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Sheep production on smallholder farms in the Ethiopian highlands - a farming system approach.

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This study was conducted within the framework of the Highlands Research Program of the formerly International Livestock Center for Africa (ILCA), now the International Livestock Research Institute (11,111). The main objectives were to evaluate the status of the sheep enterprise on smallholder farms in the Ethiopian highlands, expand the knowledge base on Menz sheep productive and reproductive performance and identify constraints to improved production to thereby recommend management measures to enhance the present contribution of these sheep to the livelihood of the farmer.

A sample of 341 flocks selected from nine villages in two locations was studied for two years at a twice per month visit frequency. Data were gathered on socio-economic parameters (including family size, landholding and use type, grain yield and straw output, and livestock herd size), and productive and reproductive traits as well as mortality and off-take rates in Menz sheep. Correlation and regression studies and variance analyses were made using the Statistical Analysis System (SAS) computer package program. Relationships between farm resources and livestock herd size and species composition, including sheep, were assessed. The productive and reproductive performance of Menz sheep were quantified on small farm conditions and factors affecting these traits identified. Off-take and mortality rates in these sheep were also assessed.

Results obtained show that farming family size was the single most important factor, among all factors studied, that affected livestock herd size. The only factor limiting the size of land cultivated and the quantity of grain produced, was the size of household landholding. Landholding size had, however, no obvious relationship to livestock herd size, since livestock production in the present study area predominantly depends on communal grazing lands. Livestock herds, in turn, had no appreciable effect on the amount of land cultivated and the quantity of grain produced; as farm sizes were very small, owing animals for traction did not make a difference.

The reproductive performance of the sheep flocks was reasonably high as compared to other African sheep under traditional production systems. The age at first lambing of a ewe in the present study was younger and the lambing interval shorter than results reported from African traditional systems. Although the litter size per lambing was slightly lower in Menz sheep than results reported from African traditional systems, the annual reproduction rate per ewe was appreciably high in the present study flocks, which is considered to be due to the low mortality rate. The weight development and growth rate performance of the Menz sheep lambs was significantly affected by the lambs' birth season and is attributed to seasonal variation in feed supply and quality. Sheep were sold throughout the year indicating that sheep Saes is an important source of cash income for the small farmer in the present study areas. The majority of the sheep sold were disposed off in the period before grains were harvested and when grain stores from previous years depleted. This shows that farmers do sale sheep also to purchase grains when food grains deplete.

As there is no indication from this study that livestock numbers will be deliberately reduced in the future to alleviate pressure on grazing pastures, which are the major feed source for livestock including sheep, it is recommended that the existing Management system of communal grazing lands be improved. This measure could improve lamb live weight development and growth. Collaborative efforts of fanners, governmental institutions, and technical personnel is required to work out a practical approach to handling the problem, which is an important communal issue for all Parties concerned.

It is concluded that livestock in general, and the sheep Sector in particular, will continue to play a major role in the mixed fanning systems in the Ethiopian highlands. In these systems livestock not only do complement crop production, but also support livelihood of small farmers in the region in many different ways at times of crop failures. Unreliable rainfall, increasing human population and small landholding size as welt as decreasing land productivity could be major threats to viability of these systems in the future. These constraints limit the capability of the traditional production systems to continue to support the livelihood of smallholder farmers in the present study areas. Improvement of this situation requires technical solutions from the point of view of livestock including sheep production and management, and policy measures, especially in terms of formulating suitable land tenure system and human Population development policy.

Furthermore, it is proposed that from methodological point of view, farm data be collected for well defined objectives on a continuous instead of ad hoc basis. To achieve this target, it is important to have an institution organized at a national or regional level that is to assume responsibility and coordinate efforts for Continuous monitoring of the livestock or the agricultural sector at large. Not least, in this connection, is the need to consider training future agricultural experts through incorporating farming systems approach in the curriculum of higher learning institutions in the country. The reasons for collecting data on whole farm basis, the kinds of information that need to be collected, the fieldwork procedures, data coding, storage and retrieval systems as well as reporting results require appropriate training.