



**HARAMAYA UNIVERSITY
FACULTY OF VETERINARY MEDICINE**

**MAJOR ANIMAL HEALTH PROBLEMS OF MARKET ORIENTED
LIVESTOCK DEVELOPMENT IN BURE WOREDA**

BY

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LIVESTOCK DEVELOPMENT IN BURE WOREDA**

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List of Abbreviations

AAU	Addis Ababa University
AI	Artificial insemination
CACC	Central Agriculture Census Commission
CSA	Central Statistical Authority
FMD	Foot and Mouth Disease
FVM	Faculty of Veterinary Medicine
ILCA	International Livestock Center for Africa
ILRI	International livestock Research Institute
IPMS	Improved Productivity and Market Success of Ethiopian Farmers
LSD	Lumpy Skin Disease
MASL	Meter above Sea Level
NCD	New Castle Disease
OoARD	Office of Agriculture and Rural Development
PA	Peasant Association
PLW	Pilot Learning Woreda

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Abstract

A study was conducted to identify the major animal health problems and to look at the production system in Bure woreda from September 2007 to March 2008. Questionnaire Survey was carried out on 80 livestock owners to collect information on the livestock production system and the major health problems recognized by farmers. Participatory discussion was also made with animal health staffs and case observational study was on 794 diseased animals, which constitute 422 cattle, 300 sheep, 16 goat and 56 equines was undertaken to identify diseases that frequently affect animals in the area during the study time. The questionnaire survey revealed that mixed crop livestock production system is predominant in the area. The livestock herd was dominated by cattle and sheep. The main role of cattle in the farming system is as a source of traction power for crop production while small ruminants as source of income. Equines were used as transport animals. The livestock feeding was mainly based on farm feed resources (croup residues and natural pasture). About 46.09% provided housing for livestock while the rest keep there animals in the open. Uncontrolled natural mating was used by 90.54% of the farmers while 8.1% used controlled natural mating and 1.35 % used AI. In cattle trypanosomosis, fasciolosis, lumpy skin disease, calf diarrhea and anthrax were the most important diseases. Respiratory problems were the most important in small ruminants. Colic and respiratory problems were considered important in donkeys. In poultry NCD was the most devastating disease. Results of the case observational study also indicated that fasciolosis(22.03%), Gastrointestinal parasitism(17.06%),lumpy skin disease(18.7%) and trypanosomosis(6.64%) in cattle, fasciolosis(37.3%) and respiratory problems(30.3%) in sheep, respiratory problem (75%)in goat and wound(39.28%) and epizootics lymoangitis(37.5%) in equine were the leading cases diagnosed. Results indicated the need for expansion of veterinary services, introduction of alternative animal feed sources and detailed epidemiological study.

Key words: *Animal health, Bure, livestock, questionnaire, group discussion, production system, case observation*

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 Africa countries livestock plays a crucial role both for the national economy and the livelihood of rural communities. It provides drought power, milk, and meat, input for crop production and soil fertility and raw material for industry (ILCA, 1980). Livestock in great horn of Africa is vital resource in promoting development. They provide 20-30% of the Gross Domestic Production (GDP) and at the farmer level as much as 70% of cash income is generated from livestock (Ndikima *et al*, 2000).

Ethiopia is one of the most populated countries in Africa, having an estimated 67.2 million in July 2002 with annually growth rate of 2.9%. The dominant economic feature of the country is the agriculture sector, of which livestock is a very important and essential component (CACC, 2003). In Ethiopia, livestock contribute about 30-35 percent of agricultural Gross Domestic Product (GDP) and more than 85 percent of farm cash income. The livestock sub-sector also contributes about 13-16 percent of total GDP (Benin *et al*, 2002).

The livestock population of Ethiopia is estimated to be about 43,124,582 cattle, 28,721,633 seep, 18,559,730 goat, 1,655,383 equines, 616,396 camels and 33,199,484 poultry (CSA, 2006). Despite the huge resource, Ethiopia's livestock productivity is lower than the Africa's average. The major biological constraints contributing to low productivity include low genetic potential of the animals, poor nutrition and the prevailing animal diseases (Asseged, 1999). The main effect of the diseases include mortality, sub optimal production, reduced quality of animal products such as milk and meat, decreased drought power output, and risk of zoonotic diseases to man (Redi, 2003).

According to Tegene and his colleagues (1998), the Ethiopian highland is challenged by a Plethora of diseases, which is one of the major existing constraints impending full exploitation of the livestock. Study conducted in Ginchi watershed area Belayneh(2002)

has indicated that the most prevalent cattle diseases were leech and liver fluke infestation, black leg, anthrax, foot and mouth disease (FMD), lumpy skin disease(LSD),whereas liver fluke and sheep pox wear the major threats to small ruminants. A number of other studies carried out in the Ethiopian highlands revealed that respiratory disease with multifactor etiology are common and constitute the major causes of mortality in sheep. In addition, gastrointestinal parasites and reproductive wastage due to infertility and embryonic mortality impose a serious limitation on small ruminant production (Sykes report, 1994 and Tembly, 1998). Although these diseases are due consideration, experiences has shown that (Coppock, 1994) there was a less attention paid on health research. However, knowing the type and extent of the common and/or major health problems is very important to the livestock owner, veterinarians, and researchers which can assist in the selection of possible interventions (Radostitis *et al.*, 1994). Damte (2004) has also recommended that an organized research that can elucidate major animal health problem is a central issue for further study of epidemiological study on disease of livestock.

Underdevelopment and lack of market oriented production, lack of adequate information on livestock recourses, prevalence of animal disease; illegal trade and inadequate market information; both internal and external are mentioned as some of the major reasons for poor performance of the livestock sector (Akliilu, 2002; Hurissa and Eshetu,2002).

In order for the country to halt this trend and achieve poverty alleviation and food security, much greater attention need to be given to livestock productivity and health; including postharvest processing and marketing (Dalgado *et al.*, 1999). Various projects has been initiated by international livestock institute (ILRI) and the ministry of agriculture and rural development (MoARD) one entitled: “Improving productivity and market success (IPMS)” of Ethiopian framers; aims at contributing to reduction in poverty of the rural poor through market oriented agricultural development (ILRI, 2006)

Therefore, the objective of this paper is:

- ❖ To study production system characteristics with emphasis on major animal health problems in market oriented livestock in Bure Woreda

2. MATERIAL AND METHODS

2.1 Study Area

Bure is one of the 15 woreda of West Gojam Administrative Zone of Amhara National Regional State. It is one of the consistently surplus producer woredas of the Region. The capital city of the woreda, Bure, is found 400 km northwest of Addis Ababa and 148km southwest capital of the Regional State, Bahir Dar. Bure woreda receives relatively high amount of rainfall which is balanced in distribution pattern. According to available data the mean annual rainfall ranges from 1386 to 1757 mm. The western and northern parts of the woreda receive relatively higher annual rainfall compared to other parts of the woreda. It has mono-modal rainfall distribution which extends from May to September.

The altitude of the woreda ranges from 713 to 2604 metres above sea level .The altitude decreases from 2604 to 713 metres above sea level as one travels from north to south part (Nile gorge) of the woreda, while the opposite holds true for temperature. Long term annual mean temperature of Bure ranges from 14 °C to 24 °C (OoARD, 2006).

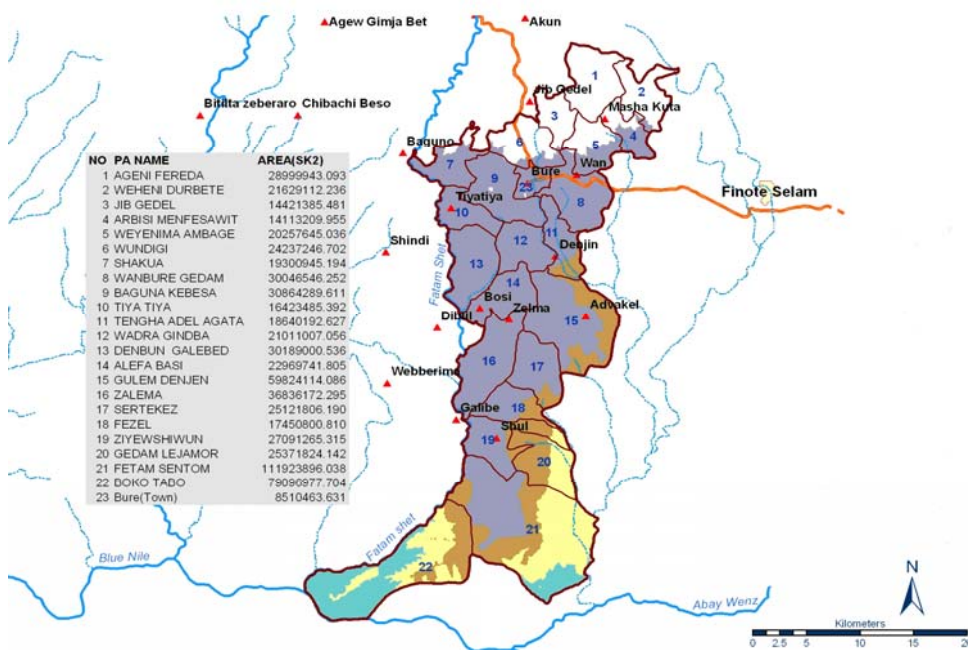


Figure 1 Map of Bure woreda (OoARD, 2006)

Table 1 Livestock population in Bure Woreda in 2004/5

No.	Livestock type	Population
1	Cattle	71924
	○ <u>Ox</u>	25575
	○ <u>Cow</u>	16318
	○ <u>Heifer</u>	10213
	○ <u>Bull</u>	10692
	○ <u>Calve</u>	9106
2	Small ruminants	23919
	○ <u>Sheep</u>	15225
	○ <u>Goat</u>	8794
3	Equines	6684
	○ <u>Horse</u>	586
	○ <u>Mule</u>	85
	○ <u>Donkey</u>	6013
4	Poultry	47159
	○ <u>Local</u>	45371
	○ <u>Improved</u>	1788
5	Bee hives	4801
	○ <u>Modern</u>	1146
	○ <u>Traditional</u>	3655

Source: (OoARD , 2006)

According to the available data, three soil types namely Humic Nitosols (63%), Eutric Cambisols (20%) and Eutric Vertisols (17%) are found in Bure woreda. Most of the areas in the wet Dega agro-ecology have Humic Nitosols, while areas with wet Woina-Dega have Humic Nitosols and Eutric Vertisols. On the other hand, the wet and moist lowlands have Eutric Cambisols.

The woreda is endowed with large number of rivers and springs. Farmers use this water resource for irrigated crop production both with traditional and modern river diversion schemes.

Bure woreda has 6143 hactar of natural forest and 401 hactar forest plantation. Major indigenous and introduced tree species growing in the woreda include *Besana* (*Croton macrostachys*), *Wanza* (*Cordia africana*), *Yabesha Tid* (*Juniperus procera*), *Sesa* (*Albizia gummifera*), *Berbera* (*Millettia ferruginea*), *Zegeba* (*Podocarpus falcates*), *Sholla* (*Ficus sure*), *Warka* (*Ficus vasta*), *Ydega Abalo* (*Terminalia briwuni*), *Kerero* (*Aningeria adolfifriederici*), *Yefrenji Tid* (*Cupressus lusitanica*), *Key Bahir Zaf* (*Eucalyptus camaldulesis*), *Korch* (*Erythrina bruci*), Getem and Yetan Zaf (*Bosiovella papifera*).

Like in other parts of the country, farmers in Bure woreda practice crop-livestock mixed farming system. However, the woreda is classified into two farming systems mainly based on altitudinal differences and dominant crops and livestock types. The two farming systems of Bure woreda are:

1. Cereal/pepper/livestock farming system
2. Cereal/potato/livestock farming system

2.2. Study Animals

All species of domestic animals owned by selected households and animal's brought to Bure veterinary clinic having different health problems during the study periods were considered as study animals.

2.3. Study Protocol

2.3.1. Sampling Procedure

For this preliminary survey, 4 Peasant associations (Pas) namely Woyema Ambaye, Tengeha Adel Ageta, Fetam Sentom, and Beko Tabo were selected purposively based on accessibility to transport and agro ecological differences. From each PA 20 households were randomly selected which then made a total of 80 households to be included in the study. All livestock owned by the sampled households were considered as study animals which comprise cattle, goats, sheep, and poultry.

2.3.2. Data Collection

Questionnaire survey

A detailed and organized questionnaire format (Annex I) was designed in an attempt to generate base line information related to livestock production with particular emphasis on major livestock health problems; livestock diseases considered as important by farmers and measures taken by farmers against livestock diseases. The questionnaire was framed in such a way that farmer's could give information that are recent and easy to recall and it was filled directly by interviewing randomly selected farmers from different villages of the four peasant associations.

Participatory approach

Informal group discussion with animal health stuffs has been held for about one hour to generate relevant information about livestock health and production (Annex II).

Case observational study

A total of 794 diseased animals which include 422 cattle, 300 sheep, 16 goats, 56 equines were examined in the Bure veterinary clinic during study period to asses and address the most frequently appearing clinical diseases that affect market oriented livestock development. The cases were tentatively diagnosed based on history; clinical finding and simple laboratory procedures.

2.4. Data Analysis

The data collected in the study was stored in the Excel Microsoft (MS excel) and descriptive statistics was employed to summarize the data.

3-RESULTS

3.1-Demographic and Land Holding Features of Respondents

The majority of respondents were male (95%) and the rest female (5%). The maximum and minimum ages were 75 and 19 years. Regarding education status, 55% of respondents are illiterate (Table 2). Respondent's family size proportion showed 42.95% and 57.05% have family members less or equal to 15 years of age and greater than 15 years of age respectively.

Table 2. Demographic Characteristics of Sampled Households

Variable	N	Category	Frequency (Proportion)
Sex	80	Male	95%
		Female	5%
Education Status	80	Illiterate	55%
		Religious	7.5%
		1-6 grade	30%
		>6 grade	7.5%
Family Size	80	≤15	42.95%
		>15	57.05%

3.2. Livestock Herd Size and Composition

The average herd size and composition of cattle, sheep, goats and equines per household is presented in Table 3. Cattle comprise the largest proportion of the livestock herd, followed by sheep, poultry, goat and lastly equines in their order of appearance. Castrated ox (37.98%) dominated the most shares of cattle herd followed by heifer (12.8%). In the case of small ruminants, the flock is composed primarily of female animals representing 49.18% in goats and 52.38% in sheep.

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

Species	Mean	Range	Proportion from species herd (%)
Cattle			
Male calf	1.45	1-4	11.1
Female calf	1.33	1-3	5.6
Heifer	1.96	1-4	12.8
Dry cow	1.8	1-4	11.4
Lactating cow	1.5	1-3	11.8
Castrated ox	2.28	1-6	37.98
Bull	1.54	1-3	9.98
Sheep			
Male lamb	1.69	1-5	16.07
Female lamb	2.18	1-5	22.02
Yearling	2	0-2	1.19
Ewe	2.93	1-9	52.38
Castrated rams	1.29	1-3	5.6
Ram	1.25	1-2	2.98
Goat			
Male kid	2	1-12	16.39
Female kid	2	1-7	22.02
Doe	2.73	0-2	49.18
Castrated	2	1-9	6.58
Buck	1.5	1-2	4.92
Equine			
Young donkey	1	0-1	16.3
Female donkey	1	0-1	51.61
Male donkey	1.43	0-1	32.26
Poultry	5.12	1-7	
Beehive	4.5	1-10	

3.3-Livestock products and functions

In the study area animals are used for different purposes (Table 4) and hence they are considered as backbone of the livelihood of the community.

Table 4. Functions/Products of Livestock and Percentage of Respondents

Functions/products	Cattle	Goat	Sheep	Equine	Poultry	Beehive
Traction power	74(48.05)			7(24.14)		
Milk/its by products	43(27)					
Market/sell	19(12.34)	11(40.74)	26(30.2)		18(23.4)	7(53.8)
Breeding/Rearing	4(2.6)	1(3.7)	4(4.7)			
Hide/Skin	3(1.95)	3(11.1)	21(24.4)			
Meat	11(7.14)	12(44.4)	35(40.7)		27(14.7)	
Transport/Loading				22(75.9)		
Egg					32(41.6)	
Honey						6(46.2)

3.4-Livestock Management

Housing Breeding and Recording

53.9% of the respondents house their animals separately in simple shed, which does not protect the animals from sun/ cold /rain .46.09% of the respondent's house animals (poultry, small ruminants) with the owners in communal house. Regarding breeding, 90.54% of the farmers used uncontrolled natural breeding, 8.1% used controlled natural breeding and 1.35% of respondents bring their animals on proper time to the veterinary clinic in search of the AI service.

Watering

The major sources of water mentioned by farmers were river (96.34%) followed by temporary wells (3.66%). There were in general water shortage from February to May but marcher & April were the critical times when there was serious water shortage in the study area.

Feeding

Cereal straws (100%) and natural pasture (85%) were the most frequently used resources in the study area. Strove was also significantly used in the area (66.25%).

Table 5. Major livestock feed resources in the study areas

Feed resource	Frequency/proportion	Rank using the mentioned feed stuff			
		First	Second	Third	Fourth
Straw (teff, wheat, barely)	80(100%)	38	10	32	
Stover (sorghum, maize)	53(66.25%)		37	16	
Natural pasture	68(85%)	34	25	9	
House left over(Atela)	17(21.25%)				17

3.5. Livestock marketing

Animals have paramount importance as source of cash as 66.25% of interviewees indicated that they sell animals for different purposes (Table 6).

Table 6. Purposes of livestock sell frequency and percentage of respondents

Reasons	Frequency	Proportion (%)
For household	40	51.95
Agricultural input	22	28.57
Replacement	9	11.69
Disease	2	2.5
Pay tax	1	1.3
Pay fertilizer credit	3	4

Respondents argue that they don't have specific time for selling livestock but mostly selling is undertaken during holidays.

3.6. Livestock culling criteria & disposal of cadaver & abortion materials

The most common reasons of culling livestock mentioned by farmers were old age (52.45%), infertility (44.76%) and disease (2.8%) . 85.33% of the respondents explained that they do not dispose fetal membranes (aborted materials)/ cadaver properly, after skinning dead animals, they leave for scavengers & dogs, but 14.67% of respondent disposed by buried.

3.7. Livestock lost in the past year (2006/7)

During the past year a total of 454 animals were lost from different causes but according to farmers most of the sheep died of diseases categorized as unknown diseases. From the

total number of animals died last year, 15.9% were cattle, 24.23 % sheep, 8.15 goats, 1.76% equines & 46.04 % poultry.

3.8. Treatment and prevention

91.6% of the peasants use modern treatment and 8.45% use traditional treatment to cure/treat diseased animals.

To prevent and control livestock diseases, specially infectious and parasitic diseases 66.1%, 0.85%, 0.85% and 32.2% of the respondents vaccinate, slaughter, quarantine, use other options like deworming and do nothing, respectively.

Table 7. Measures and frequencies of treatment and vaccination

Treatment/measures	Frequency	Percent (%)
Modern treatment	76	91.6
Traditional treatment	7	8.43
Preventive measures		
Vaccination	78	66.1
Slaughter	1	0.85
Quarantine	1	0.85
Other options (deworming and do nothing)	38	32.2

3.9. Veterinary service

51.9% of the respondents have an access to modern veterinary services and 48.1% have not. Majority of respondents argue that there is lack of manpower as compare to livestock population of the woreda, and lack of veterinary clinics in nearby.

Table 8. Response to cost treatment and vaccination at the study site

Degree of cost	Treatment		Vaccination	
	Frequency	Percentage	Frequency	Percentage
Expensive	23	29.9	6	9
Moderate	38	49.35	22	25.29
Cheap	16	20.78	49	56.32

3.10. Major Diseases of Livestock

Respondents confirmed that animal health and diseases are the front constraints of their livestock production in which many diseases mentioned as important by the sampled farmers are presented (Table 9,10, 11, 12,). Hence farmers lack important benefits from the market oriented livestock development extension. The most important diseases mentioned as affecting calves and heifers were pediculosis and lumpy skin disease, respectively but for cows and male cattle was trypanosomiasis. In addition, cows were also affected by lumpy skin disease, fasciolosis, mastitis and anthrax. Black quarter, calf diarrhea and pneumonia were also mentioned as important diseases of calves (Table 9).

In small ruminants, pasteurellosis was regarded as the most important disease. Fasciolosis and goat pox were the second most important diseases in sheep and goats respectively (Table 10).

Colic was the most important disease followed by respiratory problems and anthrax in donkeys. (Table 11)

Table 9. Major diseases of cattle mentioned by sampled farmers

Name of diseases	Local name	Prioritization based on their relative degree of importance					Overall Rank	
		First	Second	Third	Fourth	Fifth		
<i>Calves</i>								
Pediclosis	Kimazire	20	14	5	-	-	33.05	1
Black quarter	Worchoge	10	8	9	2	2	26.27	2
Calf diarrhea		4	10	7	-	2	19.5	3
Pneumonia	Sal	5	-	3	6	-	11.86	4
Lumpy skin disease	Wetete	-	2	6	3	-	9.32	5
<i>Heifer</i>								
Lumpy skin disease	Wetete	7	10	4	2	-	29.11	1
Fasciolosis	Berer	5	2	8	1	1	21.52	2
Trypanosomosis	Wuzwuz	9	4	1	1	-	18.99	3
Anthrax	Kurba	3	1	5	4	-	16.45	4
Mange	Agen	-	4	6	-	1	13.9	5
<i>Cow</i>								
Trypanosomosis	Wuzwuz	22	13	3	6	2	26.9	1
Lumpy skin disease	Wetete	7	11	14	2	3	21.64	2
Fasciolosis	Berer	1	3	13	15	4	21.05	3
Mastitis	Yetut beshta	1	6	5	8	12	18.7	4
Anthrax	Kurba	1	3	2	6	8	11.7	5
<i>Male cattle</i>								
Trypanosomosis	Wuzwuz	30	20	3	3	6	27.8	1
Lumpy skin disease	Wetete	8	13	20	13	6	26.9	2
Fasciolosis	Berer	1	9	16	18	6	22.4	3
Mange	Agen	-	4	6	10	9	13	4
Anthrax	Kurba	7	3	2	4	6	9.9	5

Table 10. Major diseases of small ruminants mentioned by sampled farmers

Name of disease	Local name	Prioritization based on their relative degree of importance					%	Overall Rank
		First	Second	Third	Fourth	Fifth		
Sheep								
Pasteurelosis	Inqit	38	13	1	-	-	47.7	1
Fasciolosis	Berer	3	16	1	2	-	20.18	2
Sheep pox	Fintita	7	9	2	-	2	18.35	3
Dermatophylosis	Afemaz	2	1	5	1	-	8.26	4
Coenerosis	Azurit	-	5	1	-	-	5.5	5
Goats								
Pasturelosis	Inqit	14	4	-	-	-	56.25	1
Goat pox	Fintita	4	6	-	-	-	31.25	2
Orf	Afemaz	-	2	1	-	-	9.38	3
Tick infestation	Metiger	-	1	-	-	-	3.13	4

Table 11. Major diseases of donkey mentioned by sampled farmers

Name of disease	Local name	Prioritization based on their relative degree of importance					%	Overall Rank
		First	Second	Third	Fourth	Fifth		
Colic	Kurtet	13	5	1	-	-	65.5	1
Respiratory problem	Sal	5	2	1	-	-	27.6	2
Anthrax	Kurba	1	1	-	-	-	6.9	3

Table 12. Major diseases of poultry mentioned by sampled farmers

Name of disease	Local name	Prioritization based on their relative degree of importance					%	Overall rank
		First	Second	Third	Fourth	Fifth		
NCD		27	-	-	-	-	93.1	1
Lice infestation		-	2	-	-	-	6.9	2

Case Observational Study

A total of 794 diseased animals (422 cattle, 16 caprine, and 300 ovine and 56 equine species) were diagnosed based on history, general and systemic examinations and laboratory tests in Bure veterinary clinic. Among the diseases which were diagnosed fasciolosis (22.03%), gastrointestinal parasitism (17%), lumpy skin disease 18.7% and trypanosomiasis (6.64%) were the most frequently observed diseases in cattle. In goats, respiratory problem (75%) and orf (18.75%) were the most common diseases while in

sheep fasciolosis (37.3%) and respiratory problem (30.3%) were most commonly encountered (Table 13).

Table 13. Major diseases diagnosed at clinic

Disease	Percentage of disease occurrence in each species			
	Bovine	Ovine	caprine	Equine
GI parasitism	17.06	21.3	0.0	0.0
Fasciolosis	22.03	37.3	0.0	0.0
Trypanosomiasis	6.64	0.0	0.0	0.0
Mange	4.98	0.0	0.0	0.0
Pediculosis	2.8	0.0	0.0	0.0
Leech	4.3	0.0	0.0	0.0
Black leg	0.47	0.0	0.0	0.0
Streptotricosis	0.0	5.7	0.0	0.0
Mastitis	6.16	0.0	0.0	0.0
Strangle	0.0	0.0	0.0	3.6
Eye infection	0.0	0.3	0.0	12.5
Respiratory problem	3.8	30.3	75	0.0
Lumpy skin disease	18.7	0.0	0.0	0.0
Foot and mouth disease	1.7	0.0	0.0	0.0
Orf	0.0	0.0	18.75	0.0
Sheep pox	0.0	1	0.0	0.0
Retained fetal membrane	5.9	1.66	6.25	0.0
Ring worm	0.7	0.0	0.0	0.0
Epizootics lymphangitis	0.0	0.0	0.0	37.5
Dystocia	0.47	0.3	0.0	7.14
Wound	0.47	0.3	0.0	39.28

4. DISCUSSION

Anthrax and Blackleg were the most important diseases mentioned by farmers. The importance of Anthrax and Blackleg was also reported by authors (Belayneh, 2002; Tesfahiwet, 2004; Kassaw, 2007; Gebremedhon, 2007; Kustres, 2007; Yohannes, 2007). 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 area. Sefirt (1996) described that scavenger birds and carnivores are able to spread the causative agent spores over a wide area. Other explanations could be due to low vaccination coverage in all villages of the woreda and the causative agent may be introduced to the lowland area during over flooding from the highlands. It is an established fact that Anthrax and Blackleg are frequently associated with flood (Frese, 1999).

Based on questionnaire survey, participatory approaches with veterinary staffs and observational study, mastitis was found to be major health problem of small holder dairy farms in the area. (Solomon, 2006; Kassaw, 2007; Gebremedhon, 2007) reported that mastitis was major dairy cow health problems in Asella, Eastern Ethiopia, Fogera Woreda, and in Atsbi Womberta woreda, Tigray regional state respectively. Frese (1999) (44.5%) of cows at Debrezeit and Addis Ababa are at risk of acquiring mastitis when there is improper milking and udder health management like preventing teat from lesion causing agent like tick infestation. According to Dairy Federation bulletin (1999) description, mastitis is economically the single most important diseases of the dairy cattle. It reduces milk yields, profit and the quality of milk and milk products in all dairy producing countries of the world.

Lumpy skin disease (LSD) was also among the important disease in different group of cattle in the study area. Other reports (Yohannes, 2007 and Kustres, 2007) also showed that lumpy skin disease in Alamata woreda and Alaba Woreda, Southern Nations Nationalities and Peoples region respectively. Its transmission from infected to healthy animal is high, as a result it mostly occurs as an outbreak and this could be the reason that make it very common disease mentioned by farmers, further more it may also be due to

low prevention measures like vaccination. The epizootic characteristics of this disease has close association with climatic condition mainly prolonged and heavy rains which favor an increase in the population of biting insects (Regassa, 2003).

Sheep and goat pox are mentioned diseases of small ruminants. Sheep and goat pox are highly contagious and spread quickly among in contract animals (Hailate *et al.*, 1994), which makes control difficult. It has importance as it dawn-grade skin quality due to skin lesion and mortality (Radostitis *et al.*, 1994).

In small ruminants, pasteurillosis is one of the most important diseases mentioned by farmers as well as third and second in case observational study in sheep and goats respectively. This is in agreement with the result of (Ayetet *et al.*, 2004; Gebremedhon, 2007;Yohannes, 2007;Kassaw, 2007) which indicates that pasturellosis is a major concern in north shoa, central highlands of Ethiopia, Atsbi Wombeta Woreda, Tigray regional state and Fogera woreda respectively. Pasturellosis, being commensally of the upper respiratory tract, selectively proliferate and colonise the lower part of the respiratory tract. This occurs during times of ill defined factors of which inclement weather is one example (Redostitis *et al.*, 1994). The other most probable reason may be the lack of an effective vaccine against pasturellosis.

Epizootic lymphangitis is one of the most common diseases in the area as seen from observational study. The importance of epizootic lymphangitis was also reported by previous authors (Zerihun, 2004; Mekonnen, 2007). This could be associated with sharing of infected equidae harness to others as it has been described as major means of transmission of the disease in addition to biting flies (Bridges, 1972).

Parasitic gastroenteritis in cattle is an important disease in the area according to the case observational study. Other reports (Belayneh, 2002; Tesfahiwet, 2004; Gebremedhon, 2007) also showed that parasitic gastroenteritis in Ginchi water shed, Adaliben woreda and Atsbi womberta woreda, Tigray Regional state was a major health problem of cattle.

Fasciolosis was also among the important diseases in different group of cattle in study area. A high prevalence of fasciolosis was reported by Ameni (2004) in North East Ethiopia. The woreda is endowed with large number of rivers and springs. Farmers use this water resource for irrigated crop production. Wrongly planned irrigation; however, impedes production and results in wasted effort by favoring the incidence and spread of common waterborne animal diseases such as fasciolosis which are known to cause significant animal losses (Traor, 1989). The other 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.

In the study area trypanosomosis is considered the most economically important disease due to the mortality it causes, the productivity losses on recovery, the cost for control and due to the very high susceptibility of cattle found in the boarder. Caerinet (1999) and Mahlet (1995) reported prevalence rates of 2% and 16.1% in Gojjam and Bahir Dar. Areas which fall in the lowland range extend to the Southern end of the woreda bordering Nile river where the disease is transmitted by tsetse fly is a bottle neck for animal production. Since the highland of study area is known to be out of the tsetse belt, the transmission of the disease could be due to mechanical vector. Mechanically transmitted trypanosomosis in Ethiopia, is commonly found in highlands too cool for the tse tse survival (Uilenberg, 1998)

Lice infestation was observed to affect most animals within a given herd. This showed that close contact between animals is important in the transmission of the parasite. The number of lice infested cases dramatically decreased as the dry season progressed. This indicates the importance of climatic factors in the epidemiology of pediculosis. Gorge *et al.* (1992) reported heavy lice infestation during wet, humid climate from Nigeria.

The study also revealed that Newcastle Disease (NCD) was identified as a popular and economically significant infectious viral disease of chickens in the area. It was also reported by Dessie and Jobre (2004) that NCD was the single major health constraint which causes heavy mortality and morbidity to chickens and affects productivity in the

country. Its frequency in the woreda is related to absence of prevention and control measures. Since chicken owners do not bring diseased chicken to the veterinary clinic, chickens were not included in the case observational study. However, interviews strongly indicated that NCD as a very important disease.

In the present study calf diarrhea is mentioned by farmers as a serious health problem affecting calves. Tassew (2007) reported prevalence rate of 28.2% in Aba Samuel dairy farm, North Gondar. Several factors affect the health and vigor of the calf in the early period of calf hood. Among these factors, inadequate feeding of colostrums, hygiene and environmental conditions are the most important.

Equine colic is one of the important diseases mentioned by respondents. This is attributed to poor management specially poor care of the teeth, feeding of equines with feeds that can not digested and heavy infection with intestinal helminthes especially strongyles (Radostit *et al.*, 1994)

Figure 2. Some disease encountered in Bure Woreda 2007/08



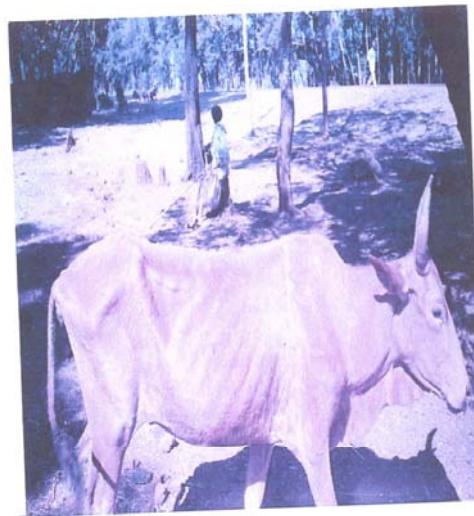
Streptococcosis



FMD—salivation hangs like string



Lumpy Skin Disease



Trypanosomiasis

5. CONCLUSION AND RECOMMENDATIONS

This study revealed that farming system in Bure Woreda is mixed crop livestock production system, of which livestock herd is dominated by cattle and sheep. Livestock feeding was based on farm feed resources (crop residues or natural pasture). Livestock plays a great role in the livelihood of the farmers in the area, which is used as a main source of income (they are 'near-cash' resources), and as a food source in addition to supporting crop production. Despite these advantages, shortage of animal feeds/ grazing land and livestock health problem are the fore front problems of market oriented livestock development in the area. Trypanosomosis, Lumpy skin disease, Fasciolosis, Anthrax and Pediculosis were most important disease of cattle. Colic considered important in Equines. Mortality of poultry is mainly associated with NCD. Respiratory problems were most important in small ruminants. Majority of the mortalities were in poultry, sheep and cattle. Modern medicaments were known and used by most the farmers in addition to traditional ones.

Based on the above conclusion the following recommendations are forwarded.

- ❖ Introduction of alternative feed resources to alleviate food shortage should be emphasized
- ❖ Awareness should be created among livestock owners concerning basic animal nutrition and health management, livestock market production and veterinary service.
- ❖ Expansion of animal health care delivery in the area including drug supply, vaccination and other disease control strategies for major diseases affecting livestock is mandatory
- ❖ Detail epidemiological study should be carried out on the major diseases prevalent in the area that would help design appropriate disease prevention and control strategies

6. REFERENCES

- Aklilu, Y. (2002). Critical issues impacting Livestock trade-in Kenya, Ethiopia and Sudan. Paper presented at the 10th annual conference of Ethiopia Society of animal production (ESAP), Addis Ababa, Ethiopia, 22-24 August 2002. ESAP, Addis Ababa, Ethiopia. pp. 18.
- Ameni, G., Erko, B., Bogale, T. (2001). Preliminary study on bovine trematode infections around Kemissie, North Eastern Ethiopia and treatment trials with Praziquantel. *Bulletin on animal health and production Africa*. No.2:62-67.
- Ayelet, G., Yigezu, L., Gelaye, E., Tariku, S., Asmare, k. (2004). Epidemiologic and serologic investigation of multifactorial respiratory diseases of sheep in central highland of Ethiopia.. *Journal of applied research in Veterinary Medicine* 2(4): 274-278.
- Belayneh, G. E. (2002). An assesment of feed resources, their management and impact on livestock production in the Ginchi watershed area. MSC thesis submitted to Alemaya University of Agriculture, Ethiopia.
- Bridges, G. H. (1972). Epizootic lymphangitis of Equines. In: Equines medicine and surgery. Catcott, E. J. and Smithcors (eds), 2nd ed. American Veterinary Publications, USA. pp. 119-131.
- Central Agricultural Census Commision (CACC) (2003). Ethiopian Agricultural sample enumeration, 2001, 102(1994 E.C). Results for Tigray Region. Statical report on livestock and farm implementations, Part IV. Addis Ababa, Ethiopia. pp. 29-43.
- Central Statistical Authority (CSA) (2006). Agricultral statistical report, Addis Ababa, Ethiopia.
- Cherinet, T. (1999). Prelimnery study on disrubution and prevalence of hemoparasites in two Weredas of West Gojjam Adminstrative Zone of the Amahra National Rgional State. Proceeding of the 13th Annual Conference of the Ethiopian Veterinary Association. pp. 31-44.
- Coopreck, D. L. (1994). The Borena plaute of Southern Ethiopia. Synthesis of pastoral research, development and change, 1986-91. System study. International Livestock Center for Africa (ILCA). Addis Ababa, Ethiopia. No. 4.

- Dalgado, C., Rosegrant, M., Sentinfeid, H., Ehui, S. and Courbois, C. (1999). Livestock to 2010. The next food revolution. Food, agriculture and the Environment discussion paper 28. IFPRI, Washington D.C.
- Damte, D. (2003). Major health problems of Cattle and Camel in the field and abattior, around Dire Dawa. DVM Thesis, Faculty of Veterinary Medicine, Addis Ababa Universty. Debre Zeit, Ethiopia.
- Dessie, T. and Jobre, Y. (2004). A review on the importance and control of NCD in Ethiopia. *Ethiopian Vetreinary Journal* **8**(1): 71-81.
- Frese, M. (1995). Cross-sectional study on Farm investigation of Epidemiology of Mastitis in market-oriented urban and peri-urban production system in the Region of Addis Ababa and Debre Zeit, Ethiopia. DVM Thesis, Faculty of Veterinary Medicine, Addis Ababa University, Debre Zeit, Ethiopia.
- Gebremedhin, A. (2007). Major Animal Health Problems of Market Oriented livestock Development in Gatsby Wombat Worked, Tigray Regional State, DVM Thesis, Faculty of Veterinary Medicine, Addis Ababa University, Debre Zeit, Ethiopia.
- Hurissa, B. and Eshetu, J. (2002). Challenges and opportunities of livestock trade in Ethiopia. Paper presented at the 10th annual conference of Ethiopian Society of Animal Production (ESAP), Addis Ababa, Ethiopia, 22-24 August 2002. ESAP, Addis Ababa, Ethiopia. pp. 33.
- International Dairy Federation (IDF) (1999). Bulletin of the International Dairy Federation annual publication, December 26, 1999.
- International Livestock Center for Africa (ILCA) (1998). Annual Report. Addis Ababa, Ethiopia, pp. 2-11.
- International Livestock Research Institute (ILRI) (2006). ILRIs partal information (WWW. Ipms-ethiopia. Org).
- Kassaw, A. (2007). Major animal health problems of market oriented livestock development in Fogera woreda, DVM thesis, Faculty of Veterinary Medicine, Addis Ababa University, Debre Zeit, Ethiopia.
- Kuastros, M. (2007): Major animal health problems of market orinted livestock development in Alaba Woreda, Southern Nations Nationalities and Peoples

- Region, DVM thesis, Faculty of Veterinary Medicine, Addis Ababa Universty, Debre Zeit, Ethiopia.
- Mehiret, A. (1995). Survey on the preevalance of bovine trypanosomosis in and around Bahr Dar, Ethiopia. DVM Thessis, Faculty of Veterinary Medicine, Addis Ababa, Debre Zeit ,Ethiopia.
- Ndikima, S., Suth, J., Kamadi, R., Ossera, S., Marambi, R. and Hamlet, P. (2000). Coping mechanisims and their effeciency in disaster-prone pastoral system of great horn of Africa. Effect of the 1995-1995 draught and the 1997-1998 ELNINO rains and response of pastorals and livestock. International Livestock Research Institute (ILRI), Nairobi, Kenya. pp. 2-4.
- Radostits, D. M., Blood, D. C. and Gray, C. G. (1994). Veterinary Medicine. A Textbook of the diseases of cattle, sheep, pigs, goats and horses, 8th ed. Bailllaiaere Tindall, London. pp. 652-656, 1167.
- Regassa, C. (2003). Preliminary study on major skin diseases of cattle among Nekemte Veterinary Clinic. Western Ethiopia. DVM Thesis, FVM, AAU, Debre Zeit, Ethiopia.
- Seifert, H. S. H. (1996). Animal diseases in the tropics. In: Tropical animal health, 2nd ed. Klulver academic publishers group.Dordercht, the Netherlands.pp.147-148.
- Solomon, T. (2006). Bovine mastitis in Asella and Antibiotic Resistance patterns of major pathogens. DVM Thesis, FVM, Debre-zeit, Ethiopia.
- Sykes, A. R. (1994). Parasitism and production in farm animals. Animal productuion. No.59. pp. 155-172.
- Tegegne, A., Gebre-Wold, A. (1998). Prospects of diary development in Ethiopia. In: proceeding of the 5th Natonal Conference of the Ethiopian Society of Animal Production. ESAP Proceeding ,Addis Ababa,Ethioppia, 15-17 May 1997. pp 28-39.
- Tembley, S. (1998). Small ruminant production in Ethiopia: prospect for improving productivity. In: The Proceeding of The 5th Natonal Conference of the Ethiopian Society of Animal Prodaction. ESAP Proceedings, Addis Abba, Ethiopia, .15-17 May, 1997. pp. 82-90.

- Tesfahiwot, Z. (2004). Major health problems of livestock in the Yerer water shed , Adaliben Woreda, South Eeastern Shoa, DVM thesis, Faculty of Veterinary Medicine, Addis Ababa Universty, Debre Zeit, Ethiopia.
- Traore, A. (1989). Incidence and control of fasciolosis around Niono, central Mali. ILCA Bulletin. No.33. pp. 18-20.
- Uilenberg, .(1998). Afieldguide for diadnosis, treatment and prevention of African animal trypanosomosis, Adapted from original Edition by W.P.Boyt. Food and Agricultre Organization of the United Nations (FAO), Rome. pp. 43-135.
- Yohannes, T. (2007): Major animal health problems of market oriented livestock development in Alamata Woreda, DVM thesis, Faculty of Veterinary Medicine, Addis Ababa Universty, Debre Zeit, Ethiopia.

7. ANNEX

Annex I. Questionnaire format

I. Animal Production

1. Code (/ / /)	1.1. Date of interview (/ /)
2. Kebele (/ / /)	2.1. Peasant Association (/ /)
3. Name of Village ()	
4. Name of the farm ()	
5. Owner's sex	5.1 Male () 5.2 Female () 5.3 Age()
6. Owners 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)

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

10. Livestock products and function

Cattle	Goat	Sheep	Equi.	Poultry	Bees

11. Feeding practice (prioritize according to order)

Type feeds	Rank
11.1. Natural pasture	
11.2. Cultivated pasture	
11.3. Cereal straws (teff, barley, wheat...)	
11.4. Stover (sorghum and maize)	
11.5. Salt and mineral	
11.6	
11.7	

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. Watering

13.1. Watering source	River []	stream []	pond []	well []
13.2. Critical season of water shortage				
13.3. Frequency of watering during this time	Alternate day []	Every 3 day []		
13.4. Other strategy adopted:				

14. Housing

14.1. Separate from home	Species mixed	Species separated
14.2. Communal	Species mixed	Species separated

15. Breeding

15.1. Controlled	Natural	AI
15.2. Uncontrolled	Natural	AI

16. Recording

16.1. Do you know the performance of your animals?	Yes	No
16.2. If yes, how?		

17. Marketing

17.1. Did you sell livestock during the last year?	Yes	No
17.2. What are the main reasons of selling livestock		
17.3. The main season of selling livestock		

II. Animal Health

18. What are your culling criteria?

- a. disease_____
- b. old age_____
- c. reproductive disease/infertility_____
- d. poor production_____
- e. other_____

19. How do you dispose the after birth/fluids/abortus/cadaver?

20. Have you encountered abortion in the last years?

- a. yes_____
- b. no_____

21. If your answer to question 23 is yes;

- a. which species_____
- b. which term_____
- c. which month/season_____

22. How do you consume animal products?

Way/product	milk	Meat	eggs
Raw			
Cooked/boiled			
other			

23. List (and rank) five important diseases.

(i) cattle

Calf (<1 year)	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)	
	Season/month		Season/month
1		1	
2		2	
3		3	
4		4	
5		5	

(ii) goats

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

(iii) equine (horses, mules, donkeys)

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

(iv) poultry

1
2
3
4
5

24. What Measures are taken to tackle the problem?

- a. Slaughter_____
- b. Modern treatment_____
- c. Traditional treatment_____
- d. Other_____

25. If you use traditional treatment, for which diseases?

- a. Infectious_____
- b. Parasitic_____
- c. non infectious_____
- d. surgical_____
- e. other_____

26. What measures are taken to prevent the disease?

- a. Slaughter_____
- b. Vaccination_____
- c. Quarantine_____
- d. other_____

27. Is there access to modern veterinary service?

- a. Yes_____
- b. No_____

28. Who performs the treatment?

- a. veterinarian_____
- b. animal health assistant_____
- c. animal health technician_____
- d. owner_____
- e. other_____

29. 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_____

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

	Treatment	Vaccination
Expensive		
Moderate		
Cheap		

31. What is the number of animals lost during the last 1 year?

(i) cattle

Calf	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

(v) poultry

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32. Do you report any diseases/outbreak to the government body?
a. Yes _____
b. No _____
33. If your answer to question 35 is yes, did the government body respond?
a. Yes _____
b. No _____
34. If the government body responded, what measures were taken by the government?
a. Treatment _____
b. Vaccination _____
c. Other _____
35. Has any training been provided to you in animal health care delivery in the last five years?
a. Yes _____
b. No _____
36. If your answer to question 38 is yes, what was the nature of the training?

37. Are there any community based animal health workers/NGOs in your area of operation?
a. Yes _____
b. No _____
38. If your answer to question 40 is yes, what is their area of engagement?
a. animal health _____
b. animal production _____
c. feed and water precision _____
d. animal management _____
e. other _____
39. What suggestion do you give for improvement of animal health care activities in your area?

ANNIX

Checklist for Group Discussion

- Major feed types in the area
- When feed / water is a problem
- Major animal diseases of the area