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INDIGENOUS KNOWLEDGE OF CATTLE KEEPING IN HADIYA ZONE, SOUTHERN ETHIOPIA

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AUTHORS' CONTRIBUTIONS
This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

This study was conducted to assess Indigenous Knowledge of Cattle Keeping in Hadiya Zone, Southern Ethiopia**.** Three districts (Shashogo, Misha and Soro) were purposively selected from each category. A total of 90 households owning cattle with 10 extension workers were selected randomly. There was significant ($p<0.05$) difference across the districts in livestock number per households. Hadiya people keep large size of herd considering it as a wealth, cultural and social security (mainly in Soro district).The motive behind the society is to secure the cultural title of 'Tibima/Abegaz/Garad and Kumima' which is attained in ascending order after achieving the first stage/title "Tibima/Garad" of possession of at least 100 cattle and the second, 'Kuma'' title in which single individual can own more than 1000 cattle. The highest percent 91.7% of respondents in Shashogo and Soro, 85% of respondents in Misha keep cattle primarily for milk. The respondents revealed that cattle keepers, who dwell in low land areas, have the practices of allowing their cattle to scavenge and graze in early morning. This practice is locally named as 'Waare'imma or waarechchaa'. The results of this study indicated that there is unexploited indigenous knowledge of cattle keeping in Hadiya Zone.

Keywords: Hadiya; indigenous; experiences; knowledge; cattle.

1. INTRODUCTION

Indigenous Knowledge (IK) is the local knowledge that is unique to a given culture or society. It is "the body of knowledge acquired by a community in any given area and relating to agriculture, livestock rearing, food preparation, education, institutional management, natural resource management, health care and other pertinent subjects. It is regarded as a valuable resource for development activities that may be equal or even superior to the knowledge introduced by outsiders and should therefore be considered and applied in development projects wherever suitable" [1]. "It is variously referred to as traditional knowledge or local knowledge. Much indigenous knowledge is based on practical experience and is not

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easily expressed verbally – it represents tacit knowledge, to distinguish it from explicit knowledge. Skilful social interaction can make the tacit explicit. Indigenous knowledge is not static, but develops and changes over time and as local people learn and adapt to their changing situation" [2].

Documentation of their vital knowledge on different subjects is necessary before the old generation passes away. It has great practical utility in almost every activity of human life such as health, animal health, livestock management, food, agriculture, timber, dye, religious ceremonies, shelter etc. "It provides useful clue for planning projects for conservation of biological diversity, sustainable uses of natural resources, indigenous health practices etc. Documentation of the indigenous knowledge of livestock keepers about animal breeds and breeding (IK-AB) should be an integral part of the work of rural development projects, institutions and organizations" [3].

In developing countries, the immediate concerns are more for food security and economic development. The most promising option for maintaining animal genetic resources is to support and provide incentives for local communities to continue herding and managing their animal genetic resources in their respective ecological contexts. Therefore, the objective of this research paper was to assess the indigenous knowledge of cattle keeping in Hadiya Zone.

2. MATERIALS AND METHODS

2.1 Description of the Study Area

The study was conducted in Hadiya zone; Southern Ethiopia. The zone is located at a distance of 232km to the south of Addis Ababa. Ecologically, 24% of the Zone is "*Dega*" (highland), 65% is "*woynadega*" (mid altitude) and 11% is" *kolla*" (lowland). Average Annual rainfall of the zone is 1260mm; its altitude ranges from 540-2940masl, and the average annual temperature 16.5ºC (Hadiya zone Agricultural office, 2015). Hadiya zone consists of a total of 11 districts which was categorized in to three category on the bases of agroecology and cattle population size. Three representative districts from each of the category were selected purposively.

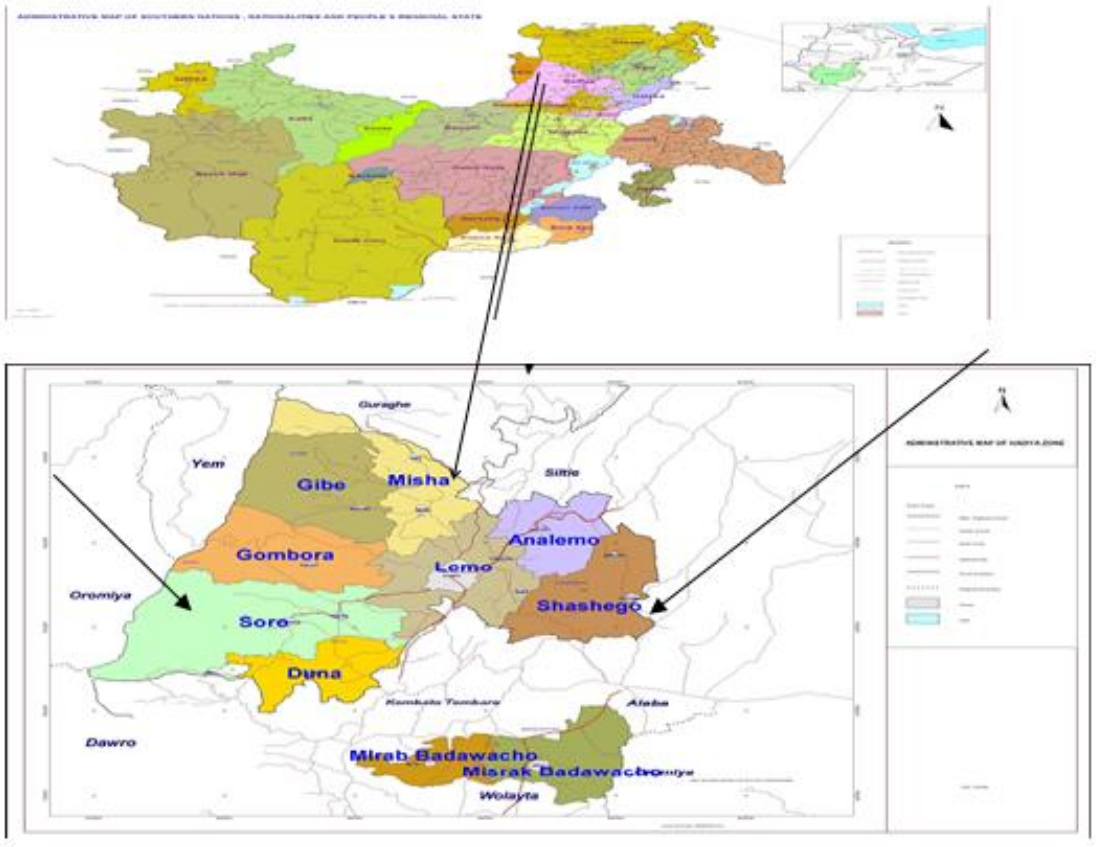

Fig. 1. Location of the study area
Source: Hadiya Zone Finance office (2014)

2.2 Sample Size and Sampling Method

Hadiya zone was surveyed through single rapid exploratory field visits to the study area for gathering available secondary information from the district experts of the rural and agricultural development office and the farmers' representatives to define the sampling frame and available background information on the existence of indigenous knowledge and the experiences of cattle conservation. Among the districts of the zone, three were selected randomly. Three kebeles were selected randomly from each district and 10 households also were selected randomly from each kebele. Ten (10) experts from the zone and the districts were interviewed and participated in focus group discussions separately.

2.3 Data Collection Methods

Preliminary field visits was conducted for gathering secondary data from local livestock extension staffs and offices about conservation of indigenous cattle types and available indigenous knowledge of cattle rearing in the study area. Then key informant focus group discussions were held with representatives of farmer groups, extension staffs and the district sector administration officers. A total of six focus group discussions were held one per district, each having 8–12 farmers plus a representative of the extension staff.

The discussions were facilitated by the researcher at all districts. The main points for discussions included indigenous knowledge, existing cattle conservation practices, community based husbandry practices, in each study area, a structured questionnaire that has a type of mixed questions with open ended and closed types will be administered. Development agents working in the district office of livestock and fisheries department, and rural kebeles was recruited and trained on way of handling and administering the questionnaire. The focus area of the questionnaire was on practices of cattle conservation and indigenous breeding practices.

2.4 Statistical Analysis

The SPSS statistical computer software (SPSS, version 20) was used to analyze the survey data and descriptive statistics (mean, standard error and frequency) was also performed.

3. RESULTS AND DISCUSSION

3.1 General Socio-economic Characteristics

Percent sex, educational background and mean age (years) of the respondents are presented in Table 1. The male respondents were in larger proportions (80%, 72% and 75.3%) in Shashogo, Misha and Soro districts respectively. M: F sex ratio in Shashogo is similar with the report of Ftiwi and Tamir [4] in Western Tigray of Northern Ethiopia which was exactly 80 percent for male respondents. M: F sex ratio for male (72%) and female (28%) reported in Misha district was found to be similar with sex ratio of the respondents reported by Tonamo et al. [5] in Essera district. However, sex ratio in Shashogo and Soro was found to be larger. The larger proportions of female respondents in Misha district might be due to relatively larger number of female being head of the household in the district.

The larger proportions of the illiterate respondents (40% and 39.7%) were found in Shashogo and Misha districts respectively. Illiteracy percent reported by Tesfaye (2007) in Metema has almost similar figure (45%) for Shashogo district but Misha had lower. The largest percent (30%) of the respondents in Soro district were able to read and write. Similarly Yisehak et al. [6] in Dedo district reported "the percentage (30%) for literacy. As indicated in Table 1, majority of respondents in Soro had attended certain level of education compared to the two other districts". The mean age of the respondents (years) in the study districts were 42.3, 44.20 and 40.49 in Shashogo, Misha and Soro districts respectively which is similar with age of the respondents (43.62, 45.88 and 41.00) reported by Yisehak et al. [6] in "three districts of Jimma zone of Western Ethiopia".

3.2 Family Size and Livestock Holding

Mean±SE for family size and livestock holding per house hold by districts are presented in Table 2. The mean family size in Shashogo, Misha and Soro districts were 6.72 ±.26, 6.18±.25 and 5.72±.24 respectively. The mean family size (6.18±.25) obtained in this study for Misha district was similar to mean family size (6.22) reported by Adebabay [7] in Bure district. The mean family size in Shashogo district was 6.72 ±.26 per household which was less than the Ethiopian national average (7.4) and greater than Sub-Saharan average (5.6) as reported by USAID (2009). The mean family size in Soro district was 5.72±.24 per household. This result is in agreement with Tesfaye [8] in Metema district and Kedija et al. [9] in "Meiso district who reported mean family size of 5.7± 0.13. Family size depends on practices such as social and cultural perceptions of the society". "Having many children is thought as an asset for farming activities and being large in number in a household has social prestige showing the strength of that family.

Similarly, study by Tonamo et al. [5] in Essera district indicated that having many wives is one of wealth indicators and commonly practiced type of marriage".

Table 1. Sex (percent), educational background (percent) and age (mean) of the respondents across the districts

Descriptor	Shashogo		Misha		Soro		Over all	
	N	%	N	%	N	%	N	%
Sex of the respondents								
Male	24	80	22	72	23	75.3	69	77
Female	6	20	8	28	7	24.7	21	23
Educational level of the respondents								
Illiterate	12	40	12	39.7	6	18.3	30	33.33
Read and write	6	20	6	18.3	9	30	21	23.3
Primary school	5	15	5	17	7	21.7	17	18.9
Secondary	5	15	4	15	4	15	13	14.44
School	2	10	3	10	4	15	9	10
Diploma and above								
	Mean±SD		Mean±SD		Mean±SD		Over all	
Age of the respondents	42.3±14.82		44.20±12.38		40.49±11.99		42.33±13.08	

Table 2. Mean family size and livestock holding per household

Descriptor	Districts					
	Shashogo	Misha	Soro	Over all	Test	
	Mean±SE	Mean±SE	Mean±SE	Mean±SE	F- value	P-value
Family size	6.72±.26	6.18±.25	5.72±.24	6.21±.15	3.97	0.02
Livestock						
Cattle	9.87±1.16	5.80 ±.40	11.22±1.70	10.96±.74	9.15	.000
Goats	3.73±.35	.78±.14	4.73±.50	3.07±.24	31.12	.000
Sheep	1.90±.23	2.21±.20	3.05±.18	2.38±.12	8.50	.000
Donkey	1.08±.09	.63±.07	1.33±.10	1.02±.06	15.56	.000
Chicken	6.85±.66	3.46±.44	7.56±.79	6.31±.38	5.40	.005
Horse	.43±.06	.72.±.06	.45±.06	.55±.04	6.42	.002
Mule		.18±.05	.32±.06	.20±.03	4.635	.011

P<0.05, SE=standard error

There was significant ($p<0.05$) difference across the districts in livestock number per households. This difference might be due to differential suitability of the environment for keeping animals, purposes of keeping cattle, land availability and the role of animals for livelihood of the keepers. The mean cattle holding per household were 8.87±1.16, 5.80±0.40 and 11.22±1.70 in Shashogo, Misha and Soro districts respectively. "The figures for Shashogo and Misha districts were smaller than that of Tesfaye [8] with 12.25±0.23 cattle per household in Northwestern Ethiopia and larger than that of Belay et al. (2012) with 4.53±0.4 cattle per household in Dandi district". "The number of cattle per households (11.22±1.70) in Soro district is smaller than the reported figure (14.7±0.55) by Ayantu et al. [10] in Horro district of Oromia region and (14.00±0.58) by Tonamo et al. [5] in Essera district of Southern region. Mean number of livestock is highest in Soro district compared to the other two districts".

3.3 Livestock and Crop Farming Systems

Farming system is characterized by mixed crop-livestock production system which was confirmed during focus group discussions across the districts. "Cattle are the dominant livestock species, mainly used for milk and draught power followed by other purposes. This result is in line with the report of Tonamo et al. [5] in Essera district, where cattle were the main species reared by the farmers and were used primarily for draught power and milk".

"Hadiya cattle also have an important socio-cultural role such as bride price and payment of fines in settling disputes in communal areas, reserved for special ceremonial gatherings such as marriage feasts, weddings, funerals and circumcision, given as gifts to relatives and guests, and as starting capital for youth and newly married men in the study area. This was consistent with the findings of Belay et al. [11] in Dandi district".

Crop farming in this area was mainly practiced using oxen/draught power, and oxen are given due attention next to lactating cows particularly with regard to better feeding. In Soro district feeding oxen separately from other animals is most common and the farmers give due attention to feed them properly during and after plaughing season. Dominantly growing crops in the study area include wheat, *teff*, sorghum, bean and pea, barley, maize, potato, *enset*, coffee, kchat and tomato.

3.4 Cultural and Other Reasons of Keeping Cattle

"Farmers keep cattle for multiple purposes like milk, meat, blood, hides, and horns as source of income" [12,13]. "Socio-cultural functions of cattle include their use as bride price and payment of fines in settling disputes in communal areas" [14]. "They are also reserved for special ceremonial gatherings such as marriage feasts, weddings, funerals and circumcision. Cattle are given as gifts to relatives and guests, and as starting capital for youth and newly married men. They are used to strengthen relationships with in-laws and to maintain family contacts by entrusting them to other family members" [15].

"Hadiya people share many similarities with other people for having distinct motive to keep cattle for different purposes. They keep large size of herd considering it as a wealth, cultural and social security (mainly in Soro district).The motive behind the society is to secure the cultural title of '*Tibima/Abegaz/Garad* and *Kumima'* which is attained in ascending order after achieving the first stage/title "*Tibima/Garad*" of possession of at least 100 cattle and the second, '*Kuma*'' title in which single individual can own more than 1000 cattle [16]. Due to this reason farmers in Soro district own larger number of livestock and the district has the largest livestock population among all the districts of the zone".

"The results of individual interviews with farmers in the study area show that cattle have multipurpose functions. The major functions of cattle in the area are: draught power, milk/meat production, source of income, cultural purpose, social security and manure. Similar report was recorded by Fasil and Workneh [17] on purposes of keeping cattle in Amhara region".

"Largest number of respondents in the study area throughout the districts ranked milk and draught as primary purposes of keeping cattle. As shown in Table 3, 91.7% of respondents in Shashogo and Soro, 85% of respondents in Misha keep cattle primarily for milk. Cattle primarily for draught purpose were reported by 93.3 % of respondents for each of Shashogo and Soro districts, and 81.7% of respondents in Misha. Similarly Etafa et al. [18] reported that 99.4% of the respondents in Hararghe kept oxen primarily for draft power, while 86.6% of the respondents kept cows for sale of milk".

3.5 Indigenous Knowledge in Cattle Feeding

The respondents also reported that the major feed types in the area is generally dominated by native pasture (grass) and utilized in three different ways namely tethering, herding, and zero grazing. Herding (61.7% and 48.3%) was the main utilizing way in Shashogo and Soro districts respectively, while tethering (51.7% and 38.3%) was mostly practiced in Misha and Soro districts respectively. Seasonal supplementation of mineral locally known as '*bole*' (*Boora* in Hadiyyisa) was found common throughout the districts. The farmers take care of feeding *'bole'* because cattle are very familiar with mineral. When the cattle need this supplement, they shout to the men who keep them and the owner of these cattle provide them by understanding the cattle are seeking to feed *'bole'*. Rivers, ponds and springs were reported in focus discussion to be the sources of water for cattle in the study areas with rivers as the major source.

Conservation of different crop residues is a common practice throughout the districts mostly when there are available sources of crop residues in dry season. Communal and individual grazing lands throughout the study area in general, and established pasture, in particular, in Misha district were reported as more useful sources of feed in the wet season before the major crops are harvested. In Misha district, (highland), as mentioned above, '*enset*' and its by products are good sources of feed for cattle in dry season and also there are good practices of using established pasture. During focus group discussions and interview, utilization of improved forages was also reported as sources of feed for cattle. Hadiya people are also known by having different indigenous cattle feeding practices. The respondents revealed that cattle keepers, who dwell in low land areas, have the practices of allowing their cattle to scavenge and graze in early morning. This practice is locally named as 'Waare'imma or waarechchaa'. This type of early morning feeding practice is due to having the understanding in milk yield increment during milking.

Table 3. Percent of respondents reporting major functions of cattle in the districts

Purposes	Rank	Districts								
		Shashogo			Misha			Soro		
		N	%	Index	N	%	Index	N	%	Index
Meat	1st	11	36.7	0.15	18	61.7	0.16	10	35	0.15
	2nd	19	63.3		12	38.3		19	63.3	
	3rd	-	-		-	-		1	1.7	
Milk	1st	27	91.7	0.19	25	85	0.18	27	91.7	0.18
	2nd	3	8.3		5	15		3	8.3	
	3rd	-	-		-	-		-	-	
Draught	1st	28	93.3	0.19	24	81.7	0.18	28	93.3	0.19
	2nd	2	6.7		6	18.3		2	6.7	
	3rd	-	-		-	-		-	-	
For social security	1st	4	11.7	0.1	3	10	0.1	4	15	0.1
	2nd	8	28.3		10	35		10	31.7	
	3rd	18	60		17	55		16	53.3	
Manure	1st	3	8.3	0.12	5	15	0.13	3	8.3	0.11
	2nd	20	68.3		22	75		19	63.3	
	3rd	8	23.3		3	10		8	28.3	
Selling for money	1st	16	53.3	0.16	11	38.3	0.14	17	56.7	0.16
	2nd	11	36.7		15	48.3		11	36.7	
	3rd	3	10		4	13.3		2	6.7	
Cultural	1st	3	10	0.09	4	13.3	0.11	7	21.7	0.1
	2nd	7	23.3		15	48.3		6	20	
	3rd	20	66.7		11	38.3		17	58.3	

N=number of respondents Index= sum of (3 X number of household ranked first + 2 X number of household ranked second + 1 X number of household ranked third) given for each function (purpose) divided by sum of (3 X number of household ranked first + 2 X number of household ranked second+1 X number of household ranked third) for all function (purpose)

3.6 Major Cattle Diseases and Some Traditional Treatment Practices in the Study Areas

Diseases have numerous negative impacts on productivity of herds i.e. death of animals, loss of weight, slowdown of growth, poor fertility performance, decrease in physical power and the likes. In current study biological, nutritional and physiological health problems were reported to be among the major factors affecting cattle in the study area. Major animal diseases and parasites were identified through group discussion involving key informant farmers, development agents and veterinary technicians. As reported by Tajebe et al. [19] 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".

Drought and feed shortage were considered as the two major factors that predisposed the cattle for a variety of infectious and non-infectious diseases. Most of the infectious diseases were reported to occur in dry season while the prevalence of parasitic diseases increased at the beginning and at the end of the wet season. Cattle diseases reported in all the studied districts were common but the intensity of prevalence for a disease type was different. The reported common and economically important diseases throughout the study area were infectious diseases (anthrax, blackleg, pasteurellosis, brucellosis, contagious bovine pleura pneumonia, lumpy skin disease and foot and mouth disease), external parasites (ticks and lice), internal parasites (fascioliasis) and vector borne diseases (trypanosomiasis and babesiosis). In addition to these some metabolic diseases were also reported but their occurrence was rare. Lumpy skin diseases and foot and mouth diseases were reported to be occurring widely throughout the study area in the year of study.

During focus group discussions most of the participants reported that "the farmers have their own hypodermic needles to inject medicine to their cattle in case of disease outbreak. None of them have ever been trained or received prescriptions from veterinarians. They explained that they commonly administer penicillin for acute diseases. Doses are quantified in terms of bottles and may increase or decrease according to the number of animals suffering from diseases in a given herd, level of disease severity and the amount of drug available for use. The same

information was reported by Fasil [17] in Amhara region".

Many of the veterinary clinics in the study area had shortage in terms of medical supplies and human power; and are often distantly located as indicated during focus group discussions. They also revealed that control measures were vaccination, deworming and spraying. Traditional methods of treatment for some diseases were also reported by farmers. Feeding red colored *'enset'* leaf for cattle when there is placenta retention, branding the area around the ribs with hot iron and incising around the shoulder for anthrax were some reported traditional treatment ways.

Outcomes of focus group discussions in Soro district revealed that the cattle are severely affected by trypanosomosis especially in the kebeles located near Gibe river basin and the farmers purchase and administer deltametri for prevention of tsetse fly in the area. Veterinary professionals during focus group discussion revealed that there was a problem of use of low dose of medicine by farmers for cattle treatment which not only limits the effectiveness of the drugs but also develops drug resistance. Soro district was also reported to be known by movement of cattle which could be the reason for high prevalence of disease in the district.

Outcomes from group discussion in Shashogo district revealed that there was production loss in the area due to high parasites infestation during summer (*kremt*). Fascioliasis (*Fasciola hepatica*) was reported "to be the cause for this production loss because animals graze around '*boyo*' lake, a local lake in the area, known for parasitic infestation. Deworming animals in early summer season was reported to be the controlling method".

Misha district veterinary agent, farmers and extension workers during focus group discussion revealed that the most prevalent diseases in the area were mainly of parasitic diseases especially external parasitic diseases such as ticks, fleas and lice for which the most commonly used treatment was diazinone. Internal parasites such as fascioliasis and cestodes were also reported as common for which the treatment used was broad spectrum antihelmentic drugs like albendazole.

3.7 Indigenous Knowledge in Breeding and Breeding Management

Majority of the respondents across the districts revealed that they select breeding animals. Coat color, body conformation and adaptability such as disease resistance and heat tolerance, and growth rate of bulls were reported as major parameters for selection of bulls across the districts. Similar parameters used for bull selection were reported by Beriso et al. (2015) in Aleta Chuko district. Mating is mostly uncontrolled (51.7% and 46.7%) in Shashogo and Soro districts respectively. In Misha district type of mating was mostly natural controlled (23.3%) and natural controlled and AI (45%). Thus natural mating was the familiar and major mating type in all the districts. Tonamo et al. [5] reported similar case in Essera district about natural mating being the most familiar and common; and larger proportion of mating was uncontrolled.

The primary reason for uncontrolled mating in the study area is the communal grazing practice whereby animals of various households graze together. The sources of bulls reported for mating across the districts were their own herd and neighboring herd. As indicated in Table 4, 69.7%, 85.3% and 78.3% of the respondents in Shashogo, Misha and Soro districts respectively, reported that they use breeding bulls from their own herd and neighboring herd. On the other hand, 28.3%, 16.7% and 21.7% in Shashogo, Misha and Soro districts respectively, reported that they use breeding bulls from their own herd only. Similarly Tonamo et al. [5] reported that majority of the farmers in Essera district use the breeding bulls from their own herd and neighboring herd and small portion of farmers use their own herd as source of breeding bulls.

It was reported that the main purposes of keeping breeding bulls are for mating, socio-cultural purposes, draught, both mating and draught purposes which was similar in all the three districts. As indicated in Table 4 castration (68.3%, 63.8% and 63.3%), selling (11.7%.5% and 10%) and both selling and castration (12%, 26.7% and 26.7%) were reported as the culling methods for Shashogo, Misha and Soro districts respectively.

Most of the sampled households reported that the practice of heat detection is through visual observation. Willingness to be mounted by other cows and mucus discharge were among the frequently reported signs of heat in the study area. Similarly Shiferaw [20] reported that willingness to be mounted by other cows and mucus discharge were the frequently identified signs of heat in Kereyu cattle.

3.8 Selection Criteria for Breeding Animals

Selection of breeding animals was reported to be practiced in the study area where there is a proverb in local language '*moora firoo wee'ichi orodo la'isooko'* known by the community which means that the male calve going to be the breeding bull will be

Table 4. Household's response in percent on indigenous cattle breeding management

Breeding management	Districts			
		Shashogo	**Misha**	**Soro**
Selection of breeding animal				
	Yes	75	68.3	70
	No	25	31.3	30
Type of mating				
	Natural controlled	21.7	23.3	16.7
	Natural uncontrolled	51.7	16.7	46.7
	Natural controlled and AI	10	45	25
	Natural uncontrolled and AI	16.7	13.3	11.7
Source of breeding bull				
	Own herd	30.3	14.7	21.7
	Own herd and neighboring herd	69.7	85.3	78.3
Purpose of keeping breeding bulls				
	Mating	21.7	15	18.3
	Socio-cultural purpose	5	5	18.3
	Draught	50	60	43.3
	Mating and draught	23.3	20	20
Culling method				
	Selling	11.7	5	10
	Castration	68.3	68.3	63.3
	Selling and castration	12	26.7	26.7

identified in the barn. This proverb confirms that the farmers are familiar with selection of breeding animals in the study area. Most selection efforts focus on male animals, which are usually chosen on the basis of their female relatives' performance, their strength as well as their phenotypic characteristics. But they reported that the presence of uncontrolled mating (Shashogo and Soro) districts was major problem limiting the success of animal selection. Most of the reported selection criteria of breeding animals were also related to the production, reproduction, adaptive traits, behavior, and physical appearances of the animals.

4. CONCLUSION AND RECOMMENDATIONS

Results of the study showed that mixed crop-livestock production system was the dominant farming system in the study area. Cattle served as a source of draught power, food, manure, and source of income, cultural and social purposes. That the natural mating was the common mating type practiced in the area. Feed and water shortage, diseases, market problem, conflict recurrent drought, infrastructures and other constraints like shortage of capital, land and extension services were identified as major cattle production constraints in the study areas. In addition, poor genetic makeup of local cattle was also reported as the constraints limiting effectiveness of herd productivity. In the study districts, natural pasture and crop residues were the main sources of feed for cattle and the higher proportion of feed was derived from natural pasture and crop-residues including *enset* as one of major sources in highland areas. There was significant ($p<0.05$) difference across the districts in livestock number per households. This difference might be due to differential suitability of the environment for keeping animals, purposes of keeping cattle, land availability and the role of animals for livelihood of the keepers.

The results of this study indicated that there is unexploited indigenous knowledge of cattle keeping in Hadiya Zone. Generally, the experiences of cattle keeping purposes, indigenous breeding practices, indigenous feeding and indigenous disease treatment practices were indicated as major indigenous cattle keeping experiences of Hadiya people.

DECLARATION

This statement is to certify that the Authors has seen and approved the manuscript being submitted. I

warrant that the article is the Authors's original work. I warrant that the article has not received prior publication and is not under consideration for publication elsewhere. This research has not been submitted for publication nor has it been published in whole or in part elsewhere. I attest to the fact that the Authors mentioned on the title page has contributed significantly to the work, read the manuscript, attest to the validity and legitimacy of the data and its interpretation, and agree to its submission to your Journal.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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