affect productivities and growth rate of cattle in the study area. A high prevalence of fasciolosis was reported by Ameni et al. (2001) in Northeast Ethiopia. The most probable reason may be due to the tendency of farmers to feed their animals in marshy areas due to the shortage of grazing land.

Sheep and Goats

Parasitic diseases in small ruminants were found to be high which was responded by the farmers during interview and contact of veterinary professional. Similar result has also been described by Belay (1998) in western part of Ethiopia (15%) which also agrees with the report of Gebremedhin (2007). Pasteurollsis was found to be the most economically important bacterial infectious disease of small ruminants in the woreda. This is in agreement with the result of Ayelet et al.(2004) which indicated that pasteurollosis is a major concern in north Shoa, central high lands of Ethiopia.

Sheep and goat pox is the next most important small ruminant infectious disease as mentioned by farmers and animal health professional during questionnaire survey as well as during group discussion. Similar study reported by Haffize (2001) in central Ethiopia indicated that prevalence rates in sheep and goat were 1.55% and 1.62%, respectively. This disease is important in affecting the skin quality and hence the export market on the products (Ayele et al., 2003).

Equine

In the study area, one of the major animal health problems of equine is African horse sickness (AHS). AHS is highly fatal viral infectious disease of horses, mules and donkeys. Its frequent occurrence may be due to the presence of insect vector in the area. In areas where out breaks occur the morbidity rate is related to the number of insect vectors present (Radostits et al., 1994). Colic is an important and frequently occurring disease in the area as revealed both in the group discussion and questionnaire survey. All owners of equine listed this disease problem as the second most important.

The first most important equine health problem causing death and decreased work out put in this study was respiratory disease complex. 3-8% incidence rate of respiratory disease complex was reported by (Rose and Hodgson, 2000). In another study in central Ethiopia, 57% and 43% incidence rates were reported for males and females, re-

spectively (Alemnesh, 2004). It could be associated with high temperature and aridity of some parts of Woreda.

Poultry

Focus group discussion and interviewees strongly complained that Newcastle disease (NCD) is a very important chicken disease. It was also reported by Dessie and Jobre (2004) that NCD was the single major health constraint which cause heavy mortality and morbidity to village chicken and affects productivity of the system in the country. This could be due to poor hygienic conditions of the backyard raising condition, selling or low attention to treat sick chicken and receive no vaccination at all. Its frequency in the Woreda is related to absence of control and prevention methods to reduce its economic impact. Salmonellosis and Coccidiosis were also among the mentioned diseases by veterinary professional in Serbo veterinary clinic.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR'S CONTRIBUTION

All the authors contributed equally.

CONCLUSIONS

The present study revealed that the farming system in Kersa Woreda is predominantly mixed crop livestock production system characterized by land shortage and a livestock herd dominated by cattle and poultry. Livestock plays a great role in the livelihood of the farmers in the area, which is used as a main source of income, means of transport and as a food source in addition to supporting crop production. Livestock feeding was based mostly on natural pasture. Diseases and feed shortage were the problem of livestock development extension programs in the study area. Mastitis, Fasciolosis, Gastro-intestinal helminthes and Calf diarrhea were the most important diseases of cattle. AHS, respiratory disease complex and colic were considered as the most important constraints of equine health. Modern veterinary medicaments were known and used by most of the farmers, but traditional medicines were also used to a significant extent. In order to maximize health service coverage, emphasis should be given in the animal health delivery and establishment of veterinary infrastructure in their area should be given priority. Detail epidemiological survey on major economically important diseases of livestock is recommended to undertake.

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