Global Veterinaria 10 (4): 432-438, 2013
ISSN 1992-6197

DOI: 10.5829/idosi.gv.2013.10.4.72194

Livestock Resource Potential and Constraints in Somali Regional State, Ethiopia

Malede Birhan

Department of Animal Production and Extension,
Faculty of Veterinary Medicine, University of Gondar, Gondar, Ethiopia

Abstract: Somali region state is located in the South East parts of Ethiopia and it is the second largest region among the nine regions that are found in the country. The society lives in a very fragile environment, that deficits in moisture, high ambient temperature, with extremely sandy and acidic soils that are not used for normal crop production. The Somali Regional States (SRS) is characterized by pastoral and agro-pastoral livestock production system and the livelihood of the society is entirely depending on from livestock and livestock products. The families live from the milk of their herds, the meat of animals, which is occasionally slaughtered during wholly days, grain and other food bought with money earned from the sale of small ruminants and animal products. The Somali Region is crossed by different rivers flowing in to Somali Region towards the Somali Republic that can be used for irrigation. The various types of livestock population that are found in the different area of the region is clearly described on (Table 1). Hence, the region has numerous problems and constraints that are manifested by natural, human as well as topographic factors are the bottle neck for livestock development in the region.

Key words: Livestock · Potential · Constraints · Somali Region · Ethiopia

INTRODUCTION

The Somalis people are *kushitic* speaking society living in pastoral and agro-pastoral production system in Ethiopia. The region is one of the largest among the nine regional states in Ethiopia occupying with a surface area of approximately 375,000 sq km. it is bordering with Oromia Regional State in the West and Southwest, Afar Regional State in the North, Djibouti Republic in the East and Somalia Republic in Northwest and in the South [1].

Livestock production is one of the important resources in Ethiopia economy and play crucial role in the rural community. However the contribution of this sector to the national as well as regional economy is very small which is about 15 percent of the gross domestic product (GDP) and about 38 percent of the total gross value of annual agricultural output [2].

The Somali regional state (SRS) is considered as a high livestock resource potential area in the country. Livestock rearing or pastoralism is the dominant and indispensable practice followed by little mixed farming in the higher altitude and valley areas of the region. Most parts of the region are characterized by arid and semi-arid climatic which are vulnerable to recurrent drought results in food insecurity in the area since the pastoralists practice extensive resource management. The rangeland has been exposed to rapid degradation and loss of plant diversity. It is apparent that the stocking rate in the rangeland is beyond the carrying capacity of the vegetation cover which results in soil erosion gully formation and vast bare land area [3].

These pastorals lowland of the Somali region are generally endowed with enormous economic potentials, which is not yet fully utilized due to political instability, other social conflicts and traditional use of range resources, lack or absence of infrastructure facility. Among the total livestock population, 40% of the cattle 75% of the goat 25% of the sheep 20% of equines and 99% of the camel's population of the country are raised in lowland areas of Somali region [4].

Livestock is used for various purpose in the region likewise, cattle and camel are reared for milk production as mainstay of their diet small ruminants (shoats) are reared to generate income when cash is needed therefore the

Corresponding Author: Malede Birhan, Department of Animal Production and Extension, Faculty of Veterinary Medicine, University of Gondar, P.O.Box: 196, Gondar, Ethiopia. E-mail: maledeb@yahoo.com.

purpose of this paper is, to over view the present livestock resource potential and constraints of production and to find the possible solution to bring about livestock production system in the EARO [5].

Physical Features of Somali Region: The Somali Region falls into the arid and semi-arid agro-ecological climatic zone. The semi-arid areas have animal's rainfall ranging from 400 to 600mm per year and the arid areas including the Greater Ogaden area receives less than 400 mm rain per year and the minimum and maximum temperature ranges between 25 and 48°C. The seasons are roughly divided into four periods, that is two rainy periods and two dry periods and the primary wet season begins about March and generally coincides with the advent of the southwest monsoon. This season is generally considered as the season of plenty grazing pasture is good and livestock becomes fatten. When the southwest monsoons reach their height about June or July the dry season begins dust storms are common, vegetation and pasture become dry and livestock return to permanent water sources. In autumn, rain generally begins in September or at the beginning of October [6].

Rainfall sporadically over the area until December or season of the year and the rains are confined to the two main seasons that is (wet season) and (dry season), they are likely to the sporadic and unevenly and scattered over the region. Even during the rainy season in addition to variation within the season there is considerable seasonal variation in amount of precipitation in all areas of the region. Thus inadequate and erratic rainfall in the time as well as in space is aggravating the difficulty of growing forage crops and livestock rearing on rain fed bases. Vegetation reflects the pattern of precipitation generally, it is sparse on the plains and in some places, there are thorn bush, orchard bush and different acacia tree species and the vegetation patterns are also affected by saline, sandy soils of the region [7].

The Somali Region is crossed by rivers such as wabi Shebelle, Genale, web and Dawa river flowing in to Somali Region towards the Somali Republic, there are also important natural as well as man-made remains that are important for tourist attraction.But the Somali Region in general is characterized by a fragile environment. This is not as such favorable for rain fed cultivation but good range development with limited infrastructures and social services and communication net work with the rest of Ethiopia that has left the people more or less cut from the rest of the country as a whole [8].

Demographic Characteristics: The total human population of the area is estimated to be around 3,898,000. Urban-rural distribution indicates that the overwhelming majority (85.7%) of the populations is living in rural areas and population density of the region is 10.4 persons per sq km and the average household (AHH) size is 6.65 and 6.2 in rural and urban respectively. The annual population growth rate is estimated about 3% and over 95.5 percent of the population is ethnic Somali, 98.7% of the religion is Islam and they are nomadic and semi-nomadic that moves from place to place in search of pasture and pure water for them and their animals for survival [9].

Economic Consideration: The Somali Region occupies a large area with substantial and varied natural resource base. The rangeland eco- system has a great potential in terms of geothermal, solar and wind energies, fossil fuels such as oils and gasses on the surfaces and underground water resources and minerals. The region is also suitable for development of wild games. At present however, the ecological condition of Somali Region dictated that, it is primarily livestock producing region and a huge irrigation potential of West Gode dam is the main sources for crop production [3].

An important characteristic of the area is nomadic, which the tendency is to accumulate large number of livestock population and wealth status. The pastoral society depends on the number of principal animals herded. The social attracted to this form of wealth plays decisive role in livestock accumulation, which exceeds substance and it is also obvious that the pastoralists want to keep large number of animal to hedge against drought as precautionary motives [10].

During the dry seasons, the lineage groups are normally at their thickest concentration and the ranges near permanent water are most heavily stocked. However, the separation between camels and other animals is most marked because of the difference in water requirements of the species and their grazing system. In the wet seasons, the herds leave their home wells and scatter out over the range where water is only temporarily available. This practice given rest to those areas nearer to the water resources and in effect provides a system of deferred and rotation grazing management. The plants on the range have evolved under such a system of seasonal deferment throughout the year and range condition declined rapidly when subjected to yearlong grazing [11].

Families live from the milk of their herds, the meat of animals, which is occasionally slaughtered during wholly days, grain and other food bought with money

Table 1: Livestock Population in (SRS) at different zonal level in (000)

Type of animals	Shinile	Jijiga	Fiq	Dege Habur	Werder	Kebri Dhar	Gode	Afdar	Liben
Cattle	228	439	252	287	274	168	402	985	711
Sheep	913	1,316	560	538	1,372	1,150	1,004	1,231	969
Goat	776	548	672	574	1,960	719	636	788	1,874
Donkey	46	42	18	11	5	6	8	14	63
Camel	72	85	74	104	480	275	812	99	954
Horse	11	2	1	1.2	*	*	1.1	*	*
Mule	*	*	0.1	*	*	0.11	*	*	0.2

Source: CSA, 2006. * = no data, SRS= Somali regional state

Table 2: Importance of Livestock in the pastoral and agro-pastoral area

	In pastoral production system				In Agro-pastoral production			
Animal Type	Milk	Slaughtered Animal	Sell for on cash	Transport	Pack Animal	Pack Animal	Ploughing	Milk
Cattle	y						x	x
Camel	y			x				
Sheep		Z	*					
Goat	y	Z	*					x
Donkey					+	+		

Key: *= animals for sell; x=good production; y= high production; + =used for packing; z = mostly used for meat

earned from the sale of sheep and goats and animal products. In some cases, men without enough animals to be independent could work as herdsmen for richer pastoralists, for urban livestock merchants, or for settled farmers who owned animals but were unable to migrate with them. Standard herding contracts with payment in cash or kind exists in different parents of the region [12].

Somali nomads and semi-nomads have always been in contact with towns, villages and settled communities. Some are engaged in trade, exchanging milk meat, hides and skins for grain, salt sugar, tea and other commodities such as clothes medicine and household utensils. Towns also act as market centers for livestock, where pastoralists make contact with livestock trading middlemen or brokers. Grain prices, on the other hand, increase dramatically in times of drought. Besides paternalism, cultivation and trade, the Somali are engaged in the other economic activities such as craftwork, wage employment, hunting gathering etc to supplement their subsistence economy [3].

Social and Infrastructures Services: Like most pastoral areas, successive Ethiopia governments have continually ignored the Somali area in terms of the provision of social and infrastructure services like telephone, road, electricity and other educational and health services. It was claimed that delivery of social services is difficult and costly due to mobility of the recipients, low population density and vastness of the region. Even a few existing social and infrastructure services are poor, scattered and inappropriate. The national plan system is based on settled population model and planned by policy makers without the participation of pastoral communities [13]. Most poor pastoralists and agro-pastoralists are therefore devoid of health services in particular and other social and infrastructures services so that the mother and childhood mortality is generally high. The regions, especially rural areas, lack regular means of modern transport, as a result, pack animals remain to be the main means of transporting goods and services. There are some telephone stations and post offices in major urban centers. A few existing banks, insurance companies and electricity power supply are all concentrated in major town [12]. Pastoral communities benefited less from these development infrastructures Somali region is one of the last developed regions in Ethiopia in terms of access to education at all levels. The literacy figure is very low, estimated at less than 10%. The education system suffers from diverse problems, Ethiopia is listed as one of the poorest health-status countries in relation to other low-income countries and the health status of the region is also very low as compared to other regions in the country [14].

There is no reliable information or data about the number of livestock censes in national as well as regional level and the current figure is based on estimate reviewed by various documents, which was organized by different sectors. So that there is no formal census has been carried out either by the Central Statistics Authority or any other concerned bodies. Furthermore, the type of

Table 3: The major landforms of the Somali Regional state

Land type	Slope (%)	district	Agriculture
Level to gentle Undulating plains	0-8	Shinle, D/habur, W/dar and Gode	The area highly favorable for irrigation scheme for agriculture
Rolling plain to hill	10-30	Jijiga, Fiq and Afder	*
Slightly to severely dissected to mountain	Up to 30	Liben, Fiq, Afder and less in Jijiga	*
River gorges	>30	Wabeshebele, Genale, Weyb, Dawa	*

Source: Industrial Survey Project, 2000, (unpublished), *= no data

animals owned by a household is mainly determined by ecology of grazing area, particularly the type of feed resources and proximity of watering points [14].

Livestock Mortality: The main cause of livestock mortality in the region is shortage of feed and water during the dry and drought periods in the area. In addition, death of diseased animal is either by direct infection or by interacting with low nutrition. It is estimated that 70-90% of calves may be lost in drought year, primarily due to poor nutrition and management [15]. The mortality rate of adult cattle is less severe than calves. After reaching two years of age, cattle have relatively low rate of mortality in the wet season because the forage supply in wet season is more than required for maintenance and production. In such circumstance, livestock deposit more subcutaneous fat, as reserved energy to use later time when feed supply is short. High lamb mortality occurs during the first week of life, although more mortality can occur between one to five months of age. The death of lamb usually takes place during lambing time of ewe. Those lambs born during rainy season have more possibility of survival, because the ewe could show better mothering behavior [16].

Apiculture Resource in Somali Region: Ethiopia has favorable conditions for existence of bee colonies and production of honey and beeswax. The country has diverse ecological feature, which are suitable for growth of different flowering plants. The total honey production in the country is estimated at about 25,000 tons per annum this product is obtained due to the long experience of the bee-keepers on traditional method using local hives and indigenous skill. The main bee product, honey is used for multiple purposes such as food, medicine and to produce the local drink called *tej (local name beer)* [17].

Wax is important product of this husbandry and used for making traditional candle mostly used in the church and for various industrial purpose. Other knows precuts like peasants or agro-pastoralists do not exploit propolis, pollen and nectar because of lack of awareness. Even through the Somali Region is known by poor agricultural development, the people at higher altitude produce tremendous amount of honey and beeswax mainly for local consumption [18].

Problems and Constraints Associated in Livestock Production: Livestock policies are the major items from which a comprehensive development program could be formulated. Aspects like animal breeding; health, marketing and land use policies are the current burning issues. Modern breeding strategies in livestock among the indigenous herd or with exotic breed based on heritability of selected traits are not well known. The region's stock is a result of repeated inbreeding practice, which reduces fitness and fertility as well as increases mortality rate of the livestock. Therefore, breeding policy is required to determine the genetic level of local animals and to control segregation of undesirable characteristic. Livestock health is one of the most important and complicated issues in the region. Animal health service should focus on quarantine aspects, trade of medicine, livestock movement [19].

The legal off-take rate of livestock in the region is expected to be minimal because poor marketing infrastructure, price fluctuation and loose attachment of pastoralists with the highlanders and livestock in illegal cross-border trade to the neighbor countries therefore, livestock is mostly exported through illegal channel. Marketing policy related to price and infrastructure is needed in order to increase legal off-take of animals. The grazing lands in the region are increasingly converted to crop farming area, resulting in rangeland deterioration and suffering of the already underfed livestock. Furthermore, the common ownership of grazing land and private ownership of livestock have created inconvenience for introduction of intensive husbandry system. All the above mentioned factors that contributing to the decreasing of livestock production and productivity in the region, these can also further augmented as, aspects like animal breeding (inbreeding),

health service (Veterinary), marketing, absence of micro finance institution and land use policy is also bottleneck to the region's livestock development [20].

Poor Animals Nutrition: Ruminant feed is one of the major factors that contribute to low productivity of local animals. Feed resources provide crucially required nutrient such as energy, protein, vitamins and minerals for all classes of animals in order to fulfill maintenance production requirements. No study has been conducted on the productivity of natural grazing lands in this region as well as at national level. Focus on high and mid altitude pasture land only. The proportion of unsuitable land for forage production in the region is 23.05% or about 7,382,000 ha. Shinile zone is the most affected area with 86.4% followed by 40.4% in Afder and 19.1% in Degehabur, while Jijiga is the least affected zone by 0.5%. The existing bulk feed couldn't satisfy the nutrient requirement of animals particularly during the long dry season. However, most of dry forage and roughage from rangeland is less than 62g CP/kg DM of the diet which is much less than the required amount [21].

In general, rainfall and forage production tends to decrease to the South and Southeast part of the region; hence, the area is characterized by; erratic rainfall, over grazing, over stocking, mismanagement and all these result in reduction of desirable plant species in the region [22].

Animal Diseases and Parasites: Animal diseases are the second most important constraints in livestock production, which cause mortality and morbidity of animals and loss of production in the area. The diseases of animals caused by protozoa, rickettsial, bacterial, mycoplasm, viral, endoparastic and ectoparastic organisms have great effect of mortality. The health of animals is usually worst by the fact that the incidence of disease coupled with the scarcity of veterinary infrastructure facilities, manpower and shortage of chemotherapeutic drugs [23].

Low Genetic Potential of Local Breed: There is no delayed study and research work on the genetically potential local traits except limited work by the Alemaya University. However, it is believed that the inherent makeup of the indigenous stock have special adaptive traits for disease resistance, heat tolerance and ability to utilize poor quality feed. In order respects, however, the productivity of animals in terms of milk, meat and weight gain, dressing percentage and reproductive capacity such as calving, kidding and lambing rate are low [24].

Poor Management Practice: In the rural areas of traditional animals husbandry practice the productivity of animals is generally low. Herd owners are interested to hold as many heads of animals as possible rather than keeping few numbers of productive herds. Systematic way of managing the rangeland and improved forage development strategy is not practiced. Conservation and supplementary feeding to mitigate dry season feed shortage is undertaken only by few peasants/agro-pastoralists. Furthermore, control breeding and record keeping is not well knows and ruminants are mainly left to feed for themselves in the grazing area of the region [25].

Absence of Reliable Data-base: Absence of reliable data about the livestock and feed related aspects made planning and development activities very difficult. The size and distribution of the livestock population is usually drowned from old unreliable references, which lead to miscalculation of resource. Information obtained from different offices for the same purpose is not usually analogous [26]. Reliable database is the prime prerequisite to set alternative development scenarios and for optimum resource exploitation. Reliable figure is also important to monitor and evaluate the effect of biotic and a biotic factor on the change of resources, no controlled breeding and recording systems in both forage and productivity of animal. There are no efficient and adequate marketing information infrastructures in the region and the existing markets lack the basic facilities [27].

Livestock Investment Potential in the Region: Apart from the existing situation, the region has a good for livestock investment in any other aspect production system. Therefore, the following opportunities could be exploited as potential for livestock investment, like, fattening of cattle (sheep and goat), dairy industry establishment, skin and hide processing, milk and milk product processing, standardizing live animals for export, establishment of feed processing plant, apiculture for the production of honey, bee wax, pollen, propolis and fish farming are a great potential in the region [28].

CONCLUSION AND RECOMMENDATION

It is important to note that forage intervention may be difficult to implement in arid and semi-arid environment unless and otherwise, storage extension support and keen interest of farmers/agro-pastoralists. The review of this paper, noted that most attempts to introduction legumes into East Africa rangeland have been unsuccessful, therefore, the possible way of improving the resources

and the paternalists should make aware of the following important points, limit stock numbers commensurate with feed resources, develop efficient grazing system, maintain plant composition in favor of useful plants for grazing, elimination of undesirable plants, reseeding of desirable forage species, fair distribution of watering points in the rangeland, extension services, establishment of feedlot, appropriate veterinary services, develop water-harvesting techniques, develop large-scale beef companies, establish genetic improvement (breeding) center and establish marketing facilities. Finally livestock productivity is affected by a wide range of technical, economic and social issues and research has always taken a multi-disciplinary, problem-solving approach natural and social scientists involving in the region at all stages.

ACKNOWLEDGMENT

I would like to appreciate the cooperatives of Somali Region Pastoral and Agro-pastoral Research Institute (SoRPARI) for providing the necessary information for the success of this review article.

REFERENCES

1. Belachew,H. and E. Jemberu, 2002. Challenges and opportunities of livestock trade in Ethiopia. Paper presented at the 10th annual conference of Ethiopian Society of Animal Production (ESAP), Addis Ababa, Ethiopia, 22–24 August 2002. ESAP, Addis Ababa, Ethiopia, pp: 33.
2. Geremew, D., 1995. A survey of livestock markets and prices in Hararge province. Hararge Quarantine and Meat Inspection Division, MOA, Dire Dawa, Ethiopia, pp: 40.
3. Little, P., 2001. Cross-border livestock trade and food security in the Somalia and north-eastern Kenya borderlands. A summary prepared for the OSSREA/BASIS Seminar on cross-border trade, 2–3 April 2001, Addis Ababa, Ethiopia.
4. Assegid, W., 2000. Constraints to livestock and its products in Ethiopia: Policy implications. DVM thesis, Faculty of Veterinary Medicine, Addis Ababa University, Addis Ababa, Ethiopia, pp: 52.
5. Ethiopian Agricultural Research Organization (EARO), 2000. A kid looking after a kid–Our loved ones. Next generations! What do they need! EARO, Addis Ababa, Ethiopia, pp: 63.
6. Gemechu, M., 1997. The ideological and social basis for this persecution of the Oromo was laid in the sixteenth century, when the 'civilized Christian Community' feigned what they claimed to be, in opposition, the 'history' of the 'barbaric pagan Galla' (Oromo).
7. Alemayehu, M., 2006. Forage Seed Production and Marketing in Ethiopia. Addis Ababa, Ethiopia.
8. Devendra, C. and D. Thomas, 2001. Crop-animal interactions in mixed farming systems in Asia. Agricultural Systems. In press.
9. Central Statistics Authority (CSA), 2006. Agency, Federal Democratic Republic of Ethiopia Agricultural Sample Survey 2006/07, volume II, Report on livestock and livestock characteristics. Statistical Bulletin 388. Addis Ababa, Ethiopia, pp: 9-10, 25- 27.
10. Morton J. and V. Miheso, 2000. Perceptions of Livestock Service Delivery among Smallholder Dairy Producers: Case Studies from Central Kenya. Livestock Research for Rural Development Volume 12: 2.
11. Morton, J. and R.T. Wilson, 2000. The Institutional Marginality of Livestock Production Extension: the Case of Burkina Faso. Livestock Research for Rural Development, 12: 1.
12. Ministry of Agriculture (MoA), 2002. Historical Accounts of Livestock, Fishery and Animal health from 1992 to 1993 E.C (Amharic version), Addis Ababa, Ethiopia.
13. International Livestock Center for Africa (ILCA), 1987. Strategy and long-term plan. Addis Ababa, Ethiopia.
14. Linkages Between Poverty and Land Management in Rural Uganda: Evidence From the Uganda National Household Survey 1999/00, by John Pender, Sarah Ssewanyana, Kato Edward and Ephraim Nkonya, September 2004.
15. Holechek Jerry, L., G. Hilton, M. Francisco, G. Dee and V. Raul, 2000. (February). Short-Duration Grazing: The Facts in 1999. Rangelands, 22(1): 18-22.
16. Rashid, M., A.B. Bhuiyan and C. Siwar, 2011. Islamic Microcredit in Bangladesh: Performance Analysis of Rural Development Scheme (RDS) of Islami Bank Bangladesh Limited (1996-2009), 1-21. In Global Journal of Finance and Economics 8 (1).http://serialsjournals.com/articles.p
17. African Development Fund (ADF), 1998. National livestock development project appraisal report. ADF, Abidjan, Côte d'Ivoire, pp: 56.

18. Thomas, D., 2000. Increasing Livestock Productivity in Mixed Crop-Livestock Systems in South Asia. Proceedings of a Workshop, 15-17 November 1999, ICRISAT, Patancheru, India. ICRISAT, Patancheru, India, pp: 183.
19. Sarma, J.S. and P. Yeung, 1985. Livestock products in the third world: past trends and projections to 1990 and 2000. International Food Policy Research Institute, Washington, D.C., USA.
20. Ministry of Finance and Economic Development (MoFED), 2002. Ethiopia: Sustainable Development and Poverty Reduction Program (SDPRP). Addis Ababa, Ethiopia.
21. Tacher, G., 1986. Prospects of livestock production in the future and its relation to sufficient food supply. In: Proceedings of the Fifth International Conference on Livestock Production and Diseases in the Tropics. Kuala Lumpur, Malaysia.
22. Thomas, D., 1999. Ruminants in crop-animal systems in developing countries: Beasts or benefactors? Inaugural Lecture Series, University of Greenwich, Chatham Maritime, UK, pp: 23.
23. Ministry of Agriculture and Rural Development (MoARD), 2006. Livestock development master plan, Addis Ababa, Ethiopia.
24. Berhanu, G., M.M. Ahmed and S.K. Ehui, 2003. Determinants of adoption of improved forage technologies in crop-livestock mixed systems: Evidence from the highlands of Ethiopia. Tropical grasses lands.
25. Tsige, Y., 2000. Livestock feed security and associated impacts on sustainable agricultural development. In: proceedings of the 7th annual conference of Ethiopian Society of Animal Production (ESAP), Addis Abaab, Ethiopia, 26-27 May 1999. pp: 62-74.
26. Muriuki, H.G., 2003. A review of the small-scale dairy sector-Kenya. In: Milk and Dairy Products, Post-Harvest Losses and Food Safety in Sub-Saharan Africa and the Near east. FAO. Rome.
27. Hindrichsen I.K., P.O. Osuji, A.A. Odenyo, J. Madsen and T. Hvelplun, d. 2004. Effect of supplementation of maize Stover with foliage of various tropical multi-purpose trees and lablab purpureus on intake, rumen fermentation, digesta kinetics and microbial protein supply of sheep. Anim. Feed Sci. and Technol., 112: 89-102.
28. Getnet A., G. Abrehan, F. Fekede and T. Tadesse, 2004. Effect of methods and date of clearing regrowth of Rhodes (chloris gayana) and colored Guinea (panicum coloratum) grasses on seed productivity. Proceedings of the 11th annual conference of Ethiopian Society of Animal Production (ESAP) held Addis Ababa, Ethiopia, 28-30, 2003.