

Full Length Research Paper

Pastoralists and agro-pastoralists preferences for cattle breed and traits in Fentalle district of East Shoa zone of Oromia, Ethiopia

Shiferaw Garoma^{1*}, Workneh Ayalew² and P. B. Hegde³

¹Adama University, Asella School of Agriculture, P. O. Box 193, Adama, Ethiopia.

²National Agricultural Research Institute (NARI), P O Box 1689, Labu, Lae 411 MP, Papua New Guinea.

³Haramaya University, P. O. Box 138, Haramaya, Ethiopia.

Accepted 12 November, 2013

The study was carried out in Fentalle district of east Shoa zone of Oromia, southern part of the northern Rift Valley of Ethiopia, to evaluate pastoralists and agro-pastoralists preferences for cattle breed and traits. The study areas are characterized by low input-output, weak infrastructure and high environmental stress. The data was collected through questionnaire from 114 Kereyu cattle owners and analyzed using descriptive statistics, including summary statistics and frequency counts. The majority of the respondents had particular preferences for Kereyu Sanga cattle (69.3%) along with their specific traits. Milk yield (95.6%), coat color (85.1%), drought resistance (72.5%), fertility (71.1%), heat tolerance (63.1%) and disease resistance (60.5%) were the most frequently reported preferred traits by the respondents. The ecological significance of coat color is widely recognized by the cattle keepers in the study areas. Such information can help assure that breed improvement interventions are consistent with the needs of the intended beneficiaries.

Key words: Breed, traits, pastoral, agro-pastoral, breed improvement.

INTRODUCTION

Pastoralists and agro-pastoralists that inhabit the African arid and semi-arid lands are among the world's poorest populations. They lack vital infrastructure in the form of accessible roads, electricity and telecommunications, leaving them increasingly isolated. Livestock holdings of cattle, camels, goats and sheep often comprise the bulk of their limited wealth and are an integral part of their socio-cultural life.

Along with the unfavorable agro-ecology of the study area and the limited livelihood opportunities both pastoral and agro-pastoral systems of the study areas are exposed to frequent droughts.

About 43.1% of the Kereyu cattle died during the 2002/3-year drought of which about 90% was lactating cows indicating the loss of productive animals and in turn resulted in a serious shortage of milk production which Kereyu people mostly rely on for their diet (Shiferaw et al., 2007). A fifty percent cattle loss was reported earlier by Beruk and Tesfaye (2000) in pastoral and agro-pastoral area as a result of recurrent drought. Kereyu cattle type possess unique adaptive traits that enabled them survive, produce and reproduce in that very challenging environment. Alberro and Haile-Mariam (1982) reported that Kereyu cattle type is very resistant

*Corresponding author. E-mail: shiferawgf@yahoo.com, shiferaw.garoma@gmail.com.

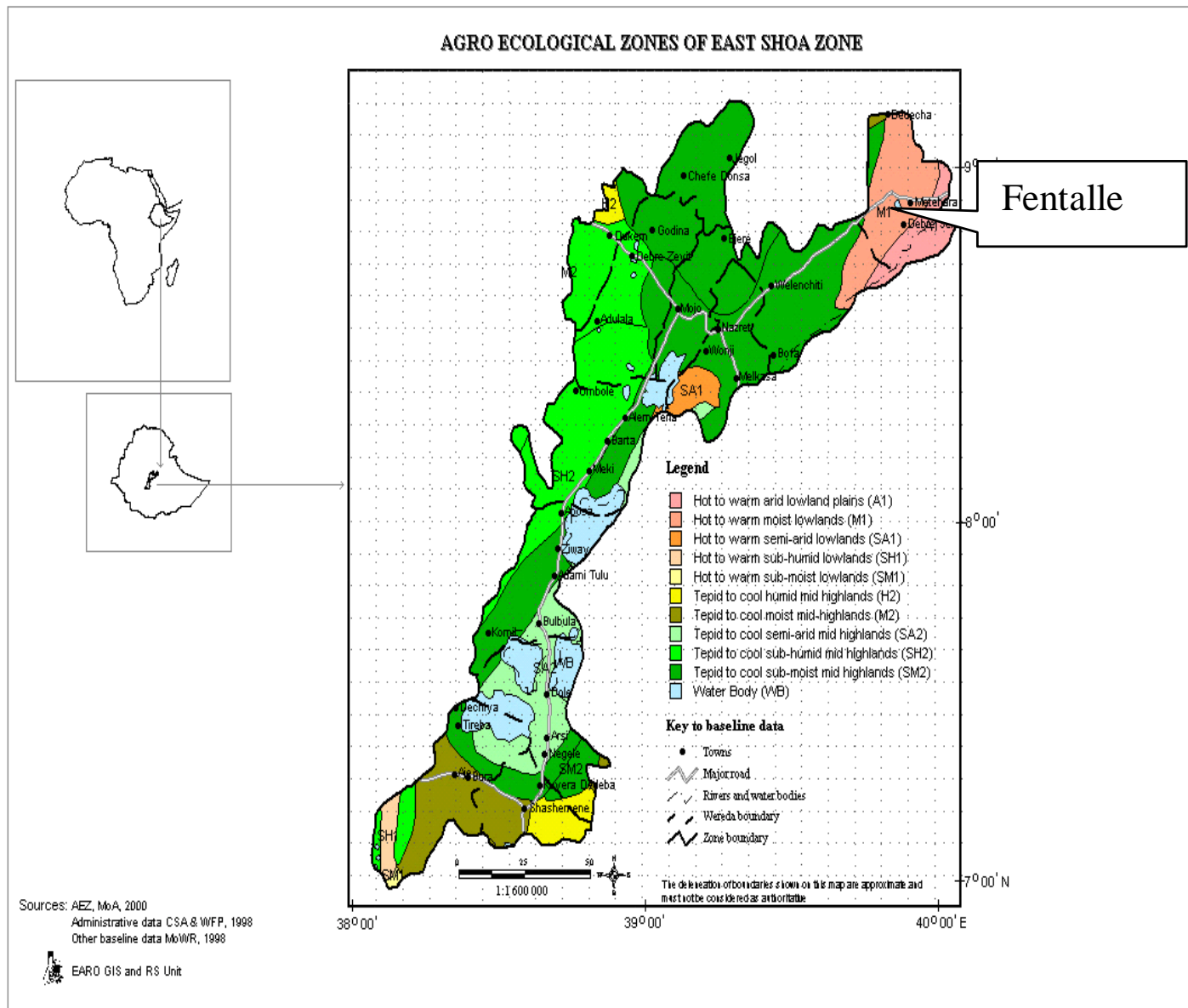


Figure 1. Map of east Shoa zone and Fentalle district.

and adapted to the extremely harsh conditions of the area.

The environmental adaptation of indigenous breeds facilitates livestock production in a wide range of agro ecological conditions and constraints particularly the areas that most poor pastoralists and agro-pastoralists inhabit and use. Since successful livestock development programmes in the future will require both enhancement of productivity and maintenance of local adaptation, the knowledge of ecological importance, breed and trait preferences of the intended beneficiaries need to be identified prior to attempting any breed improvement interventions. Hence, the objective of this study was to

evaluate breed and traits preference of Kereyu cattle owners and generate information that could help for designing appropriate breed improvement program.

MATERIALS AND METHODS

Study area

Pastoralism and agro-pastoralism are the main livelihood systems in the area. Major crops in the district (in order of importance) are maize, tomatoes, onions and teff (Fentalle District Rural Development Office, Personal communication). Fentalle district is located in east Shoa zone of Oromia, southern part of the northern Rift Valley of Ethiopia (Figure 1). The area falls within an altitude



Figure 2. One of the geologically active areas of the district.

range of 800 to 1100 masl. However, there are high peaks on the Fentalle Mountain from which the district derives its name, reaching up to 2007 masl (Abule, 2004). The district is found at a distance of about 200 km from the capital city of Ethiopia, Addis Ababa, on the way to Harar. It is affected by recurrent droughts due to disrupted rainfall patterns.

The total land area of the district is 1170 km² (CSA, 2000). The study district falls in a semi-arid zone, and receives an annual rainfall ranging from 400 to 700 mm. Temperature ranges from 29 to 38°C. Agro-ecologically, the district falls in hot to warm moist lowlands. Fentalle district falls in one of the most geologically active areas (Figure 2) of the world (Abule, 2004).

Sampling technique

Exploratory discussions were held with the experts of the rural and agricultural development office, with the representative of the pastoral community of the district and with the elderly Kereyu Sanga cattle owners to identify major production systems and concentration of Kereyu Sanga breed in the district. Currently, in Fentalle district there are 20 peasant associations (2 urban and 18 rural) of which 55.6 and 44.4% are agro pastoral and pastoral, respectively. Based on the outcome of the discussions, a total of three peasant associations (PAs), one from pastoral and two from agro pastoral production systems were purposively selected for the study. From each site 19 Kereyu Sanga cattle owners were randomly selected for administration of semi-structured questionnaire.

Method of data collection

In each sampling site, the selected cattle owners were briefed about the importance and objectives of the study before the commencement of the actual data collection. Data was collected by six trained enumerators through the designed and pre-tested semi-structured questionnaires from 114 randomly selected households under close supervision of the researcher (Table 1). A set of group discussions was held at each site with the selected elder Kereyu cattle owners to verify what has been reported by the respondents.

Data management and analysis

The data collected from the field through questionnaire and group discussions were coded and entered into computer using Excel software. SAS (1999) was employed to analyze the data using descriptive statistics, including summary statistics and frequency counts.

RESULTS AND DISCUSSION

Breed and trait preferences

Breed and trait preferences are useful to make better informed decisions in developing interventions to improve the contribution of cattle to livelihoods of their keepers.

Breed preferences

Reported breed preferences of the sample households are shown in Table 2. Currently, almost all (99.1%) of the respondents (N=114) rear Kereyu cattle and still about 69.3% (N= 114) of the respondents preferred to continue rearing Kereyu cattle and the rest 30.7% wanted to keep other breed too in addition to Kereyu cattle. Most reported preference was for Borana breed (94.3 %, N= 35) for milk production with the rest 5.7% (N= 35) for Arsi breed for the same purpose. Their preference for sex was 65.7% for breeding females, 25.7% for both breeding males and females and only 8.6% for breeding males. This high reported preference for breeding females was associated with the social and cultural value that they attach on their own breeding males in maintaining the desired quality of their animals in that particular environment. During the focus group discussions, it has

Table 1. Summary of sample sizes by production system.

Production system	Site	Individual interviewed	Focus group discussion
Agro-pastoral	1	19	1
	2	19	1
	3	19	1
	4	19	1
Pastoral	5	19	1
	6	19	1
Total	6	114	6

Table 2. Summary of reported breed preferences by sample households (percentage).

Description	Response (Yes/No)	Households	
		Frequency	Percent
Do you currently rear a breed other than Kereyu breed?	Yes	1	0.9
	No	113	99.1
If yes which breed type?	Borana	1	100
	Arsi	0	0.0
	Other	0	0.0
Do you want to rear breed other than Kereyu breed?	Yes	35	30.7
	No	79	69.3
If yes which breed type?	Borana	33	94.3
	Arsi	2	5.7
	Other	0	0.0
Which sex?	Male	3	8.6
	Female	23	65.7
	Both	9	25.7

been noted that most of the Kereyu cattle bred to Borana bulls faced calving difficulty. This might probably be associated with calving season and the body condition of the animals at calving. The reported calving difficulty of Kereyu cattle bred to Borana bulls needs further study before further dissemination of Borana breeding bulls to that particular area. Generally, the current reported high proportion of preference for Kereyu cattle by their owner would help in maintaining the purity of this cattle type and above all in improving the performance of these adaptive cattle type in their home tract.

Trait preferences and desirable qualities of Kereyu cattle

Milk yield (95.6%), coat color (85.1%), drought resistance (72.8%), fertility (71.1%), heat tolerance (63.1%), disease

resistance (60.5%), body size (58.8%), growth rate (57%) and meat (50%) were among the reported preferred traits by the respondents (Table 3). Similar preferences for these traits were reported for Sheko breed (Takele, 2005) and for other local breeds of pastoral and agro-pastoral production systems in Oromia Regional State (Workneh and Rowlands 2004). High preference for milk yield is common in many traditional African cattle owners, who keep cattle primarily for milk and secondarily to accumulate stock as a form of investment (de Leeuw and Wilson, 1987).

The high preference reported for coat colour than for fertility traits indicates that the ecological significance of coat colour is widely recognized by the cattle keepers in the study areas. Such information can help assure that breed improvement interventions are consistent with the needs of the intended beneficiaries. Horn sizes were preferred by 22.8% of the respondents which they believe

Table 3. Reported trait preference by sample households (percentage).

Trait	Respondents	
	Number	Percent
Milk yield	109	95.6
Color	97	85.1
Drought resistance	83	72.8
Fertility	81	71.1
Heat tolerance	72	63.1
Disease resistance	69	60.5
Body size	67	58.8
Growth rate	65	57.0
Meat	57	50.0
Temperament	55	48.2
Walkability	52	45.6
Longevity	51	44.7
Horn	26	22.8
Fat/butter	7	6.1

Table 4. Desirable quality of Kereyu breed based on judgment of respondents.

Desirable quality	Respondents	
	Number	Percent
Heat tolerance	110	96.5
Color	103	90.3
Disease resistance	92	80.7
Drought tolerance	90	78.9
Milk yield	80	70.2
Walkability	78	68.4
Fertility	75	65.8
Tolerance to parasite	73	64.0
Aggressiveness	69	60.5
Good mothering ability	65	57

in adult cattle serve as formidable weapons against any intruders. Fat/butter was less preferred (6.1%) indicating the raw/fresh milk consumption behavior of the pastoral and agro-pastoral community in the study areas.

Heat tolerance (96.5%), color (90.3%), disease resistance (80.7%), drought tolerance (78.9%), milk yield (70.2%), walkability (68.4%), fertility (65.8%), tolerance to parasite (64%) and aggressiveness (60.5%) were the most frequently reported desirable qualities of the Kereyu cattle type in their natural habitat as indicated in Table 4 above. Mostly the aggressiveness of the breed is appreciated by their owner due to the fact that during the conflict time with the surrounding communities (Argoba and Afar) on the bordering rangelands they directly come back to their home place; they are not easily taken by

theft (usually adult cattle) and not easily attacked by predators.

CONCLUSION AND RECOMMENDATION

Information on breed and traits preferences is useful to make better informed decisions in developing interventions to improve the contribution of cattle to livelihoods of their keepers. Kereyu cattle owners have particular preference for Kereyu Sanga cattle along with their specific traits. Milk yield, coat color, drought resistance, fertility, heat tolerance, disease resistance, body size, growth rate and meat are among the preferred traits in the study areas. Ecological significance of coat colour is widely recognized by the cattle keepers.

The revealed preference for breed and traits provides breed improvement programs with important information on the key constraints that pastoralists and agro-pastoralists face. For the benefits of breeding to have an effective impact on livestock productivity for the intended recipients, a participatory approach at all stages that solicits the opinion of pastoralists and agro-pastoralists and disseminates the expected benefits of the locally adapted breeds is important. The design of breeding schemes needs to consider the socio-economic parameters and other factors that may determine the effectiveness of particular programs. Community based group breeding program need to be initiated to improve the performance of the breed while maintaining their adaptive traits in their natural habitat and the reported calving difficulty of Kereyu cattle bred to Borana bulls need to be studied before further dissemination of Borana breeding bulls to that particular area.

ACKNOWLEDGEMENT

The authors are grateful to Ethiopian Institute of Agricultural Research for its financial support for this study. The authors are also thankful to the Kereyu cattle owners for their willingness and cooperation in providing the required information.

REFERENCES

- Abule E (2004). Rangeland Evaluation in Relation to Pastoralists perceptions in the Middle Awash of Ethiopia. Ph.D Thesis, University of the Free State. Bloemfontein South Africa. pp. 55-58
- Alberro M, Haile-Mariam S (1982). The indigenous cattle breeds of Ethiopia: part I. World Anim. Rev. 41:2-10.
- Beruk Y, Tesfaye M (2000). Pastoralism and Agro-pastoralism: Past and Present. pp. 54-68. In Proceeding of the 8th Annual Conference of Ethiopian Society of Animal Production (ESAP) 24-26 August 2000, Addis Ababa, Ethiopia.
- Central Statistical Authority (CSA) (2000). Statistical abstract of Ethiopia. Central Statistical Authority. Addis Ababa, Ethiopia. P. 16.
- de Leeuw PN, Willson RT (1987). Comparative productivity of indigenous cattle under traditional management in

- sub-Saharan Africa. *Quart. J. Int. Agric.* 2:377-390.
- Shiferaw G, Hedge PB, Workneh A (2007). In-situ phenotypic Characterization of Kereyu Cattle type in Fentalle District of Oromia Region, Ethiopia, M.Sc Thesis. Haramaya University, Ethiopia. pp. 1-70.
- Statistical Analysis System (SAS) (1999). Institute Inc., SAS/STAT user's guide, version 8, Cary, NC: SAS institute Inc., 1999. P. 3884.
- Takele T (2005). On-Farm Phenotypic Characterization of Sheko Breed of Cattle and Their Habitat in Bench Maji zone, Ethiopia. M.Sc Thesis. Alemaya University, Ethiopia.
- Workneh A, Rowlands GJ (2004). Design, execution and analysis of the livestock breed survey in Oromia Regional State, Ethiopia. OADB (Oromia Agricultural Development Bureau), Addis Ababa, Ethiopia and ILRI (International Livestock Research Institute), Nairobi Kenya. P. 260.