

Assessment of animal health and production constraints: The case of three districts

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Abstract

Background: Animal production is an important tool for improving the living standard of humans and is the backbone of Ethiopia's agricultural development. The country is known for its high livestock potential, but it is not well exploited due to various hindering factors.

Objectives: The objective of the study is to assess the key issues related to animal health and production.

Methods: The evaluation was carried out in three purposively selected districts of East Wollega zone, namely Gidda Ayana, Sibru Sire and Jimma Arjo by using well-designed and structured questionnaire surveys.

Result: During the study period, 200, 145 and 165 respondents were sampled from the animal owners in the districts of Gidda Ayana, Sibru Sire and Jimma Arjo, respectively. Of these, about 97.89%, 95.68% and 94.9% practice extensive management in Gidda Ayana, Jimma Arjo and Sibru Sire, respectively. The majority of respondents in Gidda Ayana (98.1%), Jimma Arjo (97.21%) and Sibru Sire (98.9%) use natural pastures. For cattle breeding, uncontrolled natural mating is used in Gidda Ayana (90.79%), Jimma Arjo (86.3%) and Sibru Sire (95.69%). The major constraints of animal health and production were also assessed. Accordingly, a lack of access to adequate animal production and health expert in Gidda Ayana (27.33%), Jimma Arjo (29.36%) and Sibru Sire (31.59%) was recorded, whereas the lack of sustainable and structured modern livestock market was observed in Gidda Ayana (25.94%), Jimma Arjo (21.31%) and Sibru Sire (19.80%).

Conclusion and recommendations: Livestock need improved animal health, management systems and breeding methods. The study revealed key issues related to animal health and production, such as poor management systems and breeding methods, limited coverage of veterinary services and a modern livestock market. Thus, it is indispensable to increase the coverage of veterinary services, animal extension services and alternative sources of animal feed.

KEYWORDS

animal health and production, Gida Ayana, Jimma Arjo, livestock, Sibru Sire

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1 | INTRODUCTION

An animal production is an important tool for improving the living standard of humans and is the backbone of Ethiopia's agricultural development and most of sub-Saharan Africa (Ethiopian Agricultural Sample Enumeration [EASE], 2003). Ethiopia is known for its large livestock population, ranking 1st in Africa and 10th in the world. According to recent estimates of the livestock population, there are approximately 52.1 million cattle, 24.2 million sheep, 22.6 million goats and 44.9 million chickens in the country (Gebrecherkos & Afera, 2012). Despite the country being known for its high livestock production potential, it is not well exploited due to various hindering factors (Moges & Bogale, 2013). This is mainly due to the high prevalence of infectious and non-communicable diseases, the low genetic potential of native breeds, poor animal husbandry system and limited feed accessibility in quality and quantity throughout the year (Mukasa-Mugerwa, 1998).

In tropical and sub-temperate areas of Ethiopia including Oromia, there are numerous livestock health problems such as poor animal health services resulting in high prevalence and incidence of diseases (Assegid, 2000; Central Statistics Agency (CSA) & The Federal Democratic Republic of Ethiopia, 2006/2007). Despite the wide differences in animal health and production problems in the countries, specific information on animal health and production constraints has never gotten the focus of research (Coopreck, 1994). However, the depth knowledge of the major animal health and production constraints are very indispensable for veterinarians, researchers, animal production experts and other stakeholders to select economically feasible prevention interventions that will ultimately increase the animal production and productivity of animals thereby contributing to the sustainable growth and development of the country through alleviation of poverty and generation of income. Even though these districts are well known for various species of livestock, the major constraints on animal health and production are not assessed and documented so far. Therefore, the overall objective of this particular study is to assess the key issues related to animal health and production in districts.

2 | MATERIALS AND METHODS

2.1 | Study area

The study was conducted between October 2016 and February 2018 on three purposively selected districts of the East Wollega zone, namely Gidda Ayana, Jimma Arjo and Sibiu Sire. Administratively, the zone has 17 districts. The town of the zone, Nekemte, is located at a distance of 364 km from Addis Ababa, the capital city of Ethiopia (Figure 1). Astronomically, this zone lies between 8°27'N–10°13'N latitudes and 36°08'E–37°38'E longitudes. Geographically, East Wollega zone is bordered by West Shoa and Horro Guduru Wollega in the east, West Wollega zone and Benishangul-Gumuz regional state in the west, parts of Benishangul-Gumuz and Amhara regional states in the north and Illubabor and Jimma zones in the south. The climate is divided into

three categories, namely highland (28.6%), midland (50.9%) and lowland (20.5%). The annual temperature is between 14 and 26°C, and the annual rainfall is between 1000 and 2400 mm (EWBLF, 2008).

Map Source (Bezuayehu, 2002): These districts share similar farming systems but different agrological locations. They have also different ranges of livestock populations.

2.1.1 | Gidda Ayana district

Gidda Ayana is a town in the district and has about 27 peasant associations. During the study period, five peasant associations, namely Ayana 01 & 02, lalise, Arele Waja and Ejere, were selected based on the accessibility and proximity of the nearby clinic as well as huge livestock potential. The district is located in the north-eastern part of East Wollega zone at a distance of 112 km from Nekemte town, the town of the zone. It is bounded by Gidda Kiramu district in the north-east, Ibantu district in the north, Limu district in south-west and Guto Gidda district in south-east and has a total area of 998.6 km². Most of the land has an elevation above 1300 m and is characterized by lowland (49%) and highland (51%) agro-climatic conditions with a mean annual temperature between 15 and 20°C and mean annual rainfall of 1000–1600 mm. The district has high livestock potential with 180,334 cattle, 20,476 ovine, 25,241 caprine, 5210 equine, poultry 70,144 and 25,600 bee colonies (GABLF, 2012).

2.1.2 | Jimma Arjo district

The area is located about 48 km south of the city of Nekemte in an area of 780 km². This area covers almost 3.05% of the total area of the zone and is delimited by the Nunu Kumba area in the east, Guto Wayu and Leka Dulecha in the north and the Bunno Bedele zone in the south and north-west. During the study, six peasant associations, namely Arjo 01 and 02, Hara, Wayu kiltu, Lalo and Tibe chafe, were specially selected for their proximity to the veterinary clinic and infrastructure, as well as their enormous livestock potential. The area is divided into three distinct agro-ecological zones: highlands (25%), middle lands (51%) and lowlands (24%). Regarding the altitude range, the altitude varies from 1260 to 2520 m. The mean annual temperature ranges from 15 to 20°C, whereas the mean annual precipitation is 1400–000 mm. The region has a high population: around 108,000 head of cattle, 24,124 sheep, 31,126 goats, 5383 horses and 20,000 head of poultry (Jimma Arjo District Bureau of Livestock Development and Fisheries [JADBLF], 2008).

2.1.3 | Sibiu Sire district

The area is bordered by Gobu Seyo to the east, Guto Wayu to the west, Guto Wayu and Gudeya Bila to the north-west, Wama Boneya to the south and is adjacent to part of Guto Wayu to the south-west. During the study, four farmer associations, Sire 01 and 02, Chari and Lalise, were selected based on their proximity to nearby veterinary clinics and

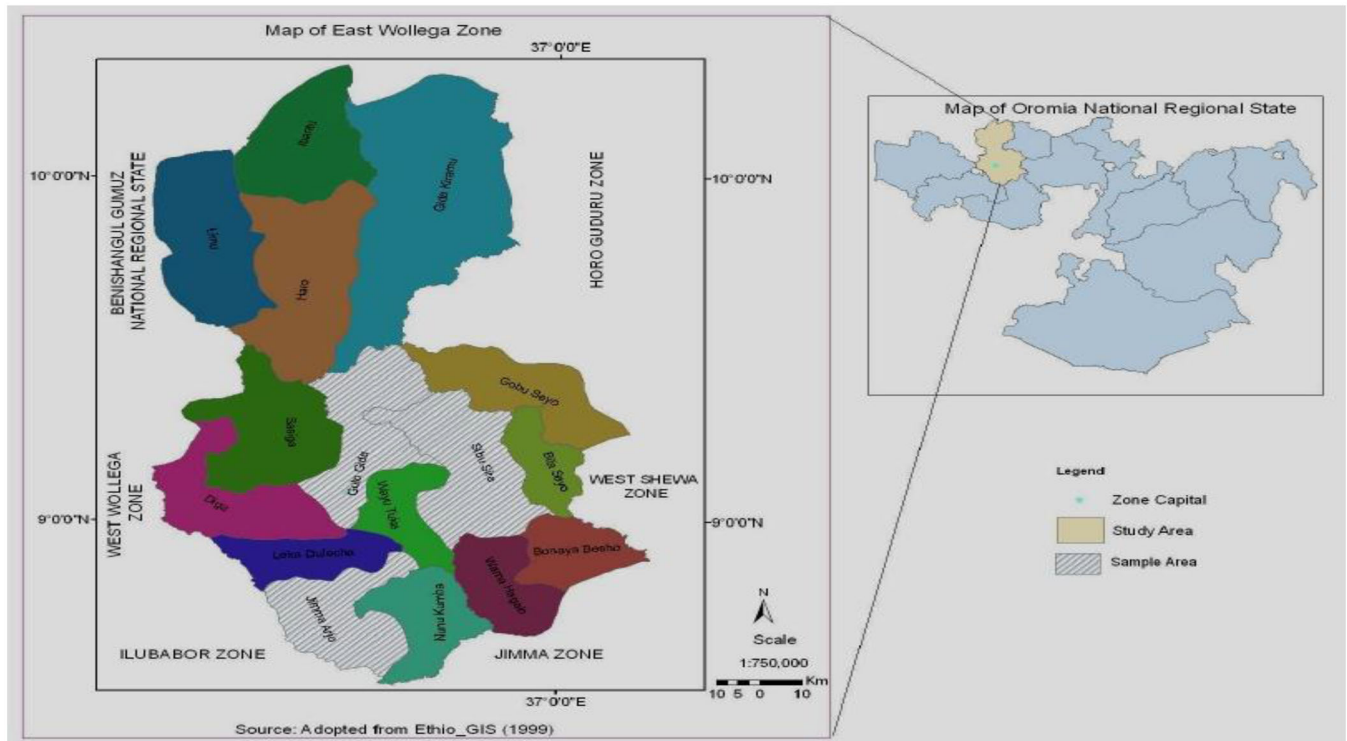


FIGURE 1 Map of East Wollega zone

the availability of infrastructure. The district is divided into three different geographic areas with different proportions. That is, 7.53% of the highlands, 74.2% of the central part and 18.27% of the lower part, which are very small parts of the district. Topographic features of predominantly rugged terrain, mountain ranges and plains. Many large and small rivers drained throughout the year analysing the rugged terrain of the area. The altitude varies from 1300 to 3020 m above sea level. As a result, the average annual temperature in the region is 150–200°C, and the average annual rainfall is 1600–2000 mm. The total cattle population in this area is 172,941. Of these, cow 126,500, sheep 25,276, goat 32,773, mule 874, horses 180 and donkeys 8700 (SSDBLF, 2008).

2.2 | Study design and population

A detailed questionnaire survey was used to conduct a cross-sectional survey on the assessment of key barriers to animal health and production in each study area. Districts' veterinarians and animal owners of different age groups, sex, peasant associations and animal breeds (cows, goats and sheep) and equines that were kept under different management systems and come to the veterinary service for various ailments were included.

2.3 | Sampling and data collection method

Of the districts' of the zone, three of them were purposively selected based on limited information and the presence of livestock popula-

tion potential. From each district, 200, 145 and 165 animal owners were purposively selected and sampled from three peasant associations of Gidda Ayana, Sibru Sire and Jimma Arjo, respectively, based on relevant information from animal health and production experts from the Fisheries and Livestock Resource Development Offices.

2.3.1 | Questionnaire survey

Pretested and well-structured questionnaire surveys were prepared and used for the study to obtain baseline information with a special emphasis on the trends of livestock health and production and its constraints to provide farmers with fresh and up to date information. The format was filled by interviewing selected livestock owners from various peasant associations of each district with the languages they understood and responded to. Informal panel discussions were also held with veterinary staff to obtain information on animal health issues in the study area.

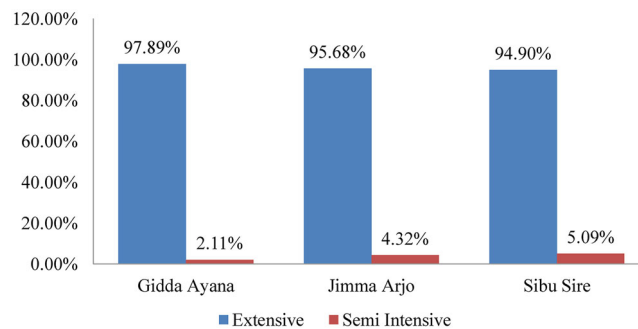
2.3.2 | Case observational study

Cases of various animals (cattle, sheep, goats and horses) that were brought to the district's veterinary clinics and diagnosed by veterinarians based on history, clinical and laboratory findings and provided the treatment was documented to assess common clinical diseases affecting livestock production.

TABLE 1 Demographic summary of respondents across districts

Variables	Name of districts		
	Gidda Ayana	Jimma Arjo	Sibu Sire
Sex (%)			
Male	72.9	81.21	82.99
Female	27.1	18.79	17.01
Age (years)			
Min.	26	21	20
Max.	54	63	49
Average	19.92	23.56	29.13
Educational status (%)			
Literate	58.03	56.13	47.09
Illiterate	41.97	43.87	52.91

Variables	Name of districts		
	Gida Ayana	Jima Arjo	Sibu Sire
Sex (%)			
Male	73.5	81.21	83.07
Female	26.5	18.79	16.93
Age (years)			
Min.	14	15	9
Max.	54	63	49
Educational status (%)			
Literate	58	56.13	47.09
Illiterate	42	43.87	52.91

**FIGURE 2** Management system of animals in the districts

mules), respectively, in descending order except in Jima Arjo where the number of goats is higher than sheep. Among the study areas, Jimma Arjo, Gidda Ayana and Sibu Sire, the number of bulls were 40.08%, 38.88% and 34.01%, respectively. Approximately 38.22% and 22.9% of the cattle herds of Gidda Ayana are composed of cows and calves, respectively, whereas the composition of the herds of small ruminants represents goats (67.85%) and sheep (64.43%). The majority of herds for both small animals and cattle are between 1–7 (78.62%) and 5–15 (82.36%). In Jimma Arjo and Sibu Sire, the cattle population is about 61.03% and 58.09%, respectively. The number of goats in Sibu Sire is also higher than the number of sheep, which is 51.01% and 48.9%, respectively. In contrast, the proportion of sheep (53.98%) is higher than that of goats (46.02%) in Jimma Arjo district.

2.4 | Data management and analysis

The relevant data for the study were collected, recorded, coded and entered with appropriate variables into a Microsoft Excel spreadsheet and analysed using Statistical Package for Social Science (SPSS), version 22.0 software. Finally, a summarization of the data was made using descriptive statistics and presented by tables and bar graphs.

3 | RESULTS

3.1 | Demographic data of respondents

Most of the respondents in Gidda Ayana were men (72.9%), and the remaining women (27.1%) had a maximum and minimum age of 54 and 26 years. But concerning educational background status, 58.03% of the respondents were literate, and 41.97% were illiterate. Similarly, the majority of respondents from Jima Arjo and Sibu Sire districts were male followed by female percentages as summarized in Table 1.

3.2 | Livestock herd size and composition

According to the majority of districts' respondents, cattle comprise the largest proportion, followed by goats, sheep and equines (donkeys and

3.3 | Farming system and livestock management

Mixed farming systems exist in all districts, and most of the respondents raise their animals on a large scale. Therefore, approximately 97.89%, 95.68% and 94.9% of the respondents handle animals with extensive management in the districts of Gidda Ayana, Jimma Arjo and Sibu Sire, respectively, whereas the rest 2.11%, 4.32% and 5.09% by semi-intensive, respectively. The trends in animal management systems of districts are represented and rendered as shown in Figure 2.

Regarding the habitat and segregation of animals during grazing, most respondents from Jimma Arjo district housed their animals in groups (96.61%) in the simple byre, which does not protect the animals from sun/cold/rain, whereas the respondents from Sibu Sire district (43.87%) house animals (cattle, small ruminants and equines) near their house by tying with ropes to pegs. According to the majority of respondents, most animals grazing in the three districts moves in groups without distinction of age, physical condition, species and purpose (beef, draught and milk production). In all districts, the animal breeding status of animals was assessed. According to the majority of respondents, natural breeding is the main breeding system used in cattle followed by artificial insemination (AI) on which they rely to improve their animal production. For instance, in cattle breeding, 90.79%, 86.3% and 95.69% of the respondents across the districts use uncontrolled natural mating in Gidda Ayana, Jimma Arjo and Sibu Sire,

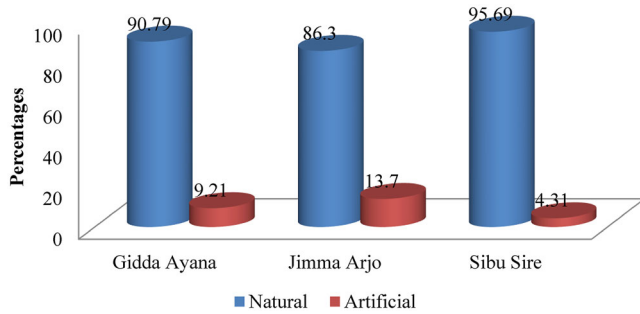


FIGURE 3 Methods of animal breeding used in cattle

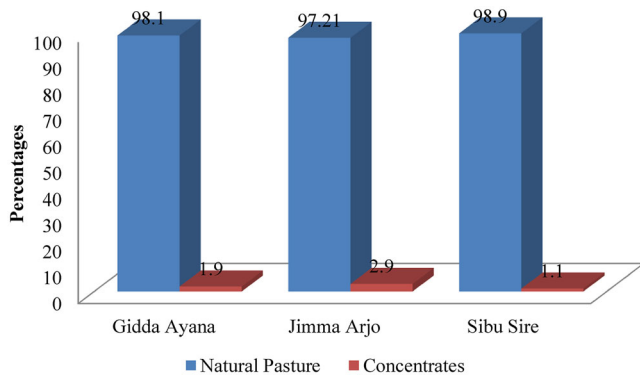


FIGURE 4 Sources of animal feeding across the districts

respectively, whereas the rest respective per cent were using AI as shown in Figure 3.

3.4 | Watering and its sources

According to the respondents, in the Gidda Ayana district, the main watering source for animals is the rivers (97.34%), followed by tap water (2.66%). The majority of the owners allow and provide their animals to drink once a day (81.9%) followed by twice a day (18.1%) in the district. Similarly, the majority of respondents from Jimma Arjo districts use the river (91.95%), whereas the rest (8.0%) use tap water and temporarily stored water (0.05%). Although the majority of Sibiu Sire respondents use river water as a source, as in other districts, there is a shortage of water for their animals from January to May when most animals are at risk.

3.5 | Feeding and its source

In all districts, feeds and water sources were also assessed. According to the majority of respondents, natural pastures are the main source of food. For instance, the majority of the respondents use natural grasses in Gidda Ayana (98.1%), Jimma Arjo (97.21%) and Sibiu Sire (98.9%) for their animal feed, and the rest with concentrate (Figure 4). During the feed shortages and dry spells, the majority of respondents majorly

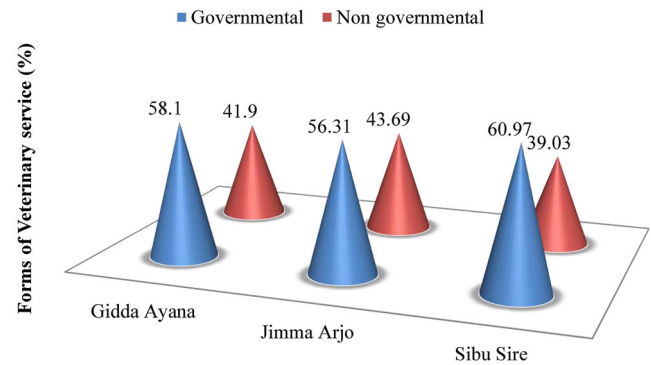


FIGURE 5 Accessibility to different forms of veterinary services across the districts

relies on agricultural waste (89.35%), such as cereal straw and hay feed (10.65%), as their main source of food, especially from March to May in all districts.

3.6 | Veterinary service and animal production expert

According to the majority of respondents, both experts are limited in number as compared to the available peasant associations and livestock potential. According to the respondents, about 58.1%, 56.31% and 60.97% have access to governmental veterinary services in Gidda Ayana, Jimma Arjo and Sibiu Sire districts, respectively. Thus, where veterinary services are limited, the owners rely mainly on private veterinary services, and the percentages of coverage in both forms are presented in Figure 5.

Concerning modern veterinary treatment, 82.6%, 80.39% and 79% of the respondents from Gidda Ayana, Jimma Arjo and Sibiu Sire use modern treatment, respectively, whereas the rest use either mobile private veterinary service to cure/treat diseased animals. In all districts, the majorities of the respondents prevent and control livestock diseases, especially infectious and parasitic diseases through vaccination and regular deworming. Similarly, in the Sibiu Sire district, 79.3%, 1.59%, 11.5% and 7.61% of the respondents vaccinate, slaughter, quarantine or use other options like deworming, respectively, in the control and prevention of the livestock diseases.

3.7 | Major constraints of livestock sector of the areas

According to respondents, the major constraints to animal health and production in all three districts were inaccessibility of modern, governmental veterinary service in quantity as per the number of peasant associations with effective service and customer satisfaction, limited feed in quality and quantity and high prevalence of the animal diseases as summarized in Table 2.

TABLE 2 Major constraints of livestock production and developments in the districts

Major constraints	Districts		
	Gidda Ayana (%)	Jimma Arjo (%)	Sibu Sire (%)
Limitation of animal feed	21.26	28.17	23.32
prevalence of different animal diseases of animals	19.81	15.07	11.97
Inaccessibility of veterinary services	33.09	37.32	38.9
Lack of adequate animal production and health expert	27.33	29.36	31.59
Lack of sustainable and structured modern livestock market	25.94	21.31	19.80
Miscellaneous problems	14.38	12.13	15.97

TABLE 3 Common diseases of the livestock in Gidda Ayana district

Name of common diseases of the area	Animal species (n = 1476)				Rank (nth)
	Bovine	Caprine	Ovine	Equine	
Anthrax	69 (7.09)	-	-	-	9
Contagious bovine pleuropneumoniae (CBPP)	423 (43.47)	-	-	-	4
Lumpy skin disease (LSD)	21 (2.15)	-	-	-	10
Pasteurellosis	61 (6.26)	122 (67.40)	28 (25.69)	-	1
Fasciolosis	87 (8.94)	-	24 (22.01)	-	6
Mastitis	50 (5.13)	5 (2.76)	8 (7.33)	3 (1.40)	8
Other gastrointestinal parasitism	79 (8.12)	12 (6.62)	26 (23.85)	83 (38.96)	2
External parasitism	80 (8.22)	10 (5.52)	13 (11.92)	25 (11.73)	5
Orf	13 (1.34)	15 (8.28)	7 (6.42)	-	7
Trypanosomosis	90 (9.25)	17 (9.39)	3 (2.75)	102 (47.88)	3
Total	973 (65.92)	181 (12.29)	109 (7.39)	213 (14.43)	

The finding also stipulated the limited coverage of veterinary services and inaccessibility to the modern livestock market. Accordingly, about 25.94%, 21.31% and 19.80% of the respondents in Gidda Ayana, Jimma Arjo and Sibu Sire districts are suffering from the lack of a sustainable and structured modern livestock market, respectively.

3.8 | Major diseases of livestock and case observational study

In all districts, common infectious and non-infectious diseases in the regions were also assessed and classified. During the study period, a total of 1476 sick animals (973 bovines, 181 goats, 109 ovines and 213 equines) of different age groups and sex were diagnosed based on clinical and laboratory examinations from various peasant associations in the Gidda Ayana district. Respondents complained that many infectious and diverse diseases are the main health problems of livestock development, decreased production and even a variable degree of death. Respondents confirmed that livestock disease is one of the main barriers to their livestock production. The most prevalent diseases that affect cattle are contagious bovine Pleuropneumoniae (43.47%), followed by trypanosomosis (9.25%), but in sheep, fasciolosis (22.01%) is the main parasitic disease, whereas in equines, trypanoso-

mosis (47.88%) is by far the most common disease followed by various types of gastrointestinal parasites (38.96%). Furthermore, mastitis is one of the diseases that challenge female cattle, sheep and goats, as summarized in Table 3.

Likewise, a total of 1412 various animals (cattle (684), goats (280), sheep (285) and equines (173)) were diagnosed at the Jimma Arjo district veterinary clinic for various diseases. Among the diagnosed and treated, gastrointestinal parasitism predominates. As shown in Table 4, trypanosomosis (22.95%) is the most common disease in the area followed by bovine ectoparasitism (13.74%).

Similarly, the main disease diagnosed in Sibu Sire districts (total = 1223) was assessed and recorded. The highest and lowest records in cattle were gastrointestinal parasites (25.49%) and lumpy skin diseases (LSDs) (1.80%). Similarly, pasteurellosis accounting in ovine (14.73%) and caprine (24.39%) is one of the main problems as described in Table 5, respectively.

4 | DISCUSSION

In the current study, the major constraints of animal health and production in selected districts of the East Wollega zone were conducted and resulted in immense findings. According to the majority of

TABLE 4 Common animal diseases of Jimma Arjo district

Name of common diseases of the area	Animal species (n = 1412)				Rank (nth)
	Bovine	Caprine	Ovine	Equine	
Anthrax	37 (5.40)	-	-	-	10
Black leg	51 (7.46)	-	-	-	9
FMD	24 (3.51)	-	-	-	11
Lumpy skin disease (LSD)	18 (2.63)	-	-	-	12
Pasteurellosis	57 (8.33)	77 (27.5)	99 (36)	-	2
Dermatophilosis	43 (6.28)	10 (3.57)	5 (1.82)	-	8
Mastitis	51 (7.45)	17 (6.07)	12 (4.36)	-	6
Gastrointestinal parasitism	87 (12.72)	53 (18.93)	60 (21.82)	97 (56.06)	1
External parasitism	94 (13.74)	57 (20.36)	50 (18.18)	40 (23.12)	3
Orf	15 (2.19)	31 (11.07)	21 (7.63)	-	5
Trypanosomosis	157 (22.95)	18 (6.43)	15 (5.45)	36 (20.80)	4
Bloat	50 (7.31)	17 (6.07)	10 (3.63)	-	7
Total (%)	684 (48.44)	280 (19.83)	275 (19.83)	173 (12.2)	

TABLE 5 The common animal diseases of the Sibru Sire district

Name of common diseases of the area	Animal species (n = 1223)				Rank (nth)
	Bovine	Caprine	Ovine	Equine	
Anthrax	11 (1.98)	-	-	-	9
Black leg	25 (4.52)	-	-	-	7
FMD	19 (3.43)	-	-	-	8
Lumpy skin disease (LSD)	10 (1.80)	-	-	-	10
Pasteurellosis	69 (12.47)	70 (24.39)	38 (14.73)	-	5
Mastitis	33 (5.96)	15 (5.22)	-	-	6
Gastrointestinal parasitism	141 (25.49)	65 (22.64)	100 (38.76)	33 (26.4)	1
External parasitism	94 (16.99)	45 (15.67)	42 (16.28)	31 (24.8)	2
Trypanosomosis	107 (19.35)	23 (8.01)	23 (8.91)	23 (18.4)	4
Miscellaneous diseases	44 (7.95)	54 (18.81)	55 (21.32)	21 (16.8)	3
Total (%)	553 (45.22)	287 (23.47)	258 (21.09)	125 (10.2)	

districts' respondents, cattle comprise the largest proportion, followed by goats, sheep and equines (donkeys and mules), respectively, in descending order except in Jima Arjo where the number of goats is higher than sheep. According to respondents, 97.89%, 95.68% and 94.9% of them are also handled by the extensive management system in the districts of Gidda Ayana, Jimma Arjo and Sibru Sire, respectively, whereas the rest 2.11%, 4.32% and 5.09% by semi-intensive. This may be due to a lack of awareness of management systems which can be mainly provided by animal and production experts. The majority of respondents from the districts also use natural pastures for their animals. For instance, Gidda Ayana (98.1%), Jimma Arjo (97.21%) and Sibru Sire (98.9%) use the natural pasture for their animal feed and while the rest concentrate. This was similar to the author's results (Moges & Bogale, 2013) in the Ray Armachewo district in the north-western part of the Tigray region, Ethiopia. During food shortages and dry

spells, the majority of respondents generally rely on agricultural waste (89.35%), such as cereal straw and complementary feed (10.65%), as their main source of food, especially from March to May in all districts. This may be due to the seasonal availability of feeds and limited industrial by-products in the areas.

In the districts, the wide prevalence of animal diseases is also one of the hindering factors for livestock production. Among these, various forms of infectious diseases were one of the major problems and constraints. For instance, anthrax and black legs are some of the common infections diagnosed during investigations in their respective districts. This may be due to the limited veterinary services together with animal health experts and the supply of different vaccines for disease control and prevention. Similarly, anthrax and blackleg were also reported by the author (Belayneh, 2002) in the Ginchi watershed area. Not only are these but also viral diseases like LSD are among the important

disease in a different group of cattle in the study area. Other reports also showed that LSD was also common in Alamata and Alaba districts (Yohannes, 2007). Among the small ruminants, pasteurellosis was one of the most important diseases during the observation study of goats and sheep, respectively, except in the Jimma Arjo district, where it was more prevalent in the next one which agrees with the result of Ayet et al. (2004).

During the study, parasitic infection and infestation were also one of the recorded major constraints of livestock production. For instance, fasciolosis was one of the economically important parasitic diseases in different age groups of cattle in the study areas. This finding is similar to the report from northern Ethiopia by EASE (2003; Ameni et al., 2001). Gastrointestinal parasites and trypanosomosis are also common parasitic diseases affecting the development of cattle of the Sibru Sire district, accounting for 25.49% and 8.01%, respectively. This, in turn, may arise due to a limited supply of anthelmintics in quality and quantity besides the lack of regular deworming along with the use of prophylaxis. In a similar report by Tariku (2000), Aba Samuel Dairy Farm in North Gondar also reported a prevalence rate of gastrointestinal parasites of 2.25%. Many factors affect the health and vigour of livestock development in all districts. These factors include inadequate feed quality and quantity, inaccessibility of nearby veterinary clinics and lack of awareness on how to increase animal production and productivity due to limited human power to reach the farmers at grass root level in the respective districts (Radostits et al., 2007).

The majorities of the respondents from distant places away from the town of the district mainly rely on private veterinary clinics. Only 58.1%, 56.31% and 60.97% have access to governmental veterinary services in Gidda Ayana, Jimma Arjo and Sibru Sire districts, respectively. This may be due to the limited budget to build and employ the veterinary clinics and human power at the grass-roots level, respectively. In the districts, there are hindering factors to animal health and production such as a lack of sustainable and structured modern livestock market, limitation of animal feed in quality and quantity and animal breed exploitation. This, in turn, can cause feed deficiency and consequently affect the animal health and growth. For instance, about 25.94%, 21.31% and 19.80% of the respondents from Gidda Ayana, Jimma Arjo and Sibru Sire districts are suffering from a lack of a modern livestock market. These may be due to an insufficient coverage of veterinary services limited awareness and financial support. In all districts, the majorities of the respondents rely on natural mating over AI for animal breeding. For instance, about 90.79%, 86.3% and 95.69% of the respondents use uncontrolled natural mating in Gidda Ayana, Jimma Arjo and Sibru Sire, respectively, for cattle, whereas the rest use AI. This may again emanate from a limited supply of superior bull semen and limited AI technicians besides inaccessibility to extension services and AI centres. This, in turn, affects the exploitation of existing livestock mainly cattle with animals of good genetic potential. According to the respondents, of the Gidda Ayana district, the main watering source for animals was the rivers (97.34%), followed by tap water (2.66%), but may predispose animals to water-born infectious disease. Similarly, the majority of respondents from Jimma Arjo districts use the river (91.95%), whereas the rest (8.0%) use tap water and temporarily

stored water (0.05%). Although the majority of Sibru Sire respondents use river water as a source, as in other districts, there is a shortage of water for their animals from January to May when most animals are at risk. This may be due to the seasonal based availability of water volume.

5 | CONCLUSION AND RECOMMENDATIONS

Livestock production needs improved animal health, feed, watering, management systems and breeding to attain their maximal production and productivity besides other inputs. The present study was conducted to assess constraints of animal health and production in Gidda Ayana, Jimma Arjo and Sibru Sire districts with major emphasis on key issues related to the livestock management and farming system, herd size and composition, watering, feeding, and its sources, nature of veterinary Services, animal production experts and status of animal diseases and availability of modern livestock market. Accordingly, the majorities of the respondents, animals were mainly managed in an extensive management system and rely mainly on natural pasture. Furthermore, most animal owners rely on natural mating, and few of them use AI to exploit livestock genetics. Besides, there were prevalent infectious diseases, limited coverage of veterinary services and a modern livestock market. Therefore, depending on the above conclusion, the following recommendations were forwarded.

- Further research should be done using microbiological, parasitic and molecular methods using micro-reliable diagnostic tools (assisted by laboratories) to diagnose specific and serious diseases in cattle in the region.
- It is important to increase the veterinary services, extension services and alternative sources of animal feed.
- Local farmers should be provided training and capacity building on rational use, animal breeding methods, prevention, and control of animal diseases.
- Livestock owners should have a basic knowledge of animal husbandry.

AUTHOR CONTRIBUTIONS

All authors contributed to the manuscript to final submission. Conceptualization, data curation, analysis and writing the original draft were performed by Jiregna Dugassa Kitessa. Investigation, methodology, validation and supervision were majorly done by Abriham Kebede Deressa, whereas visualization, reviewing and editing were done by Yobsan Tamiru Terefa. Finally, all authors read and approved the final manuscript submission.

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CONFLICT OF INTEREST

The authors declare that the manuscript has no conflict of interest to declare that is relevant to the content of this article.

ETHICS STATEMENT

Wollega University Research Ethics Review Committee (WUREC) approved this research before actual data collection. A consent sheet was prepared in English and attached to the tool on a separate page regarding the purpose, description, anticipated benefits, other relevant aspects of the study, and signed informed consent was taken from all respondents before data collection for respondents above 18 years of age. Thus, the authors declare that all methods were performed under the relevant guidelines and regulations ([Supporting Information](#)).

DATA AVAILABILITY STATEMENT

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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