MAJOR ANIMAL HEALTH PROBLEMS OF MARKET ORIENTED LIVESTOCK DEVELOPMENT IN FOGERA WOREDA

BY

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A Thesis Submitted To the Faculty of Veterinary Medicine, Addis Ababa University, In Partial Fulfillment for the Attainment of the Degree OF Doctor of Veterinary Medicine (DVM)

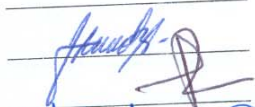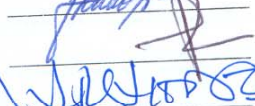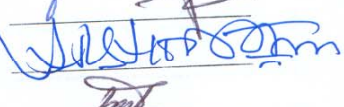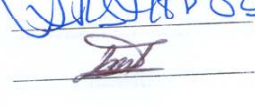**JULY 2007**
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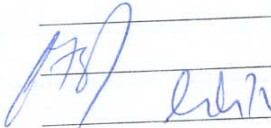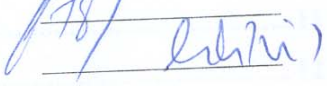
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List of Abbreviations

AAU	Addis Ababa University
AAMPDA	Animal, Animal products and by-product Market Development Authority
CIDA	Canadian International Development Agency
CSA,	Central Statistical Agency
DA	Development Agency
FAO	Food and Agricultural Organization
FWARoD	Fogera woreda Agricultural and Rural Development office.
ILCA	International Livestock Center for Africa
ILRI	The International Livestock Research Institute
IPMS	"Improving productivity and market success") of Ethiopian farmers
MoARD	Ministry of Agriculture and Rural Development MoARD

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ABSTRACT

This study was carried out in Fogera Woreda of the Amhara Regional State with the objective of characterizing the livestock production system and investigating the major livestock health problems in the area. A simple random sampling method was used to select 80 households for the study. A structured questionnaire was prepared and the heads of selected households were interviewed to collect data on production system characteristics and the importance of livestock health problems. In addition, there was also a participatory discussion with group of farmers to work out disease trend and identify constraints. Clinical cases of livestock diseases appearing in the Woreda Veterinary Clinic were also examined and recorded. The average family size, land holding and livestock herd size in this study were 5.58 persons, 2.96 ha, and 46.59 heads, respectively. Mixed crop-livestock production system is the predominant system in the area. The livestock herd was dominated by cattle and sheep while the cattle herd was dominated by oxen and cows. The role of cattle in the farming system is as a source of traction power to the crop production while small ruminants were used as a source of income. Equines were used as pack and transport animals. The livestock feeding practice was mainly based on farm feed resources (crop residues and natural pasture). About 43.75% provided housing for livestock while the rest keep their animals in the open. Uncontrolled natural mating was used by 68.75% of the farmers while 20% used controlled natural mating and 11.25% used AI. Trypanosomosis, fasciolosis, gastro-intestinal helminthes and calf diarrhea were the most important diseases of cattle. Respiratory problems were most important in small ruminants. PPR like disease and mange were common in goats while fascilosis and other gastro-intestinal helminthes were important in sheep, respectively. Colic, wound and respiratory disease complex were considered as important in donkeys. Modern veterinary medicaments were known and used by most of the farmers, but traditional medicines were also used to a significant extent.

Key words: cattle, diseases, equines, goat, livestock, production system, sheep, mortalities

1. INTRODUCTION

Livestock production constitutes one of the principal means of achieving improved living standards in many regions of the developing world. In Sub-Saharan African countries, livestock plays a crucial role both in national economies and the livelihood of rural communities. It provides drought power, milk, meat, input for crop production and soil fertility and raw material for industry (ILCA, 1980). Various estimate shows that the livestock sector contributes 12-16% of the total and 30-35 % of agricultural GDP (AAMPDA, 1999).

Ethiopia basically constitutes an agrarian society; the socio-economic activities of about 85% of the population are based on farming and animal husbandry (Solomon, 1994). Livestock plays a critical role for the majority of the Ethiopian population. Domestic animals are mainly used as drought animals, source of milk, meat, hide and skin and as pack animals. Apart from this they also serve as a means of risk diversion and accumulation of wealth among the rural community (Yohannes, 2002).

The estimated small and large ruminant populations in Ethiopia are 20.7 million sheep, 16.2. million goats and 40.3 million cattle (CSA, 2004). The camel population of Ethiopia is 1.05 million. Camels are kept in arid lowlands which cover approximately 50% of the country and are the home range of over two million pastorals (Schwartz and Dioli, 1992). Despite the large number of livestock, the national and per capital production of livestock and livestock product, export earning and per capital consumption of food from livestock origins have been stagnant in comparison to other African country (Assegid, 2000).

The growth in livestock populations has slowed over recent year. Between 1974 and 1998, human population increased by 78% while that of cattle population increased by 31% an small ruminant decrease by 5.6%. Annual population growth rate of human was 2.5% whilethat of cattle and small ruminant was 1.1 and -0.2%, respectively. Different reason can be given to this un-proportional growth rate but the main one is high prevalent of diseases in the country (Ayele *et al.*, 2003). Disease is also responsible partly for the decrease in livestock and livestock products export. The disease problem is still aggravated by the changing ecological conditions

which provid fertile ground for disease, affecting especially pastoral systems where there is a close physical association between people, livestock and wild animals. Viral and other pathogens benefit hugely from the dynamic state created by animal migration, and the increasing pressure on scarce resources from all human and animal populations with more frequent contact improving the opportunity for disease transmission (Macpherson, 1995).

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).

The contribution of livestock to poverty alleviation and food security can be increased through increased consumption of indigenous livestock, commercialization of production systems and giving much greater attention to livestock productivity and health, including post-harvest processing and marketing (Delgado *et al*., 1999).

The International Livestock Research Institute (ILRI) and the Ministry of Agriculture and Rural Development (MoARD) initiated a 5 year project in June 2004 with the financial assistance from the Canadian International Development Agency (CIDA).The project, entitled: "Improving productivity and market success" (IPMS) of Ethiopian farmers, aims at contributing to a reduction in poverty of the rural poor through market oriented agricultural development.

The objective of this paper is thus:

- To study production system characteristics with emphasis on major health problems in Fogera Woreda

2. MATERIALS AND METHODS

2.1. Study Area

This study was carried out in Fogera Woreda (District), which is one of the 106 Woreda of Amahara Regional State and found in north Gonder Zone. It is situated at 11 58 latitude and 37 41 longitude. Woreta is the capital of the Woreda and is found 625km from Addis Ababa and 55km from the regional capital, Bahir Dar. The Woreda is divided into 25 peasant association (PA's) and 5 urban Kebeles. The total land area of the Woreda is 117,405ha. Flat land accounts for 76% of the total land coverage while mountainous hills and valleys account for 11 and 3%. The average land holding is 1.4ha with a minimum and maximum hectare of 0.5 and 3.0 hectare, respectively. The total human population of the Woreda is 233,529. The rural population accounts for 88.5% of the total human population (FWARoD, 2003).

The Woreda is one of eight woredas bordering Lake Tana and has estimated water bodies of 23,354 ha. The Woreda is classified as one of the surplus productive Woredas in the region. The altitude ranges from 1774 to 2410 masl. The mean annual rainfall is 1216.3mm and ranges from1103 to 1336mm. the Woreda is mainly dominated by one long rainy season (FWARoD. 2003).

There are about 157 thousand cattle, 7.6 thousand sheep, 27.9 thousand sheep, 246.5 thousand poultry, 21.8 thousand beehives, 13.2 thousand donkeys and very few horses and mules in the Woreda (FWARoD, 2003).

2.2. Study population

The study population included all smallholder farmers and livestock kept by these farmers in the study areas.

2.3. Study Protocol

2.3.1. Sampling Procedure

A purposive selection method has been done to select the peasant association based on accessibility and inclusion in the ILRI-IPMS project. Thus, four PA's were selected namely: Abua-Kokit, Shina, Woge and Woreta Zuria. Form each PA 20 households were selected randomly which made a total of 80 households included in the study. All livestock owned by the sampled households were considered as study animals. There were, therefore, 577 cattle, 198 goats, 224 sheep and 86 equines , 327 poultry and included in the study.

2.3.2. Data collection

Questionnaire survey

A detailed structured questionnaire format (Annex 1) was designed to generate information related to livestock production system with particular emphasis on livestock management practices (feeding, housing, breeding and others), major livestock health problems, availability of extension services and demographic features of the households. One visit interview was carried out to collect the above-mentioned information from the beginning of November to the end of January.

Participatory approach

Ten to fifty key respondents were selected by the DA in each of the four PA's and informal group discussion has been held for one hour to generate relevant information from the farmers. Points considered during the discussion were to work out disease trend and identify constraints.

Clinical observational study

The clinical cases appearing in the Figera Woreda Clinic were examined and tentative diagnosis was recorded based on clinical signs observed. The cases were classified by species into diseases affecting cattle, goat, sheep and equine.

2.4. Data analysis

Data was entered and analyzed using in Microsoft Excel (2003). Descriptive statistics was used to summarize the data.

3. RESULTS

3.1. Demographic characteristics

The majority of respondents were male (93.6%) and the maximum and minimum age were 67 and 22 years, resistively. Regarding educational status 52.5% of respondents did not get any education (Table.1). The average family size was 5.58 persons from which more than half (57.35%) were above 15 years old.

Table 1. Demographic characteristics of sampled households

Variable	N	Category	Frequency (Proportion)
Sex	80	Male	93.6
		Female	6.4
Educational status	80	Illiterate	52.5
		Religious	12.5
		Elementary school	27.5
		Junior and above	7.5
Family size	80	<15 years	42.65
		=> 15 years	57.35

3.2. Land ownership and use pattern

Nearly all the farmers (96.25%) and slightly more than half of the farmers (56.25%) had their own crop land and grazing land, respectively. The average total land size owned by households was 2.96ha from which average crop and grazing land per household were 1.98 and 0.48ha, respectively. The average privately owned crop land size was 1.38 ha and that of grazing land was 2.26ha. About 60 % of the farmer had contracted land for crop production while 13.75% had contracted grazing land (Table 2).

Table 2. Average, maximum and minimum values of land holdings in the sampled households

Land use pattern	Mean	Maximum	Minimum
Crop land owned (ha)	1.38	3.00	0.38
Crop land contracted (ha)	0.60	2.50	0.13
Fallow land owned (ha)	0.50	0.50	0.50
Grazing land owned (ha)	0.26	0.50	0.13
Grazing land rented (ha)	0.22	0.25	0.13
Total (ha)	2.96		

3.3. Livestock herd size and composition

The livestock herd size and composition per household is presented in Table 3. The average livestock herd size including poultry was 46.59 heads. The majority of the livestock herd was made of cattle (36.9%) followed by sheep (15.4%), goat (13.6%) and equines (5.9%). In the cattle herd, the highest representation was that of castrated oxen (27.1%). In addition, lactating cows (17.3%), dry cow (11.3%) and bull (10.2%) also had significant shares. The sheep flock was dominated by ewe (25.9%) followed by rams (19.1%), castrated ram (17.9%) and yearling (17.0%). Regarding goats, castrated doe (37.4%), young (20.7%) and male kids (15.1%0. The equine herd was dominated by donkeys (79.1%).

Table 3. Mean, range and proportions of livestock herd composition per household

Livestock species	Mean	Range	Proportion from livestock herd	Proportion from species herd
Cattle			39.6	N=577
Male calf	1.34	0-4	3.5	8.6
Female calf	1.22	0-3	4.2	10.3
Heifer	1.74	0-4	6.2	15.2
Dry cow	1.42	0-3	4.5	11.3
Castrated ox	1.87	0-3	10.1	27.1
Lactating cow	1.59	0-4	7.0	17.3
Bull	1.44	0-4	4.1	10.2
Sheep			15.4	N=224
Male lamb	1.36	0-2	1.4	8.5
Female lamb	1.34	0-2	1.8	11.6
Yearling	1.9	0-3	2.5	17.0
Ewe	2.16	0-4	3.9	25.9
Castrated rams	2.2	0-4	2.8	17.9
Ram	1.95	0-5	3.0	19.1
Goat			13.6	N=198
Male kid	2.00	0-4	2.1	15.1
Female kid	1.73	0-3	1.7	13.1
Doe	2.78	0-5	4.9	37.4
Young	2.30	0-5	2.9	20.7
Castrated	1.78	0-4	1.1	8.1
Buck	1.58	0-3	0.7	5.6
Equine			5.9	N=86
Young donkey	1.00	0-1	1.0	18.6
Female donkey	1.00	0-2	2.4	38.4
Male donkey	1.03	0-2	1.3	21.1
Mule	1.23	0-2	1.2	20.9
Poultry	8.63	0-30	25.5	

3.4. Livestock Products and Functions

The most important product of cattle was milk (80%). There were also households producing meat (18.8%) and hides (17.5%) from cattle. The most important function of cattle was provision of traction power (100%). Goats and sheep were kept for sale (100% for both goat and sheep and meat production (48.15% for goat and 41.67% for sheep). In addition goat and sheep were also kept for skin production by 37.04% and 27.78% of the households, respectively. Equines were kept solely for loading (71.4%) and transportation (48.6%) purposes. Poultry were use as a source of income (80.4%) and meat (60.9%) and egg (100%) for household consumption. In addition, to honey, farmers owning beehives were also producing wax (31.7%).

3.5. Livestock Feed Resources and Feeding Practices

Cereal straws (100%) and natural pasture (81.25%) were the most frequently used feed resources in the study area. Stover was also significantly used in the area (56.25%). Natural pasture was more available in the wet season (80%) while crop residues are available in the dry season (81.3%). Most of the farmers supplement livestock with minerals (97.5%) only in the wet season (100%) (Table 4)

Table 4. Major livestock feed resources in the study areas

Feed resource	Frequency (Proportion) of farmers	Availability	
		Dry season	Wet season
Natural pasture	65(81.25%)	13(20%)	52(80%)
Cereal straw	80(100%)	65(81.3%)	15(17.3%)
Stover	45(56.25%)	39(86.7%)	16(13.3%)
Minerals	78(97.5)	0 0%)	78(100%)

Among the interviewed framer 77.5% had communal grazing land and 54.8% of interviewed framer used grazing land on year round basis. They traveled an average distance of 1.8 km to

reach the grazing land. The major source of water mentioned by farmer was river (51.3%) followed by temporary wells (24.8%). There was in general water shortage from January to May but April and May were the critical times when there was serious water shortage in the study areas.

3.6. Livestock Management Practices

Among the sampled households 43.75% provided housing for livestock while the rest keep their animals in the open. From the farmers providing houses for livestock about 57.1% housed their animals separately while the remaining used communal houses. Regarding breeding, 68.75% of the farmers used uncontrolled natural breeding, 20% used controlled natural mating and 11.25% used AI.

3.7. Livestock Marketing

The reasons mentioned as causes of selling livestock in the past year were to fulfill household cash needs, debt repayment old age and drought (Figure 1). The main selling season for cattle used for traction purpose was from January to May. Young cattle and cow are sold in May and June while small ruminant are sold during any time in the year.
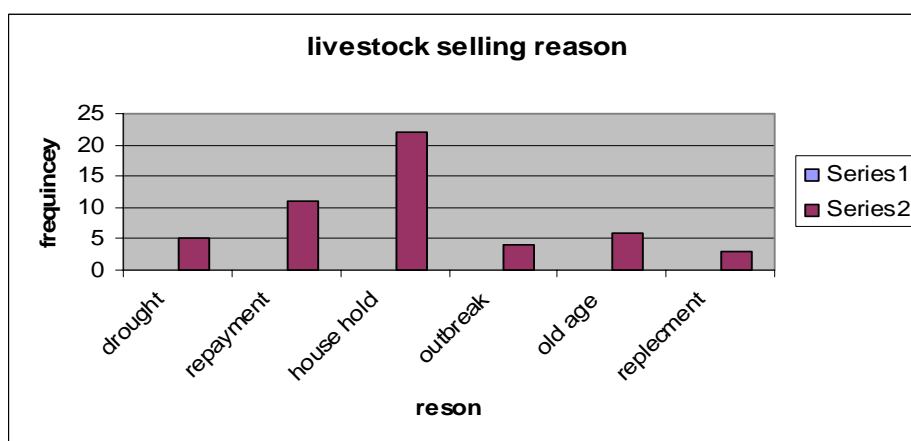
Figure 1. Different reasons of selling of livestock in the households

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3.8. Livestock Culling Criteria and Disposal of Cadaver and Abortion Materials

The most common reasons of culling livestock mentioned by farmers were disease (30%), old age (25.9%) and reproductive disease (23.1%). Poor productivity (13.8%) and other like bad behavioral reasons (11.1%) were also mentioned by farmers. According to Livestock owner the usual way of disposing cadaver and abortion materials were giving to dogs (61%) and throwing in the field (42%). Few farmers burn these materials.

3.9. Livestock Health Problems

3.9.1. Occurrence of abortion in the past two years

About 33.75% of the farmers encountered abortion in the past tow years. The most frequent abortion occurred in cattle (23 cases, 62.1%) among this 43.5% (10 cattle) aborted in the early period of gestation and 30.4% (7 cattle) aborted in late gestation period (Table 5). The seasonal occurrence of abortion is presented in Figure 2. High frequency of abortion was encountered form August to November.

Table 5. Occurrence of abortion in different species of livestock

Aborted spices	Frequency of Occurrence of Abortion	Frequency of Occurrence of Abortion by gestation period		
		Early	Mid	Late
Bovine	23	10	6	7
Goat	7	2	1	4
Sheep	5	2	1	2
Equine	2	2	0	0
Total	37	18	8	11
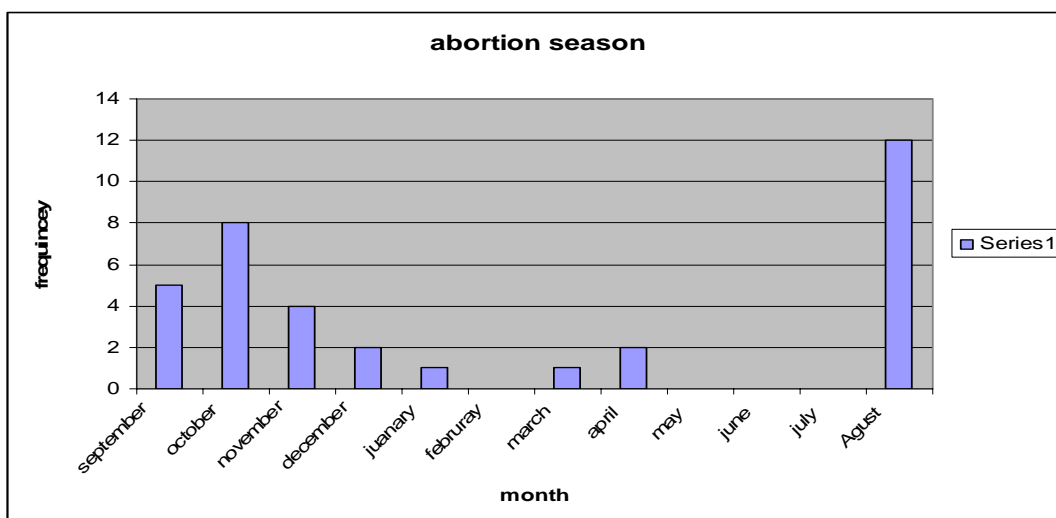
Figure 2. Occurrence of abortion in the months of the past years

3.9.2. Consumption of livestock products

Milk was consumed as raw by 68.75% and both as raw and boiled by 31.25%. Regarding meat, 68.75% consumed cooked from while 31.25% ate both as boiled and raw and dried form. Most of the households consumed egg in boiled form (85%) and the rest in raw (7.5%) and cooked from (7.5%).

3.9.3. Major diseases of livestock

The list of diseases mentioned as important by the sampled farmers are presented in Tables 6, 7 and 8. The Most important disease mentioned as affecting cows, heifers, calves and male cattle was trypanosomosis. In addition, cows were also affected by mastitis and fasciolosis. Fasciolosis was also mentioned as important disease in heifers male cattle and calves. Calf diarrhea was the second most important disease affecting calves (Table 6).

In goats and sheep, respiratory problem was regarded as the most important in all age groups. PPR like disease too the second place in both immature and mature goats. Fasciolosis was the second most important disease in both immature and mature sheep (Table 7).

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Table 6. Major diseases of cattle mentioned by sampled farmers

| Name of diseases | Local Name | No .of farmer describe the disease as | | | | | Overall Rank |
		First	Second	Third	Fourth	Fifth	
Cows							
Trypanosomosis	Gendi	45	7	5	3	4	1
Mastitis	Yetut-Beshita	12	11	14	12	10	2
Fasciolosis	Yegubet-Tile	11	6	15	7	8	3
Heifer							
Trypanosomosis	Gendi	21	28	9	13	4	1
Fasciolosis	Yegubet-Tile	48	6	9	3	7	2
Schistosomosis	Yewuha-Tile	8	21	14	7	10	3
Calves							
Trypanosomosis	Gendi	35	7	10	7	3	1
Calf diarrhea	Kumegna	26	11	12	4	6	2
Fasciolosis	Yegubet tile	8	19	8	14	5	3
Male cattle							
Trypanosomosis	Gendi	46	7	12	3	6	1
Fasciolosis	Yegubet-Tile	14	26	9	12	4	2
Schistosomosis	Yewuha-Tile	11	16	10	7	11	3

Table 7. Major diseases of goat and sheep mentioned by sampled farmers

| Name of diseases | Local Name | No .of farmer describe the disease as | | | | | Overall Rank |
		First	Second	Third	Fourth	Fifth	
Immature goats							
Respiratory problem	Sal	7	4	8	6	1	1
PPR like disease	-	7	8	2	3	5	2
Mange	Kukini	3	5	6	7	4	3
Mature goats							
Respiratory problem	Sal	8	3	8	6	1	1
PPR like disease	-	7	6	5	2	5	2
Mange	Kukini	4	2	8	7	3	3
Immature sheep							
Respiratory problem	Sal	5	15	5	6	2	1
Fasciolosis	Yegubet-Tile	13	6	6	5	1	2
Orf	Afegumed	8	5	3	8	6	3
Mature sheep							
Respiratory problem	Sal	8	7	10	5	1	1
Fasciolosis	Yegubet-Tile	10	6	6	5	2	2
Anthrax	Kurba	5	10	5	6	2	3

Colic was the most important disease followed by respiratory problems and anthrax in both immature and mature donkeys (Table 8).

Table 8. Major diseases of donkeys mentioned by sampled farmers

| Name of diseases | Local Name | No .of farmer describe the disease as | | | | | Overall |
		First	Second	Third	Fourth	Fifth	Rank
Immature donkeys							
Colic	Kurtet	25	1	5	3	0	1
Respiratory problem	Sale	1	17	3	2	0	2
Anthrax	Kurba	2	4	7	3	0	3
Mature donkeys							
Colic	Kurtet	24	1	4	3	0	1
Respiratory problem	Sale	2	15	3	1	0	2
Anthrax	Kurba	2	3	8	3	0	3

3.9.4. Incidence of Livestock Diseases at Fogera Woreda Veterinary Clinic

Among the diseases, which were diagnosed tentatively at Fogera Woreda Veterinary clinic, gastrointestinal parasitism (21.4%), peduculosis (28.72%) and trypanosomosis were the most frequently observed diseases in cattle. In goats, mange (34.9%) and respiratory problem (18.6%) were the most common diseases while in sheep gastrointestinal parasitism (34.5%) and respiratory problem (20.7%) were most commonly encountered (Table 9).

| Disease | Percentage of disease Occurrence in each species | | | |
	Bovine	Caprine	Ovine	Equine
Trypanosomiasis	10.7	0.0	0.0	0.0
GI parasitism	21.4	4.7	34.5	20.0
Pediculosis	18.7	0.0	0	0.0
Tick	8.2	4.7	17.2	12.0
Abortion	3.2	2.3	6.9	4.0
Mange	1.6	34.9	10.3	0.0
Respiratory problem	1.6	18.6	20.7	12.0
Retained placenta	4.3	11.6	0.0	8.0
Anthrax	1.6	0.0	0.0	12.0
Black leg	1.6	0.0	0.0	0.0
Calf diarrhea	6.4	0.0	0.0	0.0
Wound	3.2	2.3	0.0	30.0
Mastitis	7.5	2.3	0.0	0.0
Eye infection	1.6	4.7	3.4	8.0

3.9.4. Control and Prevention of Livestock Diseases

The majority of the farmers (96.25%) used modern medicaments while 46.25% used traditional medicine to treat sick animals. Slaughter was mentioned as a means to cull diseased animals by

27.5% of the farmers. The use of traditional treatments were mostly for infectious disease (83.75%). Non-infectious diseases (36.25%) and surgical cases (14.75%) were handled traditionally to some extent.

About 81.25% of the farmers had access to modern veterinary service while the rest didn't have access. According to the farmers long distance and lack of transport facilities were mentioned as leading problems to get modern veterinary services (96.25%). The majority have also mentioned lack of drug and vaccine (82.25%) as problems associated with animal health services.

3.10. Mortality of livestock in the past year (2005/2006)

During the past year a total of 318 animals died from different causes, but according farmer most of goat died of diseases that is categorized as unknown disease. From the total number of animals died last year, 18.9% were cattle, 45.9% were poultry, 20.1% Goat, 11% were sheep and 4.1% were equine.

Diseases outbreaks were reported to government bodies only by 45% of the farmers and about 63.9% of the reporting farmers knew that the government bodies responded for their reports.

4. DISCUSSION

Trypanosomosis was claimed to be the important disease in different group of cattle in the present study. Adane (1995) reported the prevalence rate of 16.6% trypanosomosis in and around Bahir Dar. Since the study area is known to be out of the tsetse belt, the transmission of the disease could be due to mechanical vectors. The disease is economically important as it affect the productivity of animal and socioeconomic of the human population in the affected area. Gewado (2004) reported that implementation of tsetse and trypanosomosis control in Ghibe Valley resulted in 24% increment in human settlement, 18.25% rise in cattle herd size and an increase in the number of draft oxen from 0.6 to 1.3 per house hold.

Faciolosis and schistosomosis were also among the important diseases in different group of castle in study area. Derib (2005) also report the general prevalence of termatodes of 34.5% in Bahir Dar. The reason for the prevalence of these diseases in the study area is the presence of large water bodies and the tendency of farmer to feed their animals in marshy area due to shortage of grazing land the area. Fasciolosis is economically important in that it causes great losses in terms of organ condemnation after slaughter and reducing the productivity of sick animals.

In the present study calf diarrhea is mentioned by farmer as a serious health problem affecting calf. The importance of calf diarrhea was also reported by previous authors (Gitual *et al.* 1994; Sivual *et al.*, 1996a; Busatu *et al.*, 1997). Several factors affect the health and vigor of calf in the early period of calfhood. Among these factors inadequate feeding of colostrums, farm hygiene and environmental conditions are the most important.

Mastitis was also mentioned by farmer as the second most important disease of cattle. The occurrence of cases of mastitis is also reported by Frese (1999) (44.5 %) at Debre Zeit and Addis Ababa. 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 is economically important disease due to reduced milk production, cost of treatment and premature culling (Radostitis *et al.*, 2001).

Blackleg and anthrax were also among the most important diseases mentioned by farmers. The occurrence of these two diseases in the study areas could be explained by the topography of the area which is plain and exposed to flooding every rainy season due to over flowing of Tana Take. It is an established fact that anthrax and black leg are frequently associated with flood (Blood, 1995). The fact that there is improper disposal of carcass (disposal of dead animals in the open field) by farmers in the study area would maintain the endemicity of the diseases in the areas.

In sheep and goats, respiratory problems which is characterized by nasal discharge and coughing and subsequently death in some cases was mentioned by farmer as the first most important disease. The same result was reported by Mekonen (2000) in Arsi highlands. The clinical signs are suggestive of pasteurellosis which are in agreement with the signs of pasteurellosis described by (Gilimoar, 1993).

Orf and mange are also mentioned as important disease by farmer and animal health professional during questionnaire survey as well as during group discussion These disease are important in affecting the skin quality and hence the export market on the products (Ayele *et al.*, 2003) .

Faciolosis was also mentioned as important disease in sheep by farmer. The disease was mentioned as important as the major cause of organ condemtation by Ngategize *et al*. (1993), Abdella (2006) and Yilma (2003).

Colic (abdominal pain) is an important and frequently occurring disease in the area according to the respondents both in the group discussion and questionnaire survey. All owners of equines listed this disease problem as the first most important. The causes of this disease sign are numerous in number among these are impaction (Rose and Hodgson, 2000), spasmodic colic, intussusceptions, vulvulus torsion, strangulation, tympany, colitis and verminous cases. The second important equine health problem in this study was respiratory disease complex. Three to eight percent 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, respectively (Alemnesh, 2004).

5. CONCLUSION AND RECOMMENDATIONS

This study revealed that the farming system in Fogera Woreda is predominantly mixed crop-livestock production system characterized by land shortage and a livestock herd dominated by cattle and sheep. There were also goats, donkeys, mules and poultry in the livestock herd. The fact that the cattle herd was dominated by oxen and the majority of the land owned by households was allocated for crop cultivation indicates that the role of cattle in the study areas is subordinate to the crop production. Small ruminants were used as a source of income while equines were used as pack and transport animals. Livestock feeding was based on farm feed resources (crop residues and natural pasture).

Trypanosomosis, fasciolosis, gastro-intestinal helminthes and calf diarrhea were the most important diseases of cattle. Respiratory problems were most important in small ruminants. PPR like disease and mange were common in goats while fascilosis and other gastro-intestinal helminthes were important in sheep, respectively. Colic, wound and respiratory disease complex were considered as important in donkeys.

The majority of mortalities were in poultry, cattle and goat. Modern veterinary medicaments were known and used by most of the farmers, but traditional medicines were also used to a significant extent.

Based on these conclusions, the following are recommended:

- Livestock owner need to be introduced to the basic knowledge of nutritional and animal health management
- The livestock sector should be strengthened through linking the farmers with output and input markets;
- Introduction of farm feed resources rich in protein and energy like multipurpose trees is highly recommended;
- Emphasis should be given to surveillance, monitoring and control of major diseases affecting livestock;

- Detail epidemiological study should be carried out on the major diseases prevalent in the study area that would help design appropriate disease prevention and control strategies.

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7. ANNEX

AnnexI. Questionnaire format

I. Animal Production

1. Code [/ / /]	1.1. Date of interview [/ /]
2. Kebele [/]	2.1. Peasant Association (PA) [/ /]

3. Name of village [ ]

4. Name of the farm [ ]

5. Owner's sex	6.1. Male [ ] 6.2. Female [ ]		6.3. Age [ ]	
6. Owner's education level	6.1.No [ ]	6.2. Religious [ ]	6.3. 1-6 Grades [ ]	6.4. > 6 Grade [ ]
7. Number of family members	7.1.≤ 15 years [ ]		7.2. > 15 years [ ]	

8. Private land use pattern	Own (ha)	Rented (ha)
8.1. Cropland		
8.2. Fallow land		
8.3. Grazing land		
8.4. Other		

9. Livestock inventory (number)

	Calves			Cow		Oxen		
Species	Male	Female	Heifer	Dry	Lact.	CastrA.	Bull	Total
9.1. Cattle								
	Kid/lamb							
	Male	Female	Yearling	Doe/ewe		Castr.	Buck/ram	Total
9.3. Goat								
9.4. Sheep								
	Young		Mature female	Mature male		Total	Species	
9.5. Donkey							9.7. Poultry	9.8. Bees
9.6. Horse								

10. Livestock products and function

Cattle	Goat	Sheep	Equine	Poultry	Bees

11. Feeding practice (prioritise according to order)

Type feeds	Rank
11.1. Natural pasture	
11.2. Stover (sorghum and maize)	
11.3. Cereal straws ('teff', barley, wheat…)	

11.4. Vegetable garbage	
11.5. Cultivated pasture	
11.6. Salt and minerals	

12. Communal grazing land

12.1. Is there communal grazing land?	Yes [ ]	No [ ]
12.2. Distance from the village (km)?		
12.3. In which season is most important?		

13. Availability and seasonality of feeds

Type feeds	Dry season	Short rainy season	Long rainy season
13.1. Natural pasture	[ ]	[ ]	[ ]
13.2 Stover (sorghum and maize)	[ ]	[ ]	[ ]
13.3. Cereal straws ('teff', barley, wheat…)	[ ]	[ ]	[ ]
13.4. Vegetable garbage	[ ]	[ ]	[ ]
13.5. Cultivated pasture	[ ]	[ ]	[ ]
13.6. Salt and minerals	[ ]	[ ]	[ ]

14. Traditional salt supplements

14.1. Do farmers traditionally Supplement salt?	Yes [ ]	No [ ]	
14.2. Natural source of salt	Watering points [ ]	Plants [ ]	Mineral soil [ ]
14.3.Which salt source is most available?	Watering points [ ]	Plants [ ]	Mineral soil [ ]
14.4. Time of the year for Supplementation	[ ]		
14.5. List deficiencies observed (based on farmers perception) in order of importance:			

15. Watering

15.1. Watering source	River [ ]	Stream [ ]	Pond [ ] well [ ]
15.2. Critical season of water shortage			
15.3. Frequency of watering during this time	Alternate day [ ]	Every 3 days [ ]	

16. Housing

16.1. Separate from home	Species mixed	Species separated
16.2. Communal	Species mixed	Species separated

17. Breeding

17.1. Controlled	Natural	AI
17.2. Uncontrolled	Natural	AI

18. Marketing

18.1. Did you sell livestock during the last year?	Yes	No
18.2. What are the main reasons of selling livestock8		
19.3. The main season of selling livestock		

II. Animal Health

19. What are your culling criteria?
   a. Disease   _____
   b. Old age   _____
   c. Reproductive disease/infertility   _____
   d. Poor production   _____
   e. Other   _____
20. How do you dispose the after birth/fluids/aborts/cadaver?
   _____

21. Have you encountered abortions in the last 2 years?
   a. Yes _____
   b. No   _____

22. If your answer to question 21 is yes;
   a. Which species   _____
   b. Which term   _____
   c. Which month/season   _____
23. How do you consume animal products?

Way/product	Milk	Meat	Eggs
Raw			
Cooked/boiled			
Other			

24. List (and rank) five important diseases.

   (i) cattle

Calf (<1year)	heifer	Cow	Steer	bull
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5

(ii) sheep

Young (1- 12 months)	Adult (> 12 months)
1	1
2	2
3	3
4	4
5	5

(iii) goats

Young(1- 12 months)	Adult(> 12 months)
1	1
2	2
3	3
4	4
5	5

(iv) equine (horses, mules, donkeys)

Foal (1 year)	Adult
1	1
2	2
3	3
4	4
5	5

25. What measures are taken to tackle the problem?
   a. Slaughter   _____
   b. Modern treatment_____
   c. Traditional treatment   _____
   d. Other   _____

26. If you use traditional treatment, for which diseases?
   a. Infectious   _____
   B   Parasitic _____
   b. Non infectious   _____
   c. Surgical _____
   d. other   _____
   a.   _____

27 Is there access to modern veterinary service?
   a. Yes   _____
   b. No   _____

28. What problems do you face when treating or vaccinating livestock in your area

   (rank them)?

a. lack of modern services/clinics   _____
b. lack of drugs and vaccines   _____
c. transport/distance   _____
d. other   _____

29. How do you judge the cost of modern treatment/vaccination?

	Treatment	vaccination
Expensive		

Moderate		
Cheap		

30. What is the number of animals lost during the last year?

(i) Cattle

alf	heifer	Cow	Steer	bull

(ii) sheep

Young (1- 12 months)	Adult (> 12 months)

(iii) goats

Young (1- 12 months)	Adult (> 12 months)

(iv) equine (horses, mules, donkeys

Foal (1 year)	Adult

31. Do you report any diseases/outbreak to the government body?
a.   Yes   _____
b.   No   _____
32. If your answer to question 31is yes, did the government body respond?
a.   yes   _____
b.   no   _____
33. If the government body responds, what measures had taken by the government?
a. Treatment   _____
b. Vaccination   _____
c. Other   _____

34. Has any training been provided to you in animal health care delivery in the last five years?
a.   yes   _____
b.   no   _____

35. If your answer to question 34 is yes, what was the nature of the training?

_____
_____

36. If your answer to question 35 is yes, what is their area of engagement?
   a.   animal health   _____
   b.   animal production   _____
   c.   feed and water provision_____
   d.   animal management _____
   e.   other   _____

37. What suggestion do you give for improvement of animal health care activities in your area?
   _____
   _____
   _____

Checklists for Group Discussion

   1. Key respondents (15 known individuals identified by the DA for about 1 hr)

       -   Major feed types in the area
       -   When feed /water is a problem
       -   Use of natural (plants or water source) mineral supplements: when, Known problems identified
           by farmers and measures
       -   Major disease of the area _
       -
       -

Annex 1. **Detail result of questioner survey on livestock health problem**

Local name	Name of disease	No .of farmer describe the disease as					Overall Rank
		First	Second	Third	Fourth	Fifth	
Calf							
Yewhatile	Schistosomiasis	1	14	11	5	13	4
Worchoge	Blackleg	5	8	11	9	6	5
Kurba	Anthrax	1	5	5	14	7	6
Kimazire	Peduculosis	0	6	8	3	8	7
Yeahyaeshoh	Non	2	6	4	4	6	8
Heifer							
Worchoge	Blackleg	1	5	11	14	15	4
Kurba	Anthrax	0	7	11	17	10	5
Kimazir	Peduculosis	1	5	10	4	6	6
Ee	Fmd	0	1	5	8	6	7
Ee	Fly bite	0	2	1	4	5	8
Male cattle							
Worchoge	Blackleg	0	6	16	8	10	4
Kurba	Anthrax	2	8	11	16	6	5
Kimazire	Peduculosis	0	6	7	5	5	6
	Foot and mouth	1	6	6	7	5	7

Dereba	Fly Bite	0	1	1	9	4	8
Cow							
Yewha tile	Schistosomiasis	1	7	13	12	8	4
Kurba	Anthrax	3	7	7	9	14	5
Worchoge	Blackleg	2	15	5	6	4	6
Wurga	Abortion	4	14	3	10	0	7
Kimazire	Peduculosis	0	4	7	6	5	8
	Foot and mouth	0	2	2	4	7	9

Name of diseases	Local Name	Rank (proportion)					Overall Rank
		First	**Second**	**Third**	**Fourth**	**Fifth**	
Immature Goat							
		8	6	5	2	1	**4**
Kurba	Anthrax	0	3	4	4	8	**5**
Afegumed	Orf						
Mature goat							
Kurba	Anthrax	5	8	4	1	2	4
Afegumed	Orf	0	4	4	3	7	5
Wurga	Abortion	0	2	1	1	1	6
Immature sheep							
Kukini	Mange	3	2	9	6	8	4
Kurba	Anthrax	4	2	10	5	1	5
Kortim	foot rot	2	6	4	5	4	6
Mature sheep							
Kukini	mange	3	2	9	6	7	4
Kurba	Orf	4	5	3	8	6	5
Kortim	foot rot	5	6	4	5	4	6

Local name	Disease name	No .of farmer describe the disease as					Over al rank
		First	Second	Third	Fourth	Fifth	
Young donkey							
Dereba	Skin disease	0	1	3	4	0	
	Backsor	0	1	3	4	0	
	Lameness	0	2	1	0	0	
Adult donkey							
Dereba	Skin disease	0	2	2	4	0	
	Backsor	0	1	3	5	0	
	Lameness	0	2	4	0	0	

Disease and constraints of livestock production identified by key respondents

The result of group discussion with key respondent on major constraints of live stock production revealed that disease, feed shortage, inadequate veterinary service, water shortage, lack of enough drug and un scheduled and absence of vaccination program.

Most common disease that occuring frequently in the last few years in the study identified by Key Respondent

Common name	Scientific name	Sign	Traditional medicine used (measure taken)	Age	Spp
Kurba	Anthrax	Inappitance the pancreas swollen during slaughter	Non	All	Sheep.Caprine, equine and cattle
Worchoge	Blackleg	Lameness, inappitance swelling of muscle, the meat appear black,	. Incision of affected muscle, . Drenching of local plant called gebreemboi	Young	
Gendi	Trypanosomes	Poor body condition, diarehea, larcmation of the eye	Non	All	Cow
Wurja	Abortion	Pungent fluid comes through vagina the fetus comes out dead and some times edematous	Selling of frequently aborted animal	All	All
Yetut beshita	Mastitis	Swelling, pus comes out through, teat	Non	Adults	Cow and Goat
Kumegna	Calf diareahea	Bloody diareahea (pungent smell), straining (1—month of age)	The use the local plant Gebremboi		
Afegumed	orf	Wound around mouth	Bereber	All	Sheep and goat
Yewha tile	Schistosomiasis	Bloody diarehea, emaciation, mucous feces straining	no	All	Cattle mostly
Yegubet tile	Faciolosis	Emaciation and presence of red flat worms in the liver during slaughter	no	All	Cattle sheeps
Maze	FMD	Wound in the inter digital space and mouth and salivation	Bereber	All	Cattle