International Journal of Research in Agricultural Sciences
Volume 4, Issue 5, ISSN (Online): 2348 – 3997

Survey on Livestock Production System Characterization in Bench-Maji, Sheka and Mejenger Zones, South Western Ethiopia

Gezahegn Mengistu[1*], Endale Yadessa[1], Dereje Tulu[1], Melkam Aleme[1], Ararsa Bogale[1] and Kefena Effa[2]

[1]Tepi Agricultural Research Center, P.O. Box 34, Tepi, Ethiopia.
[2]Holetta Agricultural Research Center, P.O. Box 31, Holetta, Ethiopia.
*Corresponding author email id: gezemen19@gmail.com

Date of publication (dd/mm/yyyy): 01/09/2017

Abstract **– The study was conducted in Bench-Maji and Sheka of Southern Nation's Nationalities and Peoples' Regional State and Mejenger Zone of Gambella National Regional State to characterize livestock production system, identify feed availability and major cattle diseases in the study Zones. A total of 200 household heads were selected using multistage purposive sampling method for questionnaire interview. Data were analyzed using SPSS software. The major farming system in the study areas was traditional mixed crop-livestock production system. The study revealed that overall cattle herd size was 8.18 ± 0.44 heads per household and was significantly different ($p < 0.05$) between the Zones. The main purposes of keeping cattle in the study areas were to use the animal products as the source of food, income generation, draught power, social issues and manure, in a decreasing order of importance. The major feed sources were natural pasture, crop residues, crop after math and improved forage crops. Rivers (94.7%) were the main sources of water both during dry and wet seasons. Indigenous cattle breeds (unidentified Zebu) were the dominant (98.8%) breeds in the study areas. The average daily milk yield obtained from local cow during dry and wet seasons were 1.18 ± 0.17 and 2.05 ± 0.22 liters, respectively. The overall calving interval, lactation length and age at first calving for local cow were 22.05 ± 6.76, 8.69 ± 2.27 and 50.87 ± 6.68 months, respectively. Blackleg, Ticks, Bloat, Trypanosomiasis, Foot mouth disease and Lumpy skin disease were the most common suspected diseases affecting cattle health in that order of importance. Conservation, proper storage and utilization of crop residues, integrating improved forage to the farming system, strengthening improved veterinary and AI services, provision of strong extension services and training on livestock production and management should be very important.**

Keywords **– Cattle Production, Feed Resources, Cattle Health and South-West Ethiopia.**

I. INTRODUCTION

Ethiopia is home for an estimated 53.4 million cattle, 22.8 million goats, 25.5 million sheep, 49.3 million chicken and 1.1 million camels [1]. These livestock resource has been contributing a considerable portion to national economy. According to [2] report agriculture has a contribution of 43.17% to the total GDP and livestock has 26.6% of total agricultural GDP and 11.48% of total national GDP. However, the productivity of the livestock resources and the benefits obtained from the sector does not commensurate with the high livestock population. These livestock resource has been contributing a considerable portion to national economy.

The Southern Nations, Nationalities and Peoples Region (SNNPR) has a huge number of livestock population with the current estimate of about 7.5 million cattle, 2.4 million sheep, 2.2 million goats, 6.9 million equines and 5 million chicken. According to Bureau of Planning and Economic Development (BOPED) report trends in cattle population in the region slightly increasing starting from 1997 while it was relatively constant for sheep and goats [3]. Livestock have various social and economic functions in both highlands and lowlands/pastoral farming systems. In the lowland and mid altitude areas of the region, livestock are part of the mixed farming complex providing integrated inputs for crop production (i.e. traction, threshing, transport and manure) and outputs such as milk, meat, eggs, hides and skins. In the low land parts of the region, livestock are generally the sole sources of livelihood providing milk, meat and transport at large, while hides and skins provide additional income.

Despite large number of livestock population, the productivity of per unit of animal and the contribution of this sector to the national economy is low. This situation is generally attributed to different factor such as, shortage of feed, lack of improved breed and breeding strategies, lack of appropriate health services. To improve the productivity there is a need to improve the production environment of the animal. This task involves identifying the existing production system to provide managerial, nutritional and health intervention.

In the past different authors attempted to study livestock and livestock products marketing conditions in some parts of the country. However, the work on identifying cattle husbandry practices, the feed resources and animal health constraints have not been well investigated or very limited in Southern Nations, Nationalities and Peoples Regional State particularly in Sheka and Bench-Maji zones and in Mejenger zone of Gambella region. Therefore, this study aimed at, identification cattle husbandry practices, feed availability and cattle health constraints in Sheka and Bench-Maji zones and in Mejenger zone of Gambella region.

II. MATERIALS AND METHODS

Description of the Study Areas

The study was conducted in Benchi-Maji and Sheka zones of the Southern Nations Nationalities and Peoples Regional State and Mejenger zone of Gambella National Region State. Bench-Maji zone and Sheka zones are located

in south west of Addis Ababa at 561 and 694 km, respectively. The altitude of Bench- Maji ranges from 850 to 3000 masl and that of Sheka is 1200 to 3000 m.a.s.l. The annual average temperature of Bench- Maji ranges from 20 to 40^0C and the annual rainfall from 1200 to 2000 mm and that of Sheka ranges from 15.1-27.5^{o}C annual average temperature and 1201-1800 mm annual mean rainfall. The Zone has high livestock population consisting of 447000 cattle, 73700 sheep, and 69200 goats, 9700 equine and 254300 chickens [4]. Mejenger is one of the Gambella regional Administrative zone and bordered south east by the SNNPR and west Mengesh woreda. Godere is bordered on the south and east by the SNNPR and on the west by Gambella zone. The zone is characterized by Forest coffee production along with spices that are collected from the forests for market. Farmers in Bench Maji, Sheka and Megenger zones lead their livelihoods by mixed crop-livestock production system.

Sampling Procedure

A Multistage purposive random sampling procedure was employed to select sample districts known for livestock populations. Four districts namely Shey-Bench and Meinit-Shasha from Bench- Maji, Masha and Godere from Sheka and Mejenger zone, respectively. A total of 200 (50 households' × 4 districts) households per district that own cattle were randomly selected and interviewed. A semi-structured questionnaire was used to gather the required information on the livestock husbandry practices, feed availability, cattle health and livestock constraints.

Data Analysis

Both qualitative and quantitative data collected were analyzed and summarized using both mean and frequency procedures of Statistical Package for Social Science (SPSS, version, 16).

III. Results and Discussions

Socio Economic Characteristics of the Respondents

Sex of the respondents, marital status, family size by age group and educational status in Bench- Maji, Sheka and Mejerger zones is presented in (Table1). Most of the interviewees (73.5%) were male and the rest female (26.5%). Majority (93%) of the respondents in the study zones were married and the rest (4.5%) divorced and (2.5%) widowed. This survey indicated more family size age (2.69 $\pm$ 1.83) was lies between 15 - 40 years. This age class is an opportunity for agricultural activities in general livestock production in particular with respect to labor provision in cattle herding, feeding, cleaning of the house, milking and milk product processing. Having many members of family in rural areas seem to be considered as an asset and a security in times of retirement [5]. According to this study the highest percentage of householders' educational level falls in the upper primary school and illiterate that accounts for about 31.5% and 22%, respectively. Based on the current study result, only 10% of the respondents were illiterate. The percentage of illiteracy in this study was lower than that reported by [6] in Metema (45%), and Reference [7] in Bure districts. Therefore, this can be considered to be a good opportunity to facilitating extension services for rural development and transferring technology

Table 1. Profiles of the respondents' proportion (%) by sex, marital status, family size Mean ±SD educational status (%)

Description	Bench Maji (N = 100)	Sheka (N = 50)	Mejenger (N = 50)	Overall (N = 200)
sex of the respondents				
Male	75	70	74	73.5
Female	25	30	26	26.5
Marital status				
Married	92	92	94	93
Divorced	5	8	2	4.5
Widowed	3	2	2	2.5
Family size age group				
Age of the respondent	36.49 ± 8.36	47.72 ± 11.96	41.96 ± 13.01	40.66 ± 11.54
Below 7 years	2.32 ± 1.59	1.96 ± 0.96	1.70 ±0.83	1.57 ± 0.63
7-14 years	3.00 ± 0.86	2.59 ± 1.83	1.90 ± 0.90	2.63 ± 1.72
15-40 years	2.40 ± 1.36	3.20 ± 2.39	2.76 ± 1.93	2.69 ± 1.83
41-64 years	1.25 ± 0.55	1.44 ± 0.51	1.63 ± 0.81	1.47 ± 0.67
Above 64 years	1.00 ± 0.00	1.00 ± 0.00	1.00 ± 0.00	1.00 ±0.00
Educational status				
Illiterate	27	6	28	22
Read and write	9	14	16	12
Lower Primary (1-4)	18	12	26	18.5
Upper primary (5-8)	34	42	16	31.5
Secondary (9-12)	11	24	12	14.5
College/ university	1	2	2	1.5

Land Holding

Land use patterns mainly for four purposes; crop production, grazing, haymaking, improved forage crop production and others (tree, residences). The average size of total land owned was not significant different ($p > 0.05$) between the zones. Likewise, land allocated for different purpose was not significant different except for grazing land. Land allocated for grazing was higher in Sheka zone (0.46 ± 0.06) Hectare than in Bench-Maji zone (0.38 ± 0.03) and Mejenger (0.27 ± 0.03) zones. In Mejenger zone, widespread growth of perennial crops such as coffee might be caused shortage of grazing land and Livestock are not reared in large numbers in the zone primarily due to pasture shortage. Overall land allocation for crops production (1.95 ± 0.09) was much higher than other purposes. Land allocation for improved forage crop production in the study zones was very small (0.14 ± 0.06) Hectare. This might be associated to the major feed resources in the zones depend on natural pasture and crop residues. There was no/ little land allocated for hay making in all of the study zones. In general, the average land holding size per household is (2.32 ± 0.11 ha) which is greater than to the findings (1.6 ha) of [9] in North Gondar, Amhara Region of Ethiopia. The average land allocation for cropping, grazing, hay making, cultivated forage and for others per house hold in the study zones presented in table 2.

Table 2: Land holding per hectare (Mean ± SE) and land use pattern in the study area

Land allocation in (Ha)	B/Maji		sheka		Mejerger		Overall	
	N	Mean ±SE	N	Mean ±SE	N	Mean ±SE	N	Mean ±SE
Crop Land	100	1.74±0.10	50	2.17±0.22	50	2.16±0.24	200	1.95±0.09
Grazing Land	68	0.38±0.03	41	0.46±0.06	21	0.27±0.03	130	0.39±0.03
Land for hay making		-	1	0.13±0.00		-	1	0.13±0.00
Land for Improved Forage	5	0.08±0.02	2	0.09±0.03	2	0.34±0.29	9	0.14±0.06
Land allocated for others	48	0.24±0.02	33	0.23±0.01	28	0.22±0.01	109	0.24±0.01
Total Land owned	200	2.11±0.13	50	2.73±0.27	50	2.36±0.23	200	2.32±0.11

Livestock Species, Composition and Cattle Herd Structure

The livestock species and number per household in the study zones showed in (Table 3). The overall mean cattle holding per house hold in the study areas showed, Cattle were the dominant species (8.18 ± 0.44) head followed by poultry (6.39 ± 0.37) and sheep (5.54 ± 0.42). The dominancy of cattle in the study area might be associated to their multiple uses for the farmers. Based on the current study, there was no donkey in sheka and Mejenger zones, but rare in Bench-Maji zones. Beekeeping activities was also the most important livestock sub sectors in the study zones. There was high significant difference ($p < 0.05$) between the study areas and in sheka zone particularly traditional bee hive system much higher than in Mejenger and Bench Maji zones. The overall mean of cattle holding per household was 8.18 ± 0.44. This figure was less than that of [7] with 12.25 ± 0.6.23 cattle per household in Northwestern Ethiopia and greater than that of Reference [10] with 4.53 ± 0.4 cattle per House hold in *Dandi* district. The current study showed that the mean of cattle per house hold in Bench-Maji and Sheka zones were highly significant ($p<0.05$) than Mejenger zone. In Bench Maji and Sheka zones livestock production is very important because of the mixed livestock farming system. In Mejenger zone, livestock are not reared in large numbers in this livelihood zone primarily due to pasture shortage, which is caused by the widespread growth of perennial crops such as coffee. It was observed that the average number of cows, heifers, calves (male & female), steers, bulls and oxen were 3.34 ± 0.21, 2.30 ± 0.14, (1.71 ± 0.09 & 1.53 ± 0.09), 1.90 ± 0.26, 1.66 ± 0.12 and 1.88 ± 0.08 head, respectively. In the study areas average size of cows and heifers were kept by the farmers higher than the rest of the cattle classes. This indicates that farmers in the study area keep cattle mainly for milk production and heifers were used for replacement purpose. This was in agreement with the finding of [11], were Heifer and cows dominate (54%) the most shares of cattle herd followed by Castrated oxen (25.4%). The result revealed that there were significant difference ($p<0.05$) between the study areas in the size of cows and oxen. In sheka zone, there was significantly larger number of cows 4.06 ± 0.58 than in Bench-Maji (3.71 ± 0.28) and Mejenger (1.89 ± 0.14) zones. The average size of oxen (2.07 ± 1.08) in Bench-Maji was larger than in Sheka (1.71 ± 0.13) and Mejenger (1.08 ± 0.08). The need for plow oxen was maximum in Bench-Maji Zone because of the annual crops cultivation was more. The need for plow oxen for cultivation. In Mejenger and Sheka zone were also minimal due to the dominance of perennial cash crops.

Table 3. Livestock species composition and herd structure of the respondents in the study areas (Mean ±SE)

Species Composition	Study area					
	Bench Maji	Sheka	Mejenger	Overall	Test	
	(N = 100)	(N = 50)	(N = 50)	(N = 200)	F value	P value
Cattle	9.96 ± 1.09	9.32 ± 0.59	4.12 ± 0.39	8.18 ± 0.44	17.108	0.000*
Horse	1.50 ± 0.11	1.67 ± 0.10	1.50 ± 0.50	1.67 ± 0.11	1.689	0.192
Mule	1.50 ± 0.71	2.00 ± 0.00	-	1.66 ± 0.57	0.333	0.667
Donkey	1.25 ± 0.25	-	-	1.2 ± 0.20	0.200	0.685
Sheep	4.11 ± 0.41	5.78 ± 1.03	1.67 ± 0.67	5.54 ± 0.42	2.362	0.099
Goat	4.36 ± 0.92	8.79 ± 2.58	4.44 ± 0.97	5.30 ± 0.84	2.385	0.100
Poultry	5.63 ± 0.93	8.14 ± 0.83	5.86 ± 0.96	6.39 ± 0.37	4.680	0.11
Bee hives (traditional)	4.95 ± 0.86	35.24 ± 6.37	7.50 ± 2.50	24.36 ± 3.53	6.253	0.004*
Transitional	-	4.20 ± 1.65	10.00 ± 0.00	4.20 ± 1.06	9.894	0.510
Modern	-	4.00 ± 1.01	4.00 ± 1.01	4.00 ± 1.01		
Cattle herd type						
Cow	3.71±0.28	4.06±0.58	1.89±0.14	3.34±0.21	8.331	0.000*
Heifers	2.45±0.18	2.46±0.32	1.62±0.17	2.30±0.14	2.543	0.082
Female calves	1.38±0.10	1.85±0.30	1.52±0.14	1.53±0.09	2.028	0.138
Male calves	1.76±0.12	1.73±0.23	1.55±0.14	1.71±0.0.09	0.326	0.723
Steers	2.06±0.34	1.75±0.47	1.00±0.00	1.90±0.26	0.691	0.514
Bulls	1.90±0.13	1.58±0.21	1.16±0.16	1.66±0.12	1.745	0.185
Oxen	2.07±1.08	1.71±0.31	1.08±0.08	1.88±0.07	10.227	0.000*
Mean holding of cattle /HH	9.96±1.59	9.32±09	4.12±0.39	8.18±0.44	16.209	0.000*

Farming Activities and Contribution to the Family Income

Most of the respondents (95%) in the study areas were indicated that they practice both crop and livestock production. The rest of the respondents were engaged on crop cultivation and livestock production 3% and 2%, respectively. Fig 1. Showed proportion of farming activities in the study areas.

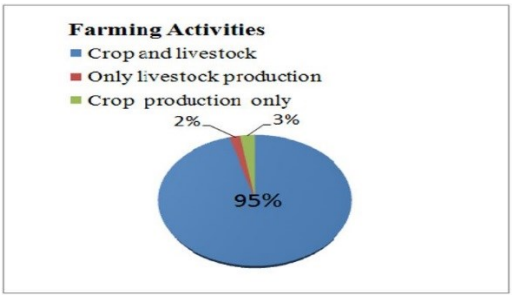

Fig. 1. Farming Activities in the study areas

The major livelihood income sources for the farmers were the sale of cash crops and food crops and sale of live animals and their products. However, in Mejenger zone crop production contribute mostly (92%) for the family income than in Bench-Maji (37%) and sheka (28%) zones. Crop production shared the highest contribution (48.5%) income for the family and both sector contributed 33.5% for the family income. The rest 17.5% and 0.5% of the family income was generated from the livestock production and other off farm activities, respectively. This result is in agreement with the report by [12] who indicated that of the respondents in Bench-Maji zone earn cash income for the family need from crop products, livestock and livestock products, and other off farm activities.

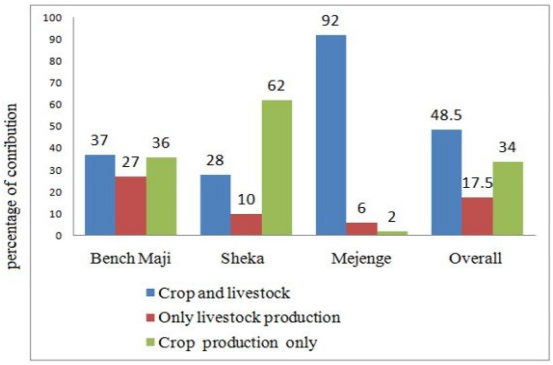

Fig. 2. Farming activities contribution to the family income

Purpose of Keeping Livestock

The reasons for keeping livestock are rational and are related to the farmers' need in the long or short term. Farmers in the study areas were keep livestock for different purposes and used the animal product as the source of food, for income generation, draft purpose, guaranty against risk, different gifts and ceremonies or celebrations (prestige). This result revealed in Bench-Maji zone the primary purpose of keeping livestock was for draft purpose (21.6%) followed by use animal products as a source of food (19.8%) and for income generation (18.8%) (Table 4). About 19% of the respondents in sheka zone were keep livestock primarily for food followed by income generation (17.6%) and for draft purpose (16.6%). Likewise in Mejenger livestock were kept for mainly for food source (28.4%), for risk minimization (19.6%) and for draft purpose (18.4%).

Table 4. Purpose of livestock production in the study zones (best five rank)

Reasons	Rank top 5					
	1st	2nd	3rd	4th	5th	Mean
Bench Maji						
As the source of food (animal product)	53	29	9	7	0	19.8
For income generation	23	26	40	4	1	18.8
For draft purpose	24	37	32	15	0	21.6
For status indicator (wealth, prestige	0	0	2	55	0	11.4
For risk minimization (against risk)	0	0	8	15	6	4.2
Sheka						
As the source of food (animal product)	42	24	14	10	6	19.2
For income generation	30	38	20	0	0	17.6
For draft purpose	26	21	30	4	2	16.6
For status indicator (wealth, prestige	0	0	4	20	22	9.2
For risk minimization (against risk)	0	0	10	28	11	9.8
Mejenger						
As the source of food (animal product)	68	58	10	2	4	28.4
For income generation	28	24	13	4	9	15.6
For draft purpose	2	14	48	22	6	18.4
For status indicator (wealth, prestige	0	0	12	8	16	7.2
For risk minimization (against risk)	22	10	20	40	6	19.6

Cattle Housing System

Majority of the respondents in Mejenger (81.2%) and 47% in Bench-Maji zones were keep their animals in separately constructed house made of wood and the roof is covered with grass. This is in agreement with report of [13] that all cattle are housed for protection from adverse weather conditions and predators in western zone Tigray, not far from family house at night to protect them from cold, rain, predators and theft. In Bench-maji zone 31% of the respondents were also keep their animals in partition from their house. In Sheka 91.1 % of the respondents are housed in simple house do not have roof (backyard system) kraal. Calves were always housed separated from their dams in a barn constructed as an expansion of the main houses or separately in and around the family house. Similar system of livestock housing was reported by [14] in the Bale highlands. Most of the respondents' the roof of cattle house is made of grasses.

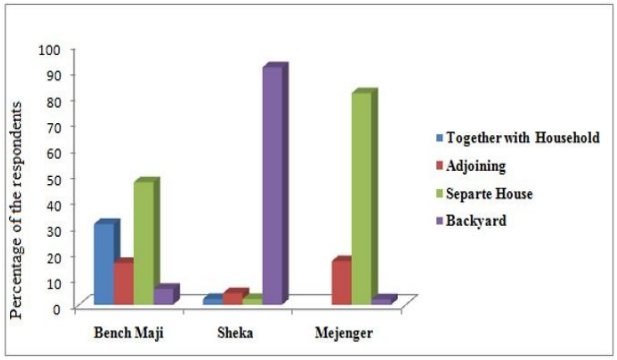

Fig 3.Cattle housing system in the study areas

Feeds and Feeding

The major feed sources in the study areas were, grazing land (61.5%), crop residues mainly green maize Stover, teff straw, barley straw (23.5%), improved forage like elephant grass, susbania leaves (2%) and the other (3%) feeds such as Enset and banana leaves, root crops (cassava, taro, sweat potato) and homemade conventional feeds. All of the respondents in the study area were allowed to graze their animals. In all the seasons, wet and dry, animals were allowed to graze entirely on natural pasture on communal and private grazing land. This coincides with [13] who reported on livestock feed resources of Ethiopia. They allowed to graze their animals at the day time for 5 to 10 hours. In the study areas, during dry period about 47% and 39.5% of the respondents were practice free grazing and partly kept grazing system, respectively. After crops have been harvested, cattle freely grazed on grazing and crop lands and afterwards either graze tethered or kept by herdsmen. The rest 13% of the respondents were grazed their animals by fully tethering system. During rainy season most of the farm land is covered by crops and farmers did not allow their animals to graze freely rather they practiced partly (77%) and fully (23%) tether grazing system. Cut–and–carry feeding is more common during wet season when land is covered with crop.

Farmers in the study areas commonly used maize store (71.5%), teff straw (19.5%), Barley straw (2.5%), sorghum Stover (2.5%), banana & sugarcane leaves (4%) and taro, cassava and sweat potato leaves (1.5%). In the study areas, treating crop residues with urea or mixing with molasses for crop residues improvement was nonexistence except physical treatment (chopping) and addition of salt on the crop residues. Majority of the respondents (79%) in Bench-Maji and (76%) in sheka zones reported that crop residues availability was adequate during dry season where the rest of the respondents (21%) in Bench-Maji and 24% in sheka reported that less adequate. In Mejenger zone (86%) of the respondents were reported that crop residues was less adequate and the rest of the respondents (14%) reported that inadequate. Though there was adequate feed available during wet season, Majority of the respondents (71%) in the study areas did not conserve feed only 29% of the respondents were conserve feed in an open air storage. In the same way, 91.5% of the respondents in the study areas did not make conserve hay. Only 8.5% of the respondents were conserve hay for their animals for dry season. Majority of Farmers (73%) in the study areas did cope out feed shortage by moving their cattle around river side and in the forest area where natural grass more available. In their decreasing order conserving feed, purchasing feed, decreasing livestock numbers were another way of coping feed shortage. Use of supplementary feeds was very limited.

Based on the present study 95% of the respondents in the study area did not cultivate improved forage crops. Lack of awareness (39.5%) and insufficient input (forage seed) (35%) were the two main reasons stated by the respondents not cultivate improved forage crops. Likewise, insufficient land (9.5%) and labor (9%) and feed for animal was adequate (5%) were also reasons stated by farmers in their decreasing order.

None of the interviewees stated that he or she had ever sold or bought 'forages' anywhere. However, some of the interviewees, depending on cash availability they purchased supplementary feed from local market like maize or sorghum grains, were supplemented for milking cows and for fattening oxen in the study areas. Whatever supplementation has been made, priority was given for milking cows, calves and oxen because they require additional intake of food during lactating, growing and planting.

Constraints are identified and ranked in the study area (Table 5). There was no a slight variation in ranking difference between the study areas. Among the five top feed related constraints, Shrinking & decline in productivity of grazing lands was ranked first in Bench- Maji and Mejenger zones where as ranked third in Sheka zone. Lack of improved feed conservation knowledge was ranked first in Sheka zone where as ranked second in Bench-Maji and Mejenger zones. In Sheka zone Shortage of land to plant forage is ranked as the second feed related constraint and in Bench-Maji and Mejenger ranked the third. In Bench Maji and sheka zones, Lack of adequate extension service on improved forage technology ranked as fourth feed related constraints where as in Mejenger zone ranked as the fifth constraint. Unavailability of feed in Mejenger zone was rated as the fourth feed related constraints where as in Bench-Maji and sheka zones rated as fifth.

Table 5. Ranks of feed related constraints perceived by farmers

Constraints	Rank top 5					
	1st	2nd	3rd	4th	5th	mean
Bench Maji						
Un availability	4	12	17	17	11	12.2
Shortage of land to plant forage	17	5	26	18	1 0	15.5
Lack of improved feed conservation knowledge	40	13	22	12	2	17.8
Lack of adequate extension service on improved forage technology	3	19	21	20	9	14.4
Shrinking & decline in productivity of grazing lands	21	39	20	10	1	18.2
Sheka						
Un availability	10	4	18	10	14	11.2
Shortage of land to plant forage	34	10	16	18	8	17.2
Lack of improved feed conservation knowledge	48	22	14	16	2	18.8
Lack of adequate extension service on improved forage technology	2	34	22	2	4	12.8
Shrinking and decline in productivity of grazing lands	18	10	24	16	4	14.4
Mejenger						
Un availability	6	20	18	24	6	14.8
Shortage of land to plant forage	16	22	14	8	18	15.6

Constraints	Rank top 5					
	1st	2nd	3rd	4th	5th	mean
Lack of improved feed conservation knowledge	12	24	12	23	10	16.2
Lack of adequate extension service on improved forage technology	18	10	24	8	4	12.8
Shrinking and decline in productivity of grazing lands	54	10	20	24		21.6

Water Resources, Distance and Watering Frequencies

Source of water and frequency of watering in the study areas is presented in Table 6. The sources of water for cattle were river (94.7%), spring (4.3%) and pond (1%). This general trend of water sourcing is in agreement with [15] who reported similar results in *Debre-Birhan* area. With regard to the frequency of watering the majority (70.7%) of the respondents gave water to their cattle twice a day during dry season, while 26.7% of the respondents offer water to their cattle once a day and 3% of the respondents drink their animals three times a day by tracking the animals to the water point. During wet season the Majority (89.3%) of the respondents in the study areas drink their animals once per day and the rest 10.7% of the respondents drink their animals twice per day. Majority (73%) of the respondents reported that there is no water shortage in the area. The rest (27%) of the respondent reported that there is scarcity of water during dry season. Majority (86.4%) of the respondents travelled 1-4 km distance to drink their animals. parasite problem like leach (61%), scarcity (6.5%), unhygienic (4.5%) and distance (1.3%) were water related problems reported by the respondents in the study areas.

Table 6. Major water sources for livestock in the study areas.

Water source		Bench Maji (%)	Sheka (%)	Mejenger (%)	Overall
River		93	94	97	94.7
Pond		2	1	-	1
Others (Spring)		5	5	3	4.3
Frequency of watering					
Once per day		24	44	18	26.7
Twice per day	Dry season	73	66	76	70.3
Three times per day		3		6	3
Once per day		88	97	83	89.3
Twice per day	Wet season	12	3	17	10.7
Three times per day					

Cattle Breed and Breeding Practices

About 98.76% of the respondents owned local breeds of cattle, whereas 1.23% of the respondents had crossbred bulls were obtained through artificial insemination. Also [16] reported that the cattle breeds kept in *Ilu Aba bora* zone were 100% non-descriptive indigenous cattle. Correspondingly, in Ethiopia according to, 99.4% of the total cattle populations in the country are local breeds while the hybrids and the exotic breeds accounted for about 0.5 and 0.1%, respectively. The majority of the respondents in the study areas (79.3%) were reported that uncontrolled natural mating system applied followed by controlled mating (17.2%) was used. The rest of the respondents in Bench Maji and Sheka zone were used AI service and both AI (1.4%) and natural mating (2.1%). Fig 4.indicated the breeding system in the study areas.

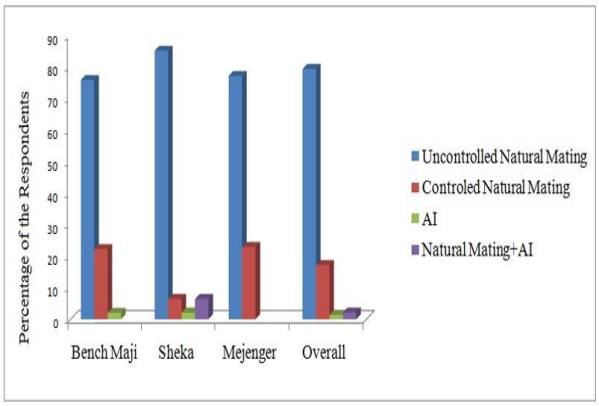

Fig. 4. Breeding system in the study areas.

Most farmers bred their cows by any bull available in the herd when their cows are on heat. Only 16.5% of the respondents were used their own breeding bull by considering coat color, body size, presence of horn and temperament. It has been observed from both individual interviews and group discussion in this study that there is little or no attempt by farmers to improve their stock by selection or 85.5% of the respondents did no use artificial Insemination (AI) service. Based on the survey result, Inaccessibility of AI service (47.1%), in sufficient knowledge about AI (19.5%) and the Inefficiency of AI (18.5%) were the most common reasons of not using AI in the study areas. The rest having their own bull (7.6%) and their fear about the small size of local cows (7%) to carry the pregnancy and deliver the offspring of improved breeds were also reasons of not using AI by the respondents.

Table 7. Reasons of the respondents not using AI and distance of AI service in the study areas.

	Study area percentage of respondent in the study areas			
	Bench Maji	Sheka	Mejenger	Overall
I have no access to AI service	34.4	28.9	78.9	47.1
The efficiency of AI is not good	35.3	24.1		18.5
I do not use AI due to cultural reasons	-	-	-	-
I have a bull	11.8	8		7.6
Insufficient Knowledge	13.5	26	19.1	19.53
The small size of local cow	5	13	3	7
Distance to AI service				
1km-5km	24.4	38.9	16	18.6
5km-10km	57.7	58.3	40.8	52.3
10km-15km	19.3	2.8	30.2	17.4
15km-20km	10		13	7.7
Above 20km	-	-	-	-

Majority (25.4%) of the respondents were dispose their cows when they became old followed by infertile and gave

low milk yield (19.3%). All (100%) of the respondents in the study areas were reared calves by partial sucking before weaning. Average age of weaning of calves was 9.27 ± 2.22 months. After weaning 78% of the respondents raised the male calves for draft purpose.

Milking Frequency

In sheka and Mejenger zones all of the respondents (100%) and 82% in Bench-Maji zone milked twice per day whereas ± the rest 18 percent of the respondents in Bench-Maji milked three times per day during early lactation period.

Calving Interval

The overall mean value of calving interval for local cow in the study areas was 22.05 months. The long CI is recorded in Bench Maji 22.89 ± 4.69 months which is significantly higher than that of Mejenger zone18.91 ± 3.15 months but not that of sheka 21.89 ± 4.69 months. The long calving interval results obtained in the present study are in comparable with earlier reports. Reference [17] reported the mean CI for kariyu cattle in the East Shwa zone of Oromia to be 18 months. Low reproductive performance of the cattle may be due to management effects, poor nutrition and housing and health conditions.

Lactation Length

In the current study of the indigenous cattle of the zones the overall mean lactation length was 8.69 ± 2.27 months reported. The average lactation length each zone was 8.94 ± 2.20, 9.50 ± 2.35 and 7.30 ± 1.69 months in Bench-Maji, Sheka and Mejenger zone, respectively. There was significant difference (P<0.05) between the study zones. The report of the present study were slightly lower than with the findings of [18] the lactation length of the local cattle breed (9.93 ± 0.20 months) of Aleta Chekko district. Fertility is the ability of male and female animals to produce viable germ cells, mate, conceive and deliver normal living young. The lifetime productivity of a cow is influenced by reproductive performances like age at first estrous, age at first Service age at first calving and calving interval [19].

Age at First Calving

The overall age at first calving (AFC) cows in the study areas was 50.87 ± 6.68 months. In the present study, the result of AFC in the study areas were 51.79 ± 6.29, 49.76 ± 5.41 and 52.06 ± 6.89 months in Bench Maji, Sheka and Mejenger zone, respectively. Age at first calving was not significant difference between the study areas. The result of this study nearly similar the result [20] which value 51.8 months for indigenous breed in Adama districts, and slightly less than the results of [21] that valued 53 months for high land zebus. Different factors advance or delay age at first service (AFS) and age at first calving (AFC). Environmental factors, especially nutrition, determine pre-pubertal growth rates, reproductive organ development, and onset of puberty and subsequent fertility. The average milk yield of local cows during dry season was 1.18 ± 0.17 L whereas during wet season 2.05 ± 0.28L. Yield and supply of milk and milk products per house hold and per animal increased during wet season due to better feed availability.

Table 8. Average productive and reproductive performance of cattle in the study areas

Parameters	Mean ± (SE)			
	Bench Maji	Sheka	Mejenger	overall
Calving interval	24.89 ± 6.69*	21.38 ± 6.15*	16.91 ± 3.66*	22.05 ± 6.76
Age at first calving	51.79 ± 6.29	52.06 ± 6.89	49.76 ± 5.41	50.87 ± 6.68
Weaning age	9.31 ± 2.25	9.73 ± 2.21	8.73 ± 2.11	9.27 ± 2.22
Lactation length	8.94 ± 2.20	9.50 ± 2.35	7.30 ± 1.69	8.69 ± 2.27
Age at castration	50.37 ± 7.38*	42.35 ± 9.45*	54.14 ± 10.59*	49.73 ± 9.51
Milk yield				
Wet season	2.16 ± 0.32*	2.01 ± 0.21*	1.97 ± 0.31*	2.05 ± 0.22
Dry season	1.42 ± 0.18*	1.08 ± 0.23*	1.03 ± 0.12*	1.18 ± 0.17

Cattle Health

In current study, major animal diseases and parasites were identified through group discussion involving key informant farmers, development agents and veterinary technicians. As reported by reference [22] economic losses due to disease and parasites have quadruplet their effect further when factors such as feed shortage, poor management practices and environmental factors are prevalent.

Based on the survey result, Blackleg (66.5%), Ticks (46.5%), Bloat (39%), Trypanosomiasis (37%) FMD (29.5%) and LSD (28.5%) were the most common suspected diseases affecting cattle production in the study areas. Anthrax, pneumonia and abortion were the next important diseases with the percentage of 21.5, 20.5 and 16, respectively.

Table 9. Common suspected disease reported by farmers (N, %)

Diseases		Bench-Maji		Sheka		Mejenger		Total	
Scientific name	Local name	N	(%)	N	(%)	N	(%)	N	(%)
Black leg	Abagorba /Kuacha/	81	81	32	64	20	40	133	66.5
Anthrax	Yemberet/Oger	18	18	16	32	7	14	41	20.5
CBPP		7	7	6	12	4	8	17	8.5
Pneumonia	Michi	14	14	9	18	20	40	43	21.5
Mastitis		14	14	3	6	9	18	26	13
Abortion	Wurja	17	17	12	24	3	6	32	16
Bloat		42	42	20	40	16	32	78	39
Leech	Arkit	52	52	8	16	1	2	61	30.5
Ticks	-	44	44	31	62	18	36	93	46.5
Internal parasite	-	1	1	7	14	3	6	11	5.5
Lumpy skin disease	Lupitupo	11	11	31	62	15	30	57	28.5
FMD	-	26	26	2	4	31	62	59	29.5
Mengimites		12	12	4	8	7	14	7	11.5
Trypanosomiasis		52	52	4	8	18	44	74	37

Table 10. Traditional medicine to treat sick animal in the study areas

Type of diseases	Traditional treatment used	Method of treatment
Blackleg	Kerebicho, Bisana, sensel	Smoking the sick animal with kerebicho, Drenching grinded bisana or sensel leaf with water. Branding with hot iron
Ticks	Kerosene, butter	Painting the area with kerosene or butter where ticks present
Pneumonia /couph	kebericho	Fumigating the sick animal with kebericho
Internal parasite	Soap, hot pepper Fexo*(Lepidium sativum)*,senafich Tinbaho,yabshero	Drenching soap, grinded feto the grinded powder with water.
Bloat	Vegetable oil ,ash	Drenching hot vegetable oils
LSD	Soap, senafich	Washing the sick animal with soap
Mastitis	Kebericho/soap	Fumigating the sick animal and washing with soap

Veterinary Service in the Study Areas

Based on the current study, the respondents there was veterinary service in the study areas which accounts 88.7% and the rest 11.3% of the respondents responded that there was no veterinary service in the study areas. The veterinary clinic found in the study areas gave vaccination, treatment and castration. The veterinary services are mainly given by the government (75.4%), veterinary drug suppliers (17.4%) and private veterinarian (7.2%). The current study indicated that majority of veterinary services (96.7%) were given with payment and the rest (3.6%) services were given with free of charges. In study areas, veterinary services mainly performed by veterinary technician (80.6%) followed by animal health assistance (14.9%) and veterinarian (3.7%). Low veterinary drugs (28.2%), the distance to health clinic (27.1 %) and shortage of veterinary services (26.7%) were the three most health related problems in the order of importance stated by the households in Bench-Maji Zone. Shortage of veterinary personnel (50%), high price of veterinary drug (22.7 %) and Low veterinary drugs (20.5%) were the major health related problems in Sheka zone. In Mejenger zone, Low veterinary drugs (36.3%), high price of veterinary drug (23.8 %) and shortage of veterinary personnel (21.4%) were the three most common health related problems.

IV. Conclusions and Recommendation

The overall livestock production systems in the study area is characterized by mixed crops and livestock production was the predominant farming and livestock was identified as traditional management system. Cattle were the dominant livestock species kept by the farmers in Bench-Maji and Sheka zone followed by poultry in Mejenger zone. Livestock in general and cattle in particular play an important roles mainly used as source of food, drought purpose, income generation and for different social issues. Sources of feed for cattle in the study area were mainly grazing land, crop residues, crop aftermath and non-conventional. Feed shortage, inadequate extension and veterinary services, disease prevalence lack of drugs and lack of markets were some of the major livestock production constraints.

From the present Survey it was suggested that;

- Proper Conservation, improvement of crop residues and utilization of the existing feed resources should be encouraged Cultivation of improved forages crops best suited to the farming system, back yard forage production is recommended.
- Equipping the established veterinary clinic with necessary facilities, drugs and animal health professionals could be important to control and monitor animal disease and parasites in the study areas.
- Provision of strong extension services and training on livestock feed conservation and utilization and improved livestock husbandry management should be very important.

Acknowledgement

The authors acknowledged Ethiopian Institute of Agricultural Research for funding this research .and Interviewed Bench-Maji, Sheka and Mejenger zones respondents, Livestock and Fishery Offices experts and development agents are greatly acknowledged by the authors.

References

[1] Central Statistical Agency (CSA) (2011). Agricultural Sample Survey. Report on Livestock and Livestock Characteristics (Private Peasant Holdings). Volume II. Addis Ababa, Ethiopia, pp. 9-26.

[2] MoFED. (2010): Ethiopian Ministry of Finance and Economic Development, National accounts Statistics (GDP) Estimates for 2002. Addis Ababa, Ethiopia.

[3] BOPED (Bureau of Planning and Economic Development). 2002. Socio-Economic Profile of the Southern Nations, Nationalities, Peoples Region. Awassa.

[4] SNNPRSIEMP (Southern Nations Nationalities' Regional State Investment Expansion Main Process) (2011).

[5] Agajie Tesfaye, Chilot Yirga, Mengistu Alemayehu, Elias Zerfu and Aster Yohannes (2002). Smallholder livestock production systems and constraints in the Highlands of North and West Shewa zones. ESAP (Ethiopian Society of Animal Production) 2002. Livestock in Food Security Roles and Contributions. Proceedings of 9th annual conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, August 30-31, 2001. ESAP (Ethiopian Society of Animal Production) 433pp.

[6] Tesfaye, L. and Puskur, R. (2007). Understanding and Analyzing Dairy and Forage innovation system in Ethiopia. Improving productivity and Market Success (IPMS) of Ethiopian farmers' project, IRLI, Addis Abeba, Ethiopia, 141p.

[7] Adebabay K (2009) Characterization of Milk Production Systems, Marketing and On-Farm evaluation of the effect of feed supplementation on milk yield and milk composition of cows at Bure District, Ethiopia. Msc thesis, Bahirdar University, Ethiopia

[9] Azage, T., Tesfaye, M., Tesfaye D, Worku, T., and Eshete, D. (2009). Transhumance cattle production system in North Gondar, Amhara Region, Ethiopia: Is it sustainable? IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project. Working Paper No. 14. ILRI (International Livestock Research Institute), Nairobi, Kenya. 73 pp.

[10] Belay, D., Azage, T. and Hegde, B.P. (2012). Smallholder Livestock Production System in Dandi District, Oromia Regional State, Central Ethiopia. Global Veterinaria 8(5): 472-479.

[11] Berihu, H. and Toffik, K., 2014. Study on prevalence and econo-

-mic significance of bovine hydatidosis in Bako municipal abattoir, West Shoa zone, Oromiya regional state. Journal of Veterinary Science and Technology, 5(5).

[12] Weldegebriel, D.G. (2015). Assessment of Production and Reproductive Performances of Cattle and Husbandry Practices in Bench-Maji Zone, Southwest Ethiopia. Global Journal of Animal Scientific Research. 3(2): 441-452.

[13] Alemu, T. (1990). The unexploited potential of improved forages in the midaltitude and lowland areas of Ethiopia. PANESA/ARNAB (Pastures Network for Eastern and Southern Africa/African Research Network for Agricultural By-products. Utilization of research results on forage and agricultural.

[14] Solomon, B. (2004). Assessment of livestock production systems and feed resources base in Sinana Dinsho Districts of Bale Highlands, Southeast Oromia. M.Sc. Thesis. Haramaya University,

[15] Zewdie, T., Smith, C.M., Hutcheson, M. and West, C.R. (2010). Basis of the Massachusetts reference dose and drinking water standard for perchlorate. Environmental health perspectives, 118(1), p.42.

[16] Ayalew, T., Duguma, B. and Tolemariam, T. (2013). Traditional Cattle Fattening and Live Animal Marketing System in Different Agro-Ecologies of Ilu Aba Bora Zone, Oromia, Ethiopia. Global Veterinaria, 10(5), pp.620-625.

[17] Shiferaw, G. (2006). IN-Situ Phenotypic characterization of Kereyu cattle type in Fentalle District of Oromia Region, Ethiopia, an M.Sc Thesis, presented to the school of graduate studies of Haramaya University, Ethiopia.

[18] Beriso K, Tamir B, Feyera T (2015). Characterization of Smallholder Cattle Milk Production System in Aleta Chukko District, Southern Ethiopia. J Adv Dairy Res 3:132. doi:10.4172/2329-888X.1000132.

[19] Ray, N., Goswami, A. Sarkar, S.K., Dhara, A., and Ghosh, K.C. (2007) Physical characteristics, productive and reproductive performances of comparatively high yielding Deshi Cattle Department of Animal Genetics and Breeding, West Bengal University of Animal and Fishery Sciences, Kolkata-700 037, West Bengal, India.

[20] Kefelegn S, Ashenafi M, Kassahun M, and Adey M. (2014). Assessment of reproductive and productive performance of Dairy cattle breeds in three districts of East Shoa zone, enteral Ethiopia. ESAP (Ethiopian Society of Animal Production) 2014. Livestock and Economic Growth: Value chains as a path ways for development. Proceedings of 21th annual conference of the Ethiopian Society of Animal Production (ESAP) held in Addis Ababa, Ethiopia, August 28-30, 2014. ESAP (Ethiopian Society of Animal Production) 299pp.

[21] Mukasa-Mugerwa E. (1989) Review of reproductive performance in female Bas indicus (Zebu) cattle. ILCA monograph. No.6.ILCA.Addis Ababa.

[22] Tajebe, S., Gangwar, S.K. and Kebede, K. (2011). Performance and physical body measurement of Abergell sheep breed in traditional management system of Tigray regional state, northern Ethiopia.