Traditional Cattle Husbandry Practice in Gamo Gofa Zone, Southern Western Ethiopia

Belay Zeleke[1], Minale Getachew (Dr.)[2]

[1, 2]Arba Minch University College of Agricultural Sciences, P.O.Box 21, Arba Minch Ethiopia

Abstract: **Study was conducted to assess traditional management practice and constraints of cattle production in Gamo Gofa Zone, south western Ethiopia. Multi-stage purpose sampling technique was employed to select the districts and kebeles for the study. Focus group discussion and structured questionnaire were used to collect data from 352 households. Data were analyzed using descriptive statistics. Result indicated majority of the respondents were household heads and house wives in terms of position in the household. In the area cattle was the most specious followed by goat and sheep. Cattle production in the study area had significant role in socio economic condition of the farmers being source of draft power, food, manure and income and/or had role in diversifying the income of the farmers. Seasonal fluctuations in the availability and quality of feed have been a common phenomenon, inflecting serious changes in livestock production. River was the major water source and good veterinary access was also observed. Natural mating was the dominant breeding method and selection of the animal was based on physical appearance. Scarcity of land and quality and quantity of feeds, lack of awareness on feed conservation methods, breeding technologies and lack of market information were the major challenges mentioned. Hence, awareness creation and extension service on breeding practice and feed conservation technologies should be done.**

Keywords: **Cattle production, Gamo gofa, production system, Traditional husbandry.**

1. INTRODUCTION

In Ethiopia, agriculture is the main economic activity and more than 80% of population is dependent on agriculture in which livestock play a very important role (CSA, 2009). Livestock is an integral part of the agriculture and the contribution of live animals and their products to the agricultural economy accounts for 47% (IGAD-LPI, 2011). Livestock perform multiple functions in the Ethiopian economy by providing food, input for crop production and soil fertility management, raw material for industry, cash income as well as in promoting saving, fuel, social functions, and employment. According to CSA (2017) the current livestock population estimated to be in 59.5 million cattle, 30.7 million sheep, 30.2 million goat, 1.21 million camel, 56.53 million poultry, 2.16million horses, 0.41 million mules and 8.44 million donkeys. These population are widely distributed across diverse agro ecological zones of the country and not been fully exploited. Similarly, According to FAO (2013) Ethiopia has the 5th largest cattle population in the world.

Among livestock species, cattle contribute significantly to the livelihoods of farmers. They serve as a source of draught power for the rural farming population, supply farm families with milk, meat, manure, and also as source of cash income, playing a significant role in the social and cultural values of the society. Cattle contribute nearly too all the draught power for agricultural production at smallholder level in Ethiopia (Melaku, 2011). They are also used to generate critical cash in times of scarcity, provide collateral for local informal credit and serve other socio-cultural functions in Ethiopia (Ulfina *et al*., 2005). Despite the importance of cattle to the farming community in particular and to the national economy at large, the sector has remained underdeveloped and underutilized.

Livestock systems represent a potential pathway out of poverty for many smallholders in the developing world. The majority of the world's rural poor, and a significant proportion of the urban poor, keep livestock and use them in a variety of ways that extend far beyond income generation. In many cases, livestock are a central component of smallholder risk management strategies (Bailey *et al*., 1999).

Despite the importance of livestock to the diets and incomes of poor farmers, the central role played by livestock in the livelihoods of rural households in the developing world is seldom fully appreciated by policy makers, development agencies and donors. Knowledge of the available breed and heterogeneous production system will enable to design appropriate intervention for future research and enable to design policy from which the country will utilize the full potential from the cattle production subsector and/or increase the contribution of the sector to national economy. So the present study focused on assessing on traditional management practice and constraints of cattle production in Gamo Gofa Zone, south western Ethiopia, which is known to be one of the potential cattle producing area of the country.

2. MATERIALS AND METHODS

Description of the study area:

The study was conducted in Gamo Goffa zone of south-western Ethiopia. Gamo Goffa zone is one of 13 zones of the Southern Nations, Nationalities and People Regional State (SNNPRS) and consists of 15 rural districts and two town administrations. It laid near the center of the region around 5°57″–6°71″N latitude and 36°37″–37°98″E longitude. Its general elevation ranges from 680 to 4207 masl; it receives 600–1600 mm rainfall per annum and annual temperature ranges from 10°C to 34°C. According to CSA (2017), the estimated livestock population and beehives of Gamo Goffa zone were; 1,301,056 cattle; 476,329 sheep; 392,380 goats ;50,296 horses; 15,244 mules; 65,441 donkeys; 1,029,170 poultry and 63,479 bee hives.

Sampling technique and procedure:

Multi-stage purpose sampling technique was employed to select the districts and kebeles for the study. Study districts were stratified based on agro ecology in to strata. Based on secondary source of information, Demba Goffa for Mid-Attitude and Uba-Debre Tsehay for low-altitude part of the Zone were selected for actual data collection. Kebeles were selected from each stratum purposively based on cattle population potential, agro ecology and accessibility. Therefore, a total of 2 woredas, 8 kebeles and 352 households were studied.

Data collection methods:

Focus group discussion Preliminary field visits were made after gathering secondary data from local livestock extension staff about the type and distribution of indigenous cattle types in the study area. Then key informant focus group discussions were held with representatives of farmer groups, extension staff and the district administration officers. A total of eight focus group discussions were held – four per site, each having 10–12 farmers plus a representative of the extension staff. The researcher facilitated the discussion at all sites. The main points for discussion included indigenous knowledge about history of origin and introduction of existing cattle types, distinctive features of the cattle types as well as their desirable and undesirable characteristics, utility and status of the existing cattle populations and other information related to indigenous cattle. Similarly, the selected farmers were interviewed using a structured survey questioner. The major information assessed in the survey include land holding, major farming activities, cattle management and purpose of keeping, ownership and means of acquiring the cattle, herd dynamics, productive characteristics, culling criteria and constraints of cattle production.

Data analysis:

All data were entered, cleaned and managed using MS Excel© worksheet. Information compiled from focus group discussions and interview were summarized and synthesized to describe the origin, distribution, major characteristics and status of the respective cattle populations and production system. The data were analyzed by descriptive statistics using MS Excel and SAS (2002).

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3. RESULT AND DISCUSSION

Socio-economic characteristics of households:

Socio-economic characteristics of respondents' household indicated age of respondents ranged from 30-65, where most of them (34.09%) are in **41-50** years **age category**. Majority of the respondents were household heads and house wives in terms of position in the household. With regard to sex profile, 12.82 % and 9.09% of respondents at Demba Gofa and Uba Debretsehay, respectively, were females. The proportion of female respondents was lower compared to their male counter parts. This owes to the busy scheduled routine of women due to traditionally unbalanced work load. Nevertheless, there were no traditional restrictions observed against women approaching and talking to outsiders. The average numbers of child below the age 15 and above 15 were 2.46 and 1.76 for male and 2.31 and 1.54 for female students. This could have effect on the farming activity and family wealth status since most of the family members are consumer.

Livestock possession and species composition:

The largest average number of livestock specious possessed by respondents were cattle, goat, donkey, chicken followed by sheep. Because of the fact that this study involved farmers who owned cattle, as a major criterion, all respondent (100%) across the study area had cattle. Hence most of the respondent select cattle as most important specious followed by goat and sheep. However, the proportion of farmers who owned other specious varies between specious. On the other hand all of the respondents confirm that none of them possess any pure exotic livestock specious.

Purpose of keeping livestock:

The existing production system in the study area was mixed crop livestock production system. Of these 94.32% of the farmer used extensive management and 5.68 % of them use semi intensive management. 73.87 % of the respondents were sedentary whereas, 26.13% of them were transhumance farmers. All the respondents in the current study keep livestock for food, income and power purpose. Similarly, Chebo *et al*. (2014) reported that, the major functions of cattle of gamo highland and lowland area were manure, milk, income generation (albeit small and intermittent), traction power, meat and social values in that order of importance.

Land holding and grazing land availability:

The majority of the farmers (81.82%) reported that they have a land used for crop production whereas 18.18 % of the respondents use a rented land for crop production. On the other hand 60.22% and 21.59 % of the respondents have their own and rented grazing land respectively. The study area is known for its communal grazing and it was confirmed by the respondents as 82.95% of them use communal grazing land. 77.27% of the farmers use their own open grazing land whereas, 13.63 % of them uses a rented open grazing land.

Feed source and grazing management:

Cattle are traditionally reared under an extensive system of management on natural pastures grazing on fallow lands, wetlands, forests and bushes, and bunds of farms under a continuous grazing system. Tethering was practiced to some extent especially in areas where the grazing land was encroached by crop farming and when herding labor is scarce. The practice of feed conservation is almost non-existent in the entire breeding tract; hence this situation leads into shortage of feed.

The study showed that natural pasture, hay, crop residue and crop after math were the common feed resources used in the study area. Natural pasture was the major feed source in rainy season across all the studied area. Similar result is reported by Tadesse *et al*. (2014) and Shigdaf *et al*. (2012). However, the major feed resource commonly used in dry season was crop residue as reported by 88% and 75% of the farmers in Demba Gofa and Uba Debretsehay respectively.

Seasonal feed shortage was among the major constraints that limit livestock production in the study area. Similarly, feed shortage was reported to be a major production constraint in many parts of the country (Abebe, 1999; Samuel, 2005; Tesfay 2008; Zewdu, 2008 and Amelmal, 2011). Grazing management has been practiced by farmers to alleviate feed shortage indifferent forms. Communal grazing (herd grazing) was practiced (17.05%) paddock 20.45% and tethering 27.27% in dry season. On the other hand 36.36 % of the respondents practice tethering in wet season. The increase in

number could be afraid of the rain and related disease out breaks also. On the contrary 52.27% of the respondents leave their cattle to graze freely. Zero grazing has not been practice.

Housing;

Providing a shelter for animal has impact on their productivity. A good house can decrease environmental stress and improve productivity. Keeping animals with different age group could cause the death of the calves and the decrease of milk production. Though the type and way of housing vary among individual farmers livestock housing is a common practice in the study area. Hence 12.5 % of the respondents keep their livestock with their family inside one house. However, 27.27 % of them use a separate house. The rest (60%) used conditional housing means they provide the house whenever necessary. For instance during rainy season and if there danger from wild animal and theft they kept with their family and during dry season they kept them in separate house or left them on the field. Most of the farmers (34.09%) use Kraal house and 23.86% and 2.27% of the farmers use open yard and veranda houses respectively.

Water sources and watering:

Ruminates as any other animal require water to maintain the water content of the body, and water availability affects voluntary feed intake; less water leads to inadequate intake of dry matter. For animals kept under pastoral production system, the frequency of watering is very important.

During the dry season, water is available only from wells and some lakes and streams (Ibrahim and Olaloku, 2002). Similarly, in the current study river was the major water source in dry season (Table1). 100% of the respondents, in Demba Gofa; and 81.81% from in Uba Debretsehay) mentioned river as their main water source. Similarly, river was the major water source during rainy season 68.18% and 65.90% in Uba Debretsehay. During the wet season 93.18 % farmers allowed their flock to take water as they needed and when they want. Whereas, on dry season majority of the farmers **72.72%** farmers allowed access to water only once per day.

Table 1 Water source and watering

Water source	Demba Gofa				Uba Debretsehay		total	
	Dry season		Wet season		Dry season		Wet season	
	N	%	N	%	N	%	N	%
River	176	100	120	68.18	144	81.81	116	65.90
Water wall	0	0	20	11.36	32	18.18	28	15.90
Rain water	0	0	9	20.45	0	0	8	18.18

50% the farmers use water which is available 1-5 km around the area in dry season. In wet season 60% of the famers find water source easily < 1 km.

Access to Veterinary service and prevalence of disease:

It is well documented that disease control is very basic for genetic improvement of livestock (Solomon, 2007). Healthy animal with normal physiological function and structure enable the animal to attain highest production. In this study internal and external parasite, Trypanosomosis and FMD were reported as major diseases in the area. All respondents used modern drugs to treat their cattle against these disease and they the veterinary service from governmental clinics. However, 29.54% of farmers also used private clinic and simple drugs from open market as an emergency and additional service. Majority of the respondents (63.63%) mentioned that they find the veterinary service below <1 KM distance from their home, whereas, 36.37% of the respondents find the service within 1-5 km. In contrast with the current finding Tafesse (2001), reported there was low veterinary service performance in the lowlands. These showed that the effort of the government to tackle the outbreak of disease has been improved. On the other hand the drugs on the open market could cause health problem due overdose. Hence they should be controlled.

Breeding practice and selection criteria for breeding animals:

Most of the respondents (86.36%) in the current study agreed they use natural mating. Whereas, 13.64 % of the respondents used both artificial and natural mating. Focus group discussions and interview revealed that cattle keepers

select breeding animals for milk production, reproduction, body conformation and coat color. An animal with a better physical appearance viz: the bigger sized bull gets selected. Similarly color of the animal and the docility behavior of the animal are among the top three criterion of selection. Sometimes coat color of cattle is a preferred attribute in the study area even when milk production and body size are much better. It was also noted that local market prices are strongly influenced by coat color. Though Bulls with long prepuce and good libido during mating are considered good for reproduction, comparing with others, performance of the animal is least considered in the selection of the bull .

However selection of cow is based on milk production levels than to body size of the cow. Milk production capacity is assessed based on production history (of animal and its parents), large navel flap, and medium size of dewlap, large udder, well-placed teats and thin slender neck. Chebo *et al.* (2014) reported criteria for identifying better reproducing cows include displaying clear signs of heat, attainment of early sexual maturity, early age at first calving, short calving interval and good milk production. Animals with history of abortion are selected against.

Recently the government launched a mass synchronization and artificial insemination which in fact was mostly failed. This causes a wrong perception in farmers and let them to flee from the technicians and let the farmer with no choice (36.364%) except allowing uncontrolled mating. Some of the respondents were aware of the consequences of mating their cows with unknown bulls, and attempt to control mating the current study showed that 15.91 % the respondents use a control mating. However, 34.09% of the respondents practice uncontrolled mating. Whereas, 50% of the respondents use both control and un-control mating method. Similar uncontrolled breeding was report by Wuletaw (2004), Getachew (2006) and Chebo *et al.* (2014) from Northwestern and South western Ethiopia. Cited reasons for uncontrolled mating were lack of awareness of possible options, shortage of grazing land, shortage of labour and scarcity of breeding bulls. Similarly, in the current study because of lack of choice, 36.364% of the respondent use uncontrolled mating. The current study revealed that 61.36 percent of the respondents castrate their animals. Farmers did mention different reasons for castration viz: for control breeding, fattening, better price in market, better draught power and better temperament. Of them the main reason was for fattening purpose.

Challenges of livestock production:

Respondents did mentioned different challenges but most of them were related to land and feed shortage. All farmers mentioned that they major challenge was scarcity of land. The fact they practiced mixed farming they use most of the land for crop production. Hence there was no enough land for feed production. Similarly, almost all farmers reported that they faced feed shortage during the dry seasons. The quantity and quality of feed resources available for animals primarily depends upon the climatic and seasonal factors (Zewdu, 2008, Alemayehu, 2005 and Tedonkenk-Pamo and Pieper, 2000). On the other hand during surplus production most of the feed were wasted because they don't have knowledge of feed conservation. Lack of knowledge on breeding practices, market information, lack of awareness on any technological packages and technical issues with the agricultural development agents were also mentioned as constraints

Table 2. Selection criteria and mating system of livestock in the study area

	Total No. of respondents	%
Reason for keeping bulls		
Mating, social-cultural, draft power	352	**100**
Criteria for selecting bulls		
size	**352**	**100**
color	**352**	**100**
horn	**200**	**56.82**
Character(docility)	**216**	**61.36**
Availability (No choice)	**128**	**36.36**
performance	**144**	**40.91**
Mating		
Natural	**304**	**86.36**
both (natural and AI)	**48**	**13.64**
types of natural matting		
Controlled	**56**	**15.91**
Uncontrolled	**120**	**34.09**

Both (Controlled & Uncontrolled)	**176**	**50**
Castration	**216**	**61.36**
Reason for castration		
Control breeding	**136**	**38.64**
Fattening	**200**	**56.82**
Better drought power	**192**	**54.55**
Better temperament	**48**	**13.64**
Better price	**168**	**47.73**
Tradition	**280**	**79.55**

4. CONCLUSION AND RECOMMENDATION

Small land holding of the household plus seasonal fluctuation of feed determined the indigenous farming practice of the respondent in the study area to focus on cash crop production and/or cattle production practice. Cattle production in the study area had significant role in socio economic condition of the farmers being source of draft power, food, manure and income and/or had role in diversifying the income of the farmers. Seasonal fluctuations in the availability and quality of feed have been a common phenomenon, inflecting serious changes in livestock production. Dry season feed supply is the paramount problem. The feed shortages and nutrient deficiencies are more acute in dry seasons. And lack of knowledge on conservation of feeds and breeding practice were also the major problems. Hence, awareness creation and extension service on breeding practice and feed conservation technologies should be done.

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Competing interest:

The authors declare that there is no competing interest.

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