

The potential and limitations of grasslands for livestock production in west Shoa zone of Oromia region, Ethiopia

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Introduction

Ethiopia holds the largest livestock population in Africa estimated at about 54 million heads of cattle, 25.5 million sheep, 24.06 million goats, 0.92 million camels, 4.5 million donkeys, 1.7 million horses, 0.33 million mules, 54 million chicken and 4.9 million beehives (CSA, 2012). Despite the huge livestock population, the productivity of livestock in general is low and compared to its huge resource its contribution to the national economy is below expected. Among the major problems affecting livestock production and productivity in Ethiopia, feed shortage in terms of quantity and quality is the leading problem (Alan *et al.*, 2012). The major feed resources in Ethiopia are natural pasture (grasslands) and crop residues with varying proportion among the different zones of the country. The role of natural pasture grazing as a major livestock feed resource is diminishing from time to time due to shrinking grazing land size (Yayneshet, 2010). Yet, the potential and limitations of the grasslands in the different zones are not studied and properly documented. Thus, the objective of this study is to assess the potentials and limitations of the vast grasslands found in west Shoa zone of the Oromia Regional State of Ethiopia where the LIVES project is currently operating.

Materials and Methods

This study was undertaken in 3 districts of the West Shoa Zone of Oromia Regional State of Ethiopia. The study districts (Ejere, Ada berga and Meta-robi) have a human population of 402,614 which is about 16.9% of the total human population of the Zone (CSA, 2012). The livelihood of the communities in the Zone including the study districts is based on mixed crop-livestock production system. The methods used for the study were review of literatures and secondary documents, focus group discussions (FGDs), and individual household interview. In each of the study district, 6 representative peasant associations (PA), the lowest administrative unit, were selected with the help of the district livestock agency. In each of the PA, FGD was undertaken with community members and key informants. The FGD was undertaken using a questionnaire developed by ILRI (FEAST program) and the participants of the FGDs were 10 to 15 people of different sex, age group, educational background and etc. At the end of each group discussion, three individuals representing three classes of farmland ownership (below average, average and above average) were identified by the FG discussants and were interviewed individually. The data was entered and analyzed using the FEAST program (Alan *et al.*, 2012).

Results and Discussion

The average farm size in Ejere is about 2.3 hectares with a range of 1 to 3.5 hectares while a typical (average) household has a mean household size of 6 persons with a range of 5 to 7 persons. Similarly, in Ada-berga district, the average farm size is 3 hectares with a range of 2.5 to 4.5 hectares while a typical (average) household has a mean family size of 7 persons with a range of 4 to 10 persons. At Meta-Robi, the average farm size per household is about 3.86 hectares ranging from 0.5 to 12 ha and the average family size about 6 with a range of 1 to 17. Generally, in the study districts, the average family size is higher than national average family size of rural areas (4.9) people per household (CSA, 2011) and this is mostly due to labor demanding agricultural activities in the districts contributing for such higher family sizes. The average land holdings in the study districts is also higher than the average national land holding size (0.96 ha/hh) and Oromia region (1.15 ha/hh) (CSA, 2011).

The major livestock feed resources in the zone and the study districts is natural pasture although it declines from time to time because of the increase in the size of crop lands which agrees with the findings of Ahmed *et al.* (2010). Crop residues, improved fodder, hay, by-products and other feed resources contribute 21.84, 0.13, 3.63, 0.18 and 4.72%,

respectively. The study districts are known for their livestock production such as dairying, fattening of small ruminants, apiculture and poultry. While apiculture is very common in the districts, dairying is particularly practiced in and around urban areas which majorly uses exotic cross bred cows (Jersey and Holstein Friesian breed) in Ejere and Ada-Berga. With increase in farmland size, the average livestock owned per household has increased in the districts (Table 1) which is in accordance with the report of CSA (2012) wealth being an important factor in increasing livestock size. The major crops grown in the districts are wheat, Teff (*Eragrostis tef*), beans, barely, lentils and sunflower. Other crops and vegetables are also produced in the districts.

Table 1: Mean number of livestock owned per household based on the size of farmland

	Ejere			Ada-Berga		
	Below average	Average	Above average	Below average	Average	Above average
Bulls or castrated male cattle	2.0	4.1	5.3	1.3	2.1	2.3
Goats	0.2	0.0	2.2	1.0	1.7	0.0
Horse	0.5	0.9	1.5	0.2	1.6	1.0
Improved Dairy cattle	1.0	2.1	4.2	0.0	2.0	1.6
Local dairy cattle	3.3	5.3	5.9	2.2	5.2	6.4
Poultry - village conditions	8.2	9.2	8.5	2.3	11.0	12
Sheep	2.0	4.7	4.5	2.2	9.0	9.4
Donkeys	2.2	2.0	2.0	0.0	1.2	1.5

Types of grazing land: There are two types of grazing lands in the study districts, i.e., upland and wet land although the latter is larger (80%) than the former (20%) in terms of area coverage. Hay making is a known practice by most of the farmers in the districts either from natural pasture or grown feed crop/oat. Standing hay is also a common practice in the districts although it declines from time to time because of the increased conversion of grazing lands to farmlands (Ahmed *et al.*, 2010).

Ownership: Traditionally, communal grazing land ownership with loses control from individuals on their piece of grazing lands used to characterize the study districts. Nowadays, privately owned grazing land is becoming popular. The private grazing lands (0.25 to 0.5 ha/household on average) are used for hay making and/or grazing. Communal grazing lands are diminishing over time due to expansion of cropping and allocation of communal lands for landless youth which is also the case in other parts of the highlands of Ethiopia. While tethering is common on private grazing lands, open grazing is practiced on the communal lands. Both types of land are used for grazing throughout the year. The main difference is that private grazing land is either in good or fair condition whereas the communal grazing land is poor and at best fair in terms of quality which concurs the findings of Ahmed *et al.* (2010).

Systems of grazing: In the study districts, continuous, deferred and zero grazing systems are practiced by the respondents although the former is common among many farmers (60% of the respondents). This practice has led to extensive overgrazing of the grazing lands.

Grazing land management practices: Grazing land management practices are relatively less common in all the study districts owing to lack of appropriate training, lack of appropriate improvement methods and less attention given to grazing lands by the agricultural extension system.

Conclusion

- The study revealed that the natural grasslands are still important sources of livestock feed in the study districts although diminishing from time to time. Therefore, the following interventions are important for management of the remaining grasslands.
- Rehabilitation of the degraded grasslands based on the extent of degradation (from resting to reseeding with desirable plants).
- Attention should be given to grasslands in the extension system.
- Practical training on grassland rehabilitation and study tour to successful area in grassland management.
- Land use planning/policy particularly in line with grazing land management is necessary.

References

- Ahmed, H., E. Abule, K. Mohammed and A. C. Treydte. 2010. Livestock feed resources utilization and management as influenced by altitude in the Central Highlands of Ethiopia. *Livestock Res. Rural Develop.* Volume 22, Article #229.
- Alan, D., L. York, B. Lukuyu, A. Samaddar and W. Stur. 2012. *A systematic method for assessing local feed resource availability and use with a view to designing intervention strategies aimed at optimizing feed utilization.* ILRI, Addis Ababa, Ethiopia.
- CSA (Central Statistic Agency), 2011. Ethiopia Demographic and health Survey. pp. 55.
- CSA, 2012. *Livestock and livestock characteristics (Private peasant holdings).* Volume II, Addis Ababa, Ethiopia.
- Yayneshet, T. 2010. Ethiopia Sanitary & Phytosanitary Standards and Livestock and Meat Marketing Programme (SPS-LMM) Texas A & M University System: Feed Resources Availability in Tigray Region, northern Ethiopia, for Production of Export Quality Meat and Livestock.

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