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Borana Cattle Breed Production, disease, Economic Role, Drought, and Policy Constraints in Borana Zone, Oromia Sate, Southern Ethiopia

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Abstract

The objective of this study was to assess the current status of the Borana cattle production system, its role in the household economy, and alternative economic options for major health problems and constraints in three districts of Borana Zone, Oromia State, south Ethiopia, where over 1 million cattle and 480,000 pastoralists are residing. The data was collected from December 2015 to February 2016 by interviewing 228 pastoral households, a field survey, three focus group discussions, and informal discussions with livestock experts in the study area at the zonal and district levels. The parameters assessed were family size, livestock holding, cattle management, purpose of cattle production, and economic role for the pastoralists and other alternative economic activities, drought resilience of the households, constraints of the production system, and health problems of cattle. Cattle production was found to be the most important economic activity for socio-cultural and religious purposes, integrated with sheep, goat, and camel production as a primary species and chicken, donkey, mule, and horse production as a secondary species. Crop production, horticulture, mining, petty trade, and the sale of firewood and charcoal were alternative livelihood activities. Few rich households were opting to diversify their cattle production practises to trade and house building in the towns for renting or enter into real estate. The mean age of the households was 49.61 ± 13.78. The number of male and female-headed households constituted 88.88% and 11.12%, respectively, and the overall mean household size was 8.36 persons. Three wealth classes were registered as poor (19.74%), medium (53.95%), and rich (26.31.57%), respectively, based on the number of cattle owned. The number of owners of cattle, sheep, goat, camel, chicken, donkey, horse, and mule was 41.76±46.61, 39.31±39.37, 30.94±34.20, 6.88±15.13, 3.22±5.86, 0.14±0.58, 0.09±0.38, and 0.09±0.38, respectively. Herding, housing, milking, calf rearing, watering, and selection for breeding were found to be the most important activities. Cattle were divided into two groups for herding: the 'Warraa, or village, and the Furaa, or satellite herd, to cope with shortages of feed and water. The watering frequency was three days, and the animals were resistant to prolonged watering, feed shortages, and diseases. Cattle were kept mainly for milk, secondly for slaughtering during ceremonies and holy days, thirdly for cash income, and fourthly for socio-cultural and religious services. Drought, shortage of feed and water, loss of potential traditional grazing fields and watering sites due to conflicts, cultivation, livestock diseases, plant toxicity (Baroodaa), and inefficient emergency support during droughts and disasters were severe problems. Drought resilience and alternative economic options for the households were prioritised as keeping drought-resistant cattle, goats, and camels, drought-resistant crop production, cattle herd reduction, building houses and real estate in the urban centres, educating children, urbanisation, and shop-owning for the rich. Gold mining, petty trade, charcoal, firewood, water selling, and engaging in food for work safety net programmes were options for poor households, respectively.

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INTRODUCTION

The cattle population of Ethiopia is about 59 million (CSA, 2009/10), first in Africa and ninth in the world (FAO, 2005). The cattle production is mainly mixed crop livestock in the highlands, pastoral and agro-pastoral systems in the semiarid and arid lowland areas (Adugna and Aster, 2007; Mangistu, 2000), and market-oriented urban and per-urban dairy production systems in Central Ethiopia (Azage and Alemu, 1998). Among the several cattle breeds in Ethiopia, the Borana cattle breed is well known for its outstanding adaptation to the drought-prone arid and semi-arid environments of southern Ethiopia (Ayanalem et al., 2011). The Borana cattle breeds and their original breeders are mainly found in the Borana plateau, southern Ethiopia, and north-eastern Kenya. They coevolved and existed for millions of years (Coppock, 1994). The Borana cattle are fertile, fast-growing (early maturing), resistant to most of the tropical diseases, such as the heavy challenges of ticks, tick-borne diseases, and trypanosomosis, because of their replanting action against biting insects, and tolerate more water and feed scarcity than any other breed in the country (Ojango et al., 2006). The Borana cattle breed has great socio-religious importance and is seen as a sign of grace and welfare for the Borana Oromo communities represented by the "Gada" system (http://www.boorana.com/gadasystem.htm). For the Borana, the link between their religious beliefs and their cattle herds is inseparable. They are not only for food but also vital for sacrifices and rituals to guarantee fertility, health, and assistance from spirits of their God called Waaqaa," and only in him do they believe, and the spirit spreads highly around their villages (Figure 1).

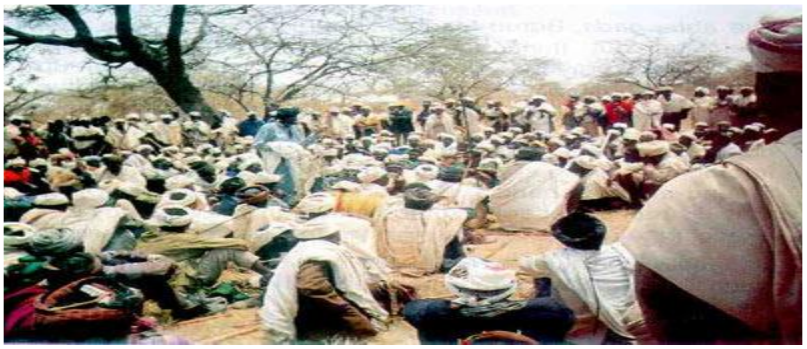

Figure 1 *Borana General Assembly 'Gumii Gayyoo'*
Source: (http://www.boorana.com/home.htm

The Borana cattle breed has dual service as a source of milk for the pastoralists and as a meat type for the national and one of the major sources of foreign revenue for Ethiopia from exports to Africa and the Middle East countries. It has been used as the preferred dam breed in most of the dairy cattle crossbreeding government and private farms in Ethiopia for several decades to produce tropically adapted crossbred dairy cows (Ojango *et al*. 2006). However, the sustainability of the Borana pastoral system is in question due to recurrent drought and massive cattle deaths due to the loss of key

grazing and water resources, inadequate infrastructural development, and unplanned destocking and restocking (Solomon, 2001). Food insecurity and poverty are now problems on the Borana Plateau (Solomon, 2001). Natural and manmade pressure might have affected the coping abilities of the cattle and their owners with the change in the pastoral production system. Hence, there is a threat to the sustainable productivity and conservation of the breed due to continuous mixing with other local breeds from the highlands for restocking and marketing of the potentially young breeding heifers and bulls (IFD with Oromia Pastoral Office experts). Thus, the objective of this study was to generate current information on the status of the Borana cattle production system, livelihood role, health, and drought constraints to draw some basic recommendations.

Objectives

1. To study the current status of the Borana cattle breed production system,
2. To study Borana cattle breed livelihood roles for pastoralist households,
3. To study the general health and management constraints of the Borana cattle breed.

MATERIALS AND METHODS

The study area

The study was conducted in Borana Zone, Oromia State, in Yaballoo, Diree, and Dhaas districts of southern Ethiopia, located in the coordinates of 3°36–6°38’ north latitude and 33°43–39°30’ east longitude, and borders Kenya to the south (Figure 2). Yaballoo is the capital town of the Borana zone, located 570 km south of Addis Ababa, and the capital city of Ethiopia. The zone consisted of thirteen districts, 275 ‘Ganda’ or pastoral associations, and 19 urban centres. The zone covers 48,360 km2, of which 75% consists of lowland (CSA 2003). The ecosystem covers about 1.9 million ha of rangelands, semi-arid savannah landscape, gently sloping lowland, and flood plains vegetated predominantly with grass and bush land (CSA 2003), with an altitudinal range of 1000–1500 masl, mean annual rainfall below 600mm (Sutter, 1995), mean annual daily temperature around 19 °C, frequently exposed to droughts, and vastly unsuitable for crop production due to the unpredictable nature of rain, with four defined seasons, two rainy seasons (long ‘Gannaa’ and short ‘Hagayyaa’ accounting for 60% and 30% of the total annual rainfall, respectively (Sutter, 1995), and the remaining 10% is from the occasional rains (‘Furmaataa’). The two dry seasons are the long dry season "Bona Hagayyaa" and the short dry season "Adoolessaa." The long rains are from March to May, and the short rains are from September to October. The pattern of rainfall is an irregular phenomenon known as "oolaa" (drought) with severe shortages of animal feeds, water, and human diets, which subsequently leads to increased hardship and livestock mortality (Boku Tache, 2008; Riche et al., 2009). Water resources are drying up in the early dry season, impacting livestock production and productivity (CSA (2003)). They move their animals seasonally following traditional routs to look for sufficient water and grazing (FGD with Borana elites).

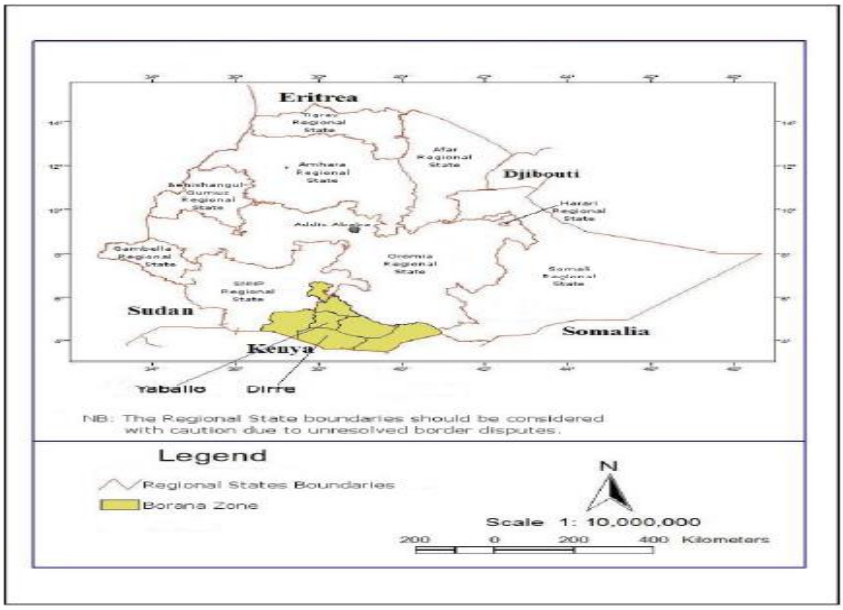

Figure 2 *Map of the study sites in Borana zone, Oromia Regional State, Ethiopia Source: Boku, 2008*

Indigenous Population and Ethnic Groups in the Area

The zone is inhabited by 1.1 million people (CSA 2003), with an average household size of 5.28 in 174,474 housing units. The three largest ethnic groups, Oromo (88.78%), Gedeo (4.42%), and Burji (3.17%), and other ethnic groups, constitute 3.63% of the population. Afaan Oromo is the first language of 90.94% of the population, Gedeo is spoken by 4.06%, and Konsoo by 2.72%; the remaining 2.28% spoke all other primary languages. The majority (47.25%) is Protestants, 35.01% practise traditional beliefs, 9.62% are Muslims, and 5.45% profess Orthodox Christianity (CSA, 2007).

The study animals

Its coat colour is mainly white and grey, with the same black paint over the neck and hindquarter in males, and brown and red coat colours are also found (Rege, 2001). The horn is short, pointed upward, with large and folded dewlap and a docile temperament (Rege and Tawah 1999; DAGRIS 2007). The Borana cattle breed is classified as a large east African zebu, tall with strong long legs (DAGRIS 2007), Alberro and Haile-Mariam (1982). The major livestock species kept in the Borana zone were cattle 1,619480, goats 814,300, sheep 354,950, and camels 184,920, and the minor livestock species kept were donkeys 65090, mules 29, 850, and horses 2540. Indigenous chickens were indicated to be reared for hobby. The cattle populations in Yaballo, Dire, and Dhas districts were 232,949; 89,398; and 200,175, respectively (Oromia pastoral office, unpublished document).

The Study Methods

A purposeful cross-sectional field visit, a questionnaire survey, and informal discussion with pastoral development workers. Was conducted in Borana zone three districts (Yaballo, Dire, and Dhaas districts), and 71, 76, and 81 households were randomly

selected, respectively, totaling 228 households interviewed from December 2015 to February 2016 with three focus group discussions consisting of 10 Borana elites from each district to collect data about the Borana cattle production system, disease, and livelihood of the pastoralists. The sample size was calculated based on Anderson et al.'s (2007) formula, which is explained as follows:

$$n = \frac{(Z\alpha/2)2p*q}{E2}$$

Where n = sample size, Z = confidence level (95% for this study), $Z\alpha/2$ = 1.96, P = proportion of the study population considered for sampling; q = 1-p proportion of the study population not considered for sampling. E = allowable error, in computing n, P = x / N, Where x is the population (households) involved in the current study, N is the total population (households) found in the three districts selected for this study. Based on the a preliminary study made in the area, 'x' was determined to be 1160 and N to be 14742. The proportion (p*) = (x/N = 1160/14742) = 0.078686. With the desired margin of error (E) set at 0.05, the sample size needed was estimated at 112 households, which was doubled to 228 households to increase the reliability and precision of the information.

Data Management and Statistical Analysis

All the information collected was entered into computer Excel software, filtered, and cross-checked for consistency and clarity for analysis by SPSS version 17.0 (SPSS 2007), and descriptive statistics of the data were made. Any significant differences between categorical predictive parameters were checked by using the chi-square test for the non-parametric variables and the T test for the parametric variables.

RESULTS AND DISCUSSIONS

Household characteristics

The male households had the largest proportion of 88.88%, 83.10%, 94.74%, and 88.88%; the female households were 11.12%, 16.9%, 6.26%, and 11.22% for the overall study areas in Yaballo, Dire, and Dhas districts, respectively. The low percentage of female respondents in the areas is due to the classification of work based on gender.

Household Members Age Composition

Table 1

Mean ±SD Household members age composition by districts

Descriptors	Yaballo (N=71)	Dire (N=76)	Dhas (N=81)	Overall (N=228)	Chi square value	Test signifi cance
HHMAC						
0-8	2.83(1.78)	2.51(1.38)	2.53(1.83)	2.62(1.68)	2.152	0.118
9-16	3.35(2.65)	2.09(1.50)	2.26(1.53)	2.54(2.00)	0.443	0.110
17-64	2.71(0.89)	2.71(0.89)	3.2(1.44)	2.89(1,54)	2.079	0.643
Above64	0.35.(0.97)	2.09(0.89)	0.46(0.74)	0.31(0.74)	0.342	0.127
Total household size	9.24	9.4	8.45	8.36	0.203	0.334

HHMAC=Household members age composition in years

Households' Livestock holding in the Study Areas

Table 2

Mean ± SD livestock holding (N) per household by districts

Livestock ownership (LOS)	Yaballo (N=71)	Dire (N=76)	Dhas (N=81)	Overall (N=228)	Chi square value	Test significance
Cattle	55.86(49.29)	26.51(21.42)	49.79(45.51)	(41.76)	46.63	0.000
Goats	48.52(41.88)	38.2(63.9)	43.02(43.52)	39.31(39.37)	10.52	0.000
Sheep	41.33(35.15)	23.35((21.42)	29.88(39.18)	30.94(34.20)	24.56	0.000
Camel	05.27(10.23)	0.47(1.34)	13.02(20.77)	6.88(15.13)	37.41	0.000
Donkey	1.1(0.9)	0.85(1.56)	1.77(2.18)	1.65(3.02)	2.17	0.117
Horse	0.02(0.22)	0.31(0.97)	0.1(0.30)	0.14 (0.58)	1.13	0.112
Mule		0.09(0.42)	0.1(0.41)	0.09 (0.38)	1,05	0.210
Chicken (indigenous)	7.7(6.2)	2.42 (3.37)	2.22(5.86)	3.22(6.90)	1.56	0.211

LOS =Livestock ownership

Cattle General Management System

Cattle management was based on the separation of adults and young ones for herding during the day, corralling of adults during the night, housing the calves in separate rooms, and milking. Cows twice early in the morning and late in the afternoon by the women at the prearranged milking areas and calf post, calves are released first to suckle and stimulate milk letdown (Figure 3).

The duty of the women was reported as house feeding and withholding of calves from water during the dry periods to acclimatise to the water shortage. Splitting cattle into village herds '*waarraa'* and moving herds *'Furaa*' to grazing fields far from the village and defining management roles among the household members based on sex and age were reported as the main strategies for coping with feed and water shortages. The grazing system is a common feeding practise with a mean length of 10:00 hours per day (Table 1).

The *'Warra'* herd was composed of calves, some milking animals for the family, and sick animals, which are maintained around the village, separated from the main herd, and mostly herded by young girls, boys, and women. Routine provision of mineral supplements for cattle was reported by 83% of the respondents. The '*Furaa'* herd moves far from the village following traditional tracts of communal grazing land based on information on weather, availability of pasture and water, cattle disease, and safety. They are herded by strong young males under the supervision of the household heads. The distance of movement of the herd from the home village depends on the season and the availability of pasture and water. The major livestock feed resources identified were natural pasture, shrubs, leaves, and pods of plants. Natural pasture was the main feed resource for all livestock species, including cattle, as indicated by 100% of the households (Table 2).

The households practising cereal crop production reported allowing cattle to graze on crop aftermath or on standing crops during droughts if they failed to mature due to moisture stress. Crop residues and hay purchased from the highlands were reported to

be supplied during droughts by the NGos and the government as a ration to sustain the breeding stocks and minimise the death of cattle. Crop fields such as maize, teff, and wheat were used for grazing after harvest in Dire and Yaballo, where crop production is adopted. Conserving hay as a standing pasture called "*Kaloo*", on reserved grazing land for dry-season feeding of cattle was reported by 22.9% (N = 228).

Figure 3 *Borana cattle grazing in reserved grazing land (kaloo) in Did-Hara, Yaballo District Borana Oromia, Ethiopia, December 2015*

Watering and Water Resource Management

Most of the small and major traditional water wells were reported to be located at least in the range of more than 10 kilometres from the villages of the Borana households and not suitable for the daily watering of cattle. Taking the herd to major grazing fields located around the permanent watering sites and herding there for several months until the end of the drought was reported to be a main cattle management practise to cope with the drought-induced water shortage. The assignment of watering and herding cattle in the satellite fields is mostly given to the very active and strong young members of the Borana, especially the unmarried males, who were reported to be responsible for guarding, feeding, and watering the satellite herds in remote grazing fields. Three types of manmade open surface water resources were reported to exist for the drought period for the watering of cattle. The first one is called Hara, *a* family-based small temporary water collecting pond located very near the encampment, less than 10 km away, and owned by one or several households in the villages, harnessed from surface rain waters during the rainy seasons for the watering of cattle during the early dry periods. The second ones were the medium community-based ponds called '*Haro'* used during the normal dry period, located in the range of 10–25 km. The third type of surface water resources were the largest and deepest ponds made by the NGOs and the government near the livestock market centres for year-round watering of cattle, including other livestock species. Haro Bake in Yaballo district was among them (Figure 4&5).

The fourth type of water resources were the traditional wells known as the Tulas, the singing wells used during drought time. During the FGD, it was reported that among the nine Tullas scattered in Borana traditional grazing horizons, at least five of them are now reported not to be accessible by the Borana due to the recent re-demarcation of the area out of the traditional range land administration legacy of the Borana Gada system without

moderating the contending societies on mutual access to the common water and grazing natural resources. During the main dry period, cattle were reported to be watered at an interval of three days due to the long distance between the water source and the villages. Daily watering of the animals was impractical to avoid overcrowding of cattle around the watering sites for proper management of the precious communal water resources. The households reported to be abided by the traditional bylaws on how to keep ones turn in watering animals as ordered by the traditional water resource administrators, or Abba *Eelaa,* assigned by the Gada council.

Breeding and Culling

The mean total number of fertile adult cows was 16.53 to 2.38 for adult bulls, or 88.88:11.12 breeding female to breeding male ratio, and the households were keeping largely milking cows in congruence with their priority objectives of keeping cattle mainly for milk production. The mean number of replacement heifers and pregnant heifers was 5.27 and 3.81, and male calves were 4.56 and young bulls were 3 compared to 2.3 adult bulls, respectively, which was an indication of the good reproductive and productive performance of the Borana cattle in the study areas. The ratio of breeding bulls to cows was 11.12 88.88, which was sufficient and above the norma1: 20 to 30 bull to cow ratio recommendation. Three types of Borana cattle breeding management were reported: government ranches, local community-based ranches, and free, uncontrolled open field mating. In the ranch, selected bulls in the centres were used to serve the cows on heat

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Figure 4 *Borana cattle herd moving to grazing sites around the village in Yaballo District, Borana, and Oromia, Ethiopia.* All the respondents (100%) mentioned that the breeding system at the household level uses only Borana local cattle in a pure natural breeding system, as shown in figures 5 and 6 below.

Figure 5 Typical Borana cattle breeding bulls and cows in the bushy dry period grazing fields

Almost 100% of the respondents reported practising natural mating systems, and there was no report on the practise of artificial insemination or cross-breeding with exotic cattle in the study area. The primary reasons for culling cattle were attributed to a lack of drought resistance, reproductive failure, reduced performance, and health problems. They cull excess bulls, unproductive female cattle that failed to conceive, and young ones with undesirable traits. Cullied cattle were sold for cash mainly to purchase food crops or slaughter during social and cultural ceremonies, which account for 85.30% and 14.70% of the total culling, respectively.

Large body size, good physical appearance, grey, white, red, light red coat colour, and small horn size were the most preferred traits for the selection of cattle for breeding by most households in the area. The most preferred traits in selecting breeding females were milk yield, short calving interval, good physical appearance, and udder size. Mothering ability and docility were reported to be used in selecting breeding cows.

Cattle Entry and Exit Methods

Households reported acquiring their breeding cattle firstly from their family (66.4%) and secondly from relatives as gifts (31.4 %.). Breeding bulls or heifers were mentioned to be given on special ceremonies, mostly the naming of the first son or marriage ceremonies. Cattle exit from the herd was reported mainly by selling (16.3%), death due to diseases and drought (30.1%), predators (6.6%), cattle raids (7.7% and drought only (31.6%).

Households' Economic Status and Purpose of Cattle Production

The entire life of the Borana society was reported to be based mainly on cattle and livestock production. All 228 households studied reported cattle to be the most preferred livestock species for milk and meat production and cash income generation. According to the norm of the Borana Oromo, the entire household was classified into the poor, medium, and rich wealth classes, constituting 19.74%, 53.95%, and 26%, respectively. Based on the number of cattle owned, all 228 households were 24.56% classified as not food secured and depend on external aid all year round; 75.44% of the households reported being food secured; 99.26% expressed happiness in keeping cattle; 19.74% had experience with crop production; 1.98% expressed horticulture production; 2.63%

engaged in non-livestock and non-crop livelihood activities; 97.37% kept cattle and other livestock species; and 24.70% had dogs and cats as pet animals for protection and empathy. The total average annual household cash income was found to be 13,108.94 Birr per year, with livestock generated (92.10%), cereal crops (2.40%), horticulture (2.34%), and other non-livestock nonagricultural activities such as petty trade, labour renting, and food for work safety net programme generated (3.18%). Cattle alone generated 51.5% of the total annual income of the households' from the sale of 16.4% annual off-take, as shown in Fig 6 below.

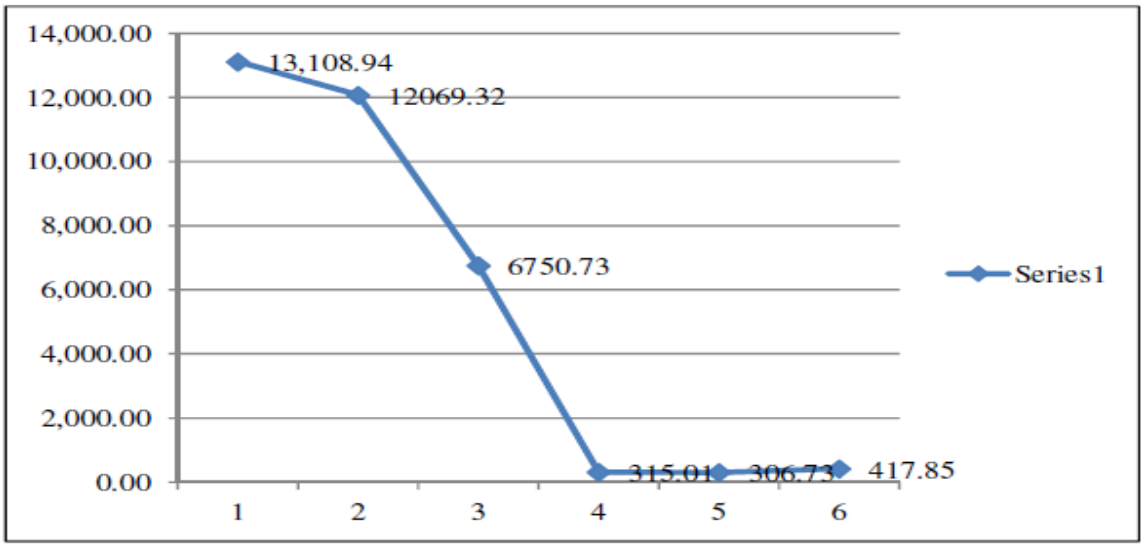

Figure 6 *Annual average households cash income in the overall study areas*

Alternative Economic Activities and Drought Resilience Strategies

Livestock rearing, mainly cattle, was mentioned as the major economic source in the study areas. Other alternative non-cattle production economic options to cope with drought-induced livestock death and decreased productivity were also reported by the FGD and all respective households as: breeding drought-resistant cattle breeds (91.23%), drought-resistant livestock species such as camels and goats (90.35%), cultivating drought-resistant crops (24.56%), reducing the cattle herd (15.80%), educating children (28.10%), livestock trade (41.23%), urbanisation and shop ownership (9.21%), petty trade for upper middle-class households (39.50%), firewood (5.70%), charcoal (5.70%), water selling (7.89%), gold mining (13.6%), labour renting (3.95%), safety net food for work programme for lower middle-class and poor households (67.11%) of the total 228 households.

Major Cattle Health and Production Problems in the Study Areas

The major cattle diseases reported to prevail in the study areas were viral, bacterial, internal parasites, external parasites, plant toxicity, and mineral deficiency diseases. Households reported that the timely supply of emergency feed, water, veterinary drugs, and vaccines for the livestock by the NGOs and GO had helped in reducing the drought-induced cattle deaths. Dry grass (hay) was reported to be the main emergency feed supply. The emergency health packages were reported to be vaccines for

FMD, LSD, Pasteurellosis, black leg anthrax, anthelminthic, antibiotics, and acaricides, and mineral and fluid therapy were mentioned to be given for valuable breeding cows and bulls. All the study households (100%) noted that drought-induced diseases due to water and feed shortages had caused welfare problems for cattle and other livestock species. Concerning sick cattle and other livestock treatment, about 10% of the households depend on indigenous practises, and over 45% depend on government veterinary services, while the rest 45% of the households mentioned using both services as appropriate. They also indicated that the extent of veterinary services in the study area needs improvement in quantity and quality. All the study households (100%) mentioned the vaccination service and emergency animal health management given by the government veterinarians had benefited them; however, they complained about the effectiveness of FMD (foot and mouth disease), LSD (lumpy skin disease), and Pasteurellosis vaccines in protecting their animals from being sick or dead. Further, they also reported a lack of effective treatment for the plant toxicities called "baroda," causing the acute death of cattle.

Major Production System Constraints

Livestock management is reported to be extensive communal grazing land around the traditional wells known as pastoral production, *Eelaa fi Fora*. Recent attempts of adopting some crop species in the relatively wet pasture-growing areas for dry-period grazing was reported to have decreased pasture land and caused feed shortages. The second major constraint mentioned was the settlement of people and the expansion of crop land into essential pasture lands. The third most important constraint mentioned were livestock diseases and predators. Drought was reported by 100% (n = 228) of the households to be the first important chronic production system problem reported by 100% (n = 228) of the respondents and by the community elite (n = 30). They defined drought as severe water and feed shortages for cattle, followed by malnutrition in humans.

Drought was mentioned as a very serious catastrophic phenomenon to the entire animal and human life due to the extended dry period, with little or no rain to sustain livestock in terms of drinking or for the growth of forages as animal feed. During the drought, the entire life of the community was reported to be endangered due to a lack of diet as animals were seizing milk production and their body condition is exhausted, the market price of cattle dramatically decreases. The drought period is reported to be increasing from time to time, and often more than one season of rain is either totally absent or insufficient for livestock production, called '*oolaa'*. During a critical drought period, more than three-fourths of the herd may be lost. They mentioned that in the 2010–2011 drought periods, 63.33% of the total heard in the study area was reported dead on average. The elites in the focus group discussion elaborated that climate change is an eminent fact in the Borana area" and has impacted cattle production and human welfare. In their own language, Afaan Oromoo *"Bonni jabattee aduu guddattee; Bokkaan xiqaatee yeroo jijjirataa deemtee; loonif namnni waan nyatuufi waan unuu dhabe, meaning "Drought is becoming severe, the sun is intense, the temperature is increasing, the rain is reduced, and its seasonality is changing, hence the cattle and humans lacked nutrition to eat and water to drink*." Lack of administrative and policy support was reported by the households to be among the minor problems of the production system. Bush encroachment, recurrent conflicts with neighbouring tribes and ethnic groups, limited access to traditional wells and watering sites, and the unfair and unpredictable price of cattle were among the minor constraints reported to be due to a lack of policy support, as presented in Table 3.

Table 3

Minor Livestock Production constraints

Minor Problems	Frequency	Percent	Cumulative	Cumulative
No response(abstain)	1	0.44	1	0.44
Predators	3	1.32	4	1.75
Grazing land shortage due to Bush encroachment and conflict.	44	19.30	48	21.05
Grazing land shortage due to over population and land degradation.	6	2.63	54	23.68
Decreased water flow to the wells due to climate change.	160	70.18	214	93.86
Un dependable and Low price of cattle.	14	6.14	228	100.00

CONCLUSIONS

Based on this study, the Borana cattle breed production was found to be the major source of food milk, meat and cash earning followed by goat, sheep and camel as a primary species for the mainstay. Chicken were found to be kept for leisure, equines as secondary species for riding and transportation of goods, dogs and cats as pet animals for empathy and protection. Drought induced water and feed shortages, epidemic diseases, plant toxicity, and mineral deficiency are reported as chronic constraints to the Borana cattle breed production affecting the livelihood of the community. Cattle herding, watering and guarding were found important routine activity of the community with endurance, hardworking and bravery to maintain livelihood of the family. Watering cattle every three days was a routine practice due to limited access to watering sites daily as well as for equitable sharing of the precious water resource based on the traditional bylaws.

Recommendation

Attention has to be given at traditional and national level to put in place flexible policies to support pastoralists endeavor to cop up with the drought induced livestock loss and livelihood problems for sustainable development mobilization of natural and local resources, giving emergency animal health services, appropriate and effective vaccines and drugs in time , and animal feeds should be available in the pastoral development centers for fast and immediate action to reduce livestock mortality during disasters. Cattle marketing polices should be transparent and governed by existing laws of the country to avoid fraud and rampant cheating methods currently reported. Grazing land usage scheme should be in place and governed as stipulated in the traditional bylaws enacted by the Gada council also the local government institutions should support its implementation.

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