

Characterization of the livestock production system and the potential for enhancing productivity through improved feeding in in Mwanza Ward, Goromonzi District, Zimbabwe

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Introduction

Goromonzi district is one of nine districts in Mashonaland East province. It has a total area of 9,100 square kilometres with a population of 224,987 according to the 2012 census. The area receives rainfall of between 700 and 1,000 mm annually between November and April. Grazing, which provides much of the feed for livestock throughout the year, fluctuates in quantity and quality, decreasing during the dry season.

Methodology

The Feed Assessment Tool (FEAST) was used to characterise the livestock production system and feed-related aspects in Mwanza ward, Goromonzi district in November 2013. The tool is a systematic method to assess local feed resource availability and use; it also looks at what interventions on feed can be developed and how (ILRI, 2015). The villages involved were Mwanza, Gosha, Marimo, Chipikiri and Matyaire. The assessment was carried out through focus group discussions and short questionnaires with key farmers' representatives. The team comprised seven researchers and one livestock extension officer from the district office. The participants numbered 18 farmers and they were divided into two groups, each group comprising nine farmers based on the proximity of villages they live in.

Selection of participants

The selection of farmers was done purposely by the district extension officers, focusing on those specialised in livestock production in Mwanza ward. The following were the selection criteria:

- Equal representation of male and female
- Participation in livestock production

Based on the criteria of selection, there was an equal representation of the groups in almost all the discussion groups.

Data collection and analysis

The assessment was done using structured group discussions and short questionnaires with key individual farmers. The analysis was done using FEAST software which has been designed to deliver outputs upon data entry.

Results

The following sections describe the results obtained during the FEAST exercise in the five villages of Mwanza ward.

Household demographics

The discussions revealed that it was difficult to decide what the average household size is. The family size was as shown in Table 1.

Table 1. The different family size categories

Family category	Number of children in household	Household size
Young families	2-3	5
Older families	5-6	7-8
Elderly often look after grandchildren	Mostly grand children	+10

Rainfall pattern

There are two distinct seasons: dry (chirimo) and rainy (zhizha) season. The rainy season starts in October and rainfall slowly increases into November. Rains are heavy during the months of December, January and February and cease in March and April. There is no rainfall from May to September. Due to global warming the rainfall pattern is now unpredictable and rains come only by mid-October and end in March

Irrigation

Farmers practise bucket irrigation with water from rivers and wells for growing horticultural crops. They have three gardens alongside the river, each with 10 farmers cultivating the land. About 25% of the farming households have access to irrigation.

Labour

There is high demand for labour in the months of October to April for various farm activities. Labour costs are around US\$ 5 per day for tilling. Farm work is mainly done by women while men do off-farm activities such as building and carpentry. Farmers also reported that the men prefer farm work to working in commercial farms where the wages are around US\$ 60 per month.

Household income

Paid labour from off-farm activities contributes most (27%) to household income, followed by crop and livestock production. There are many activities in the five villages to sustain their livelihoods. Crop production comes in second place (22%) as an income source, generated mostly by women. Sale of livestock contributes the third-largest amount to household income (20%).

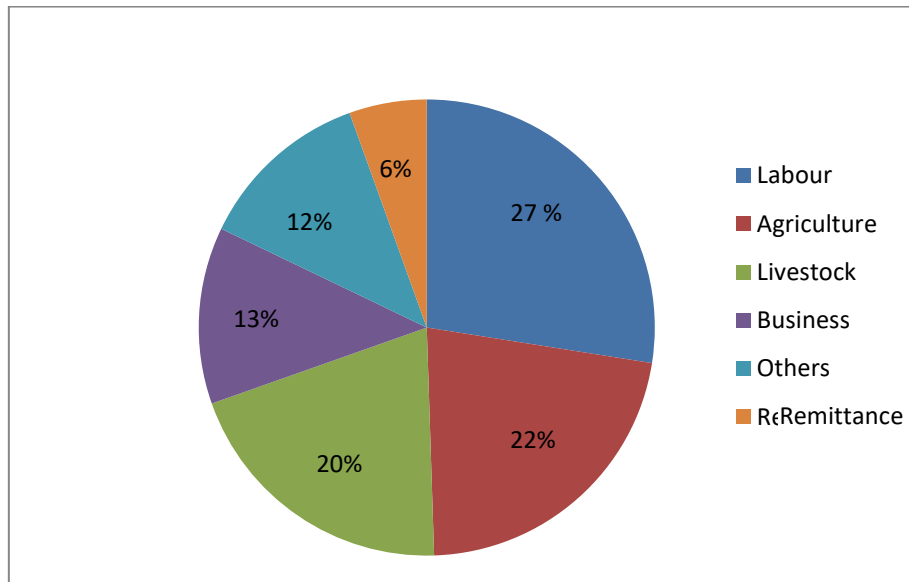


Figure 1: Contribution of various household activity to the household income of farmers in Mwanza ward

Crops and cropping systems

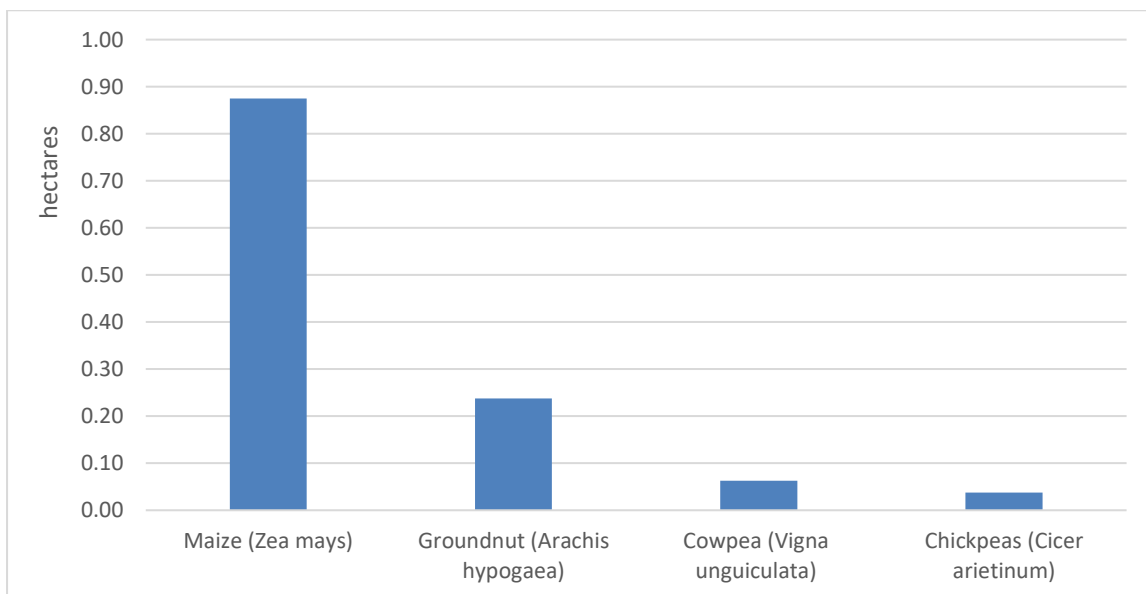


Figure 2: Dominant crops grown per household in Mwanza ward

Maize is the dominant crop grown in the five villages. Other crops such as cowpea and groundnuts are also grown (Figure 2). There is sufficient land for cultivation, consequently fallowing is practised to improve soil quality. Farmers also reported that the lack of money to purchase inputs such as fertilisers and seeds has led to land being left to fallow. There is one cropping season that starts in November for the planting of maize and two for cowpeas.

Livestock production systems

The dominant kinds of animal kept are cattle, improved dairy cattle, the local cattle of the Mashona type and goats (Figure 3). The cattle are used for draught, beef, manure and 'lobola' ceremonies. Improved dairy cattle are also kept for semi-intensive milk production. Other livestock such as commercial poultry (broilers and layers), indigenous poultry and pigs are kept at a lower tropical livestock unit (TLU/household) level. Semi-commercial poultry production is important and was introduced as part of an NGO programme - about 33% of households in the ward are engaged in this activity.

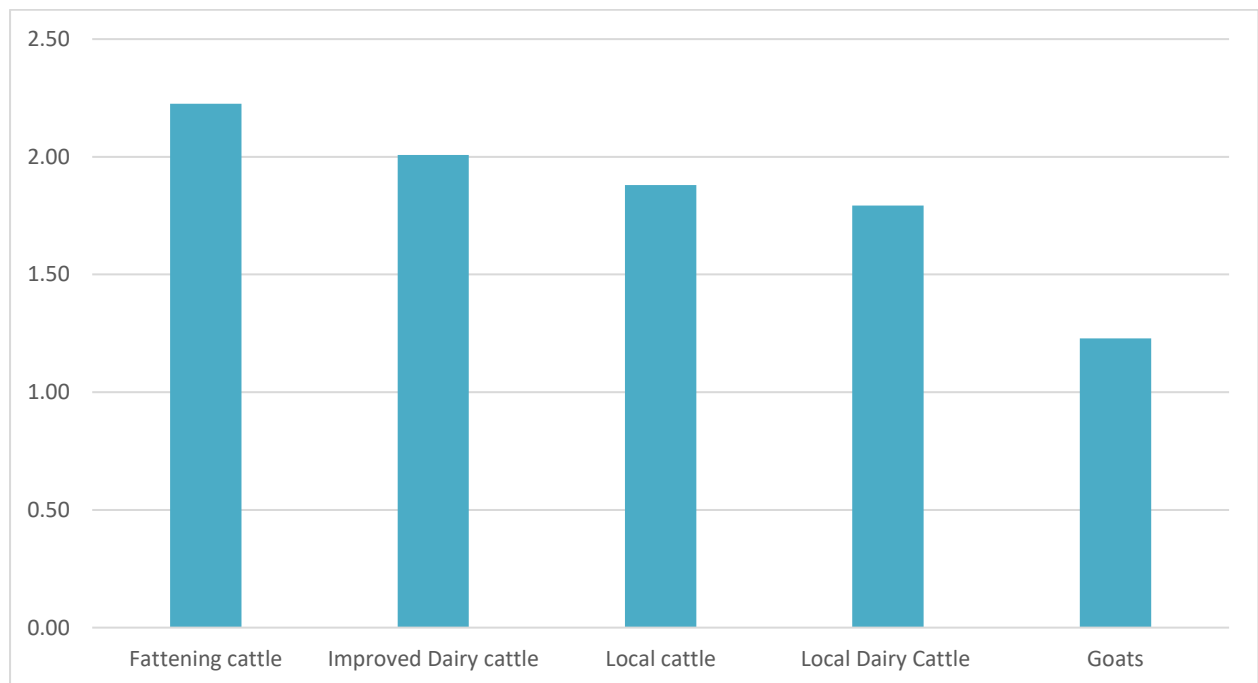


Figure 3: Major livestock species owned by households (TLU)

The main uses of livestock in the district are food, income and cultural practices (Table 2).

Table 2. Types, uses and ownership of livestock

Animal type	Use	% households owning type	Average number of animals/household
Local beef cattle	Milking, ploughing, income, 'lobola', manure, ceremonies	80	5
Improved dairy cattle	Milking	10	2
Goats	Meat, income, ceremonies	80-85	6
Chickens - Layers	Income, feed for dairy	25-30	40
Chickens - Broilers	Income, feed for dairy	40	100
Rural chicken	Home consumption, sale	100	6
Pigs	Income, home consumption	15-20	20

Feed availability and seasonality

Figure 4 below shows the availability of feed resources and rainfall over an average year. Rainfall was estimated by farmers on a scale of 1-10 where 10 is abundant and 1 is very scarce. Similarly feed availability was estimated by farmers on a scale of 10-100 where 100 corresponds to abundant feed available and 10 denotes very little feed. Grazing constituted the major feed resource for animals throughout the year, particularly during the rainy season (January to April). As the season advances from rainy to dry (December to May), the quantity and quality of grazing decreases. Green forage, collected along roadsides and from rangelands also contributed to feeding animals during the rains. From the beginning of the dry season in May up to October crop residues from the harvest of both cereal and leguminous crops make up a greater portion of the feed for livestock. Concentrates are fed all year round to animals, especially dairy cattle, though in small quantities.

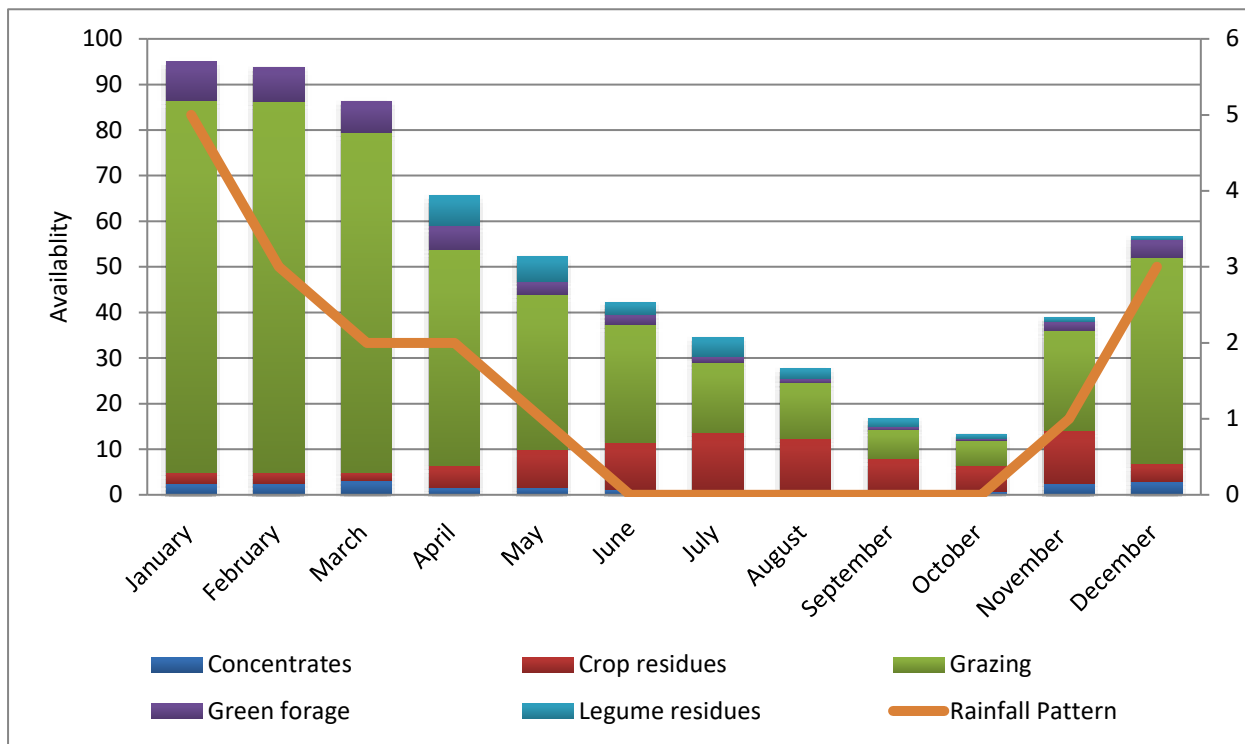


Figure 4: Availability of feed resources and rainfall during the year

Grazing accounts for a good proportion of the dry matter (DM), crude protein (CP) and metabolisable energy (ME) intake of livestock, contributing 50%, 40% and 38% respectively (Figure 5). Naturally occurring and collected forage come in second position with respect to their contribution to the nutrient intake of livestock. Cultivated fodder contributes 10% of DM and ME, whilst purchased feed provides 15% of DM. Despite the seemingly low availability of purchased feeds (mostly concentrates), they make up a considerable proportion of the nutrient intake because of their rich nutrient content.

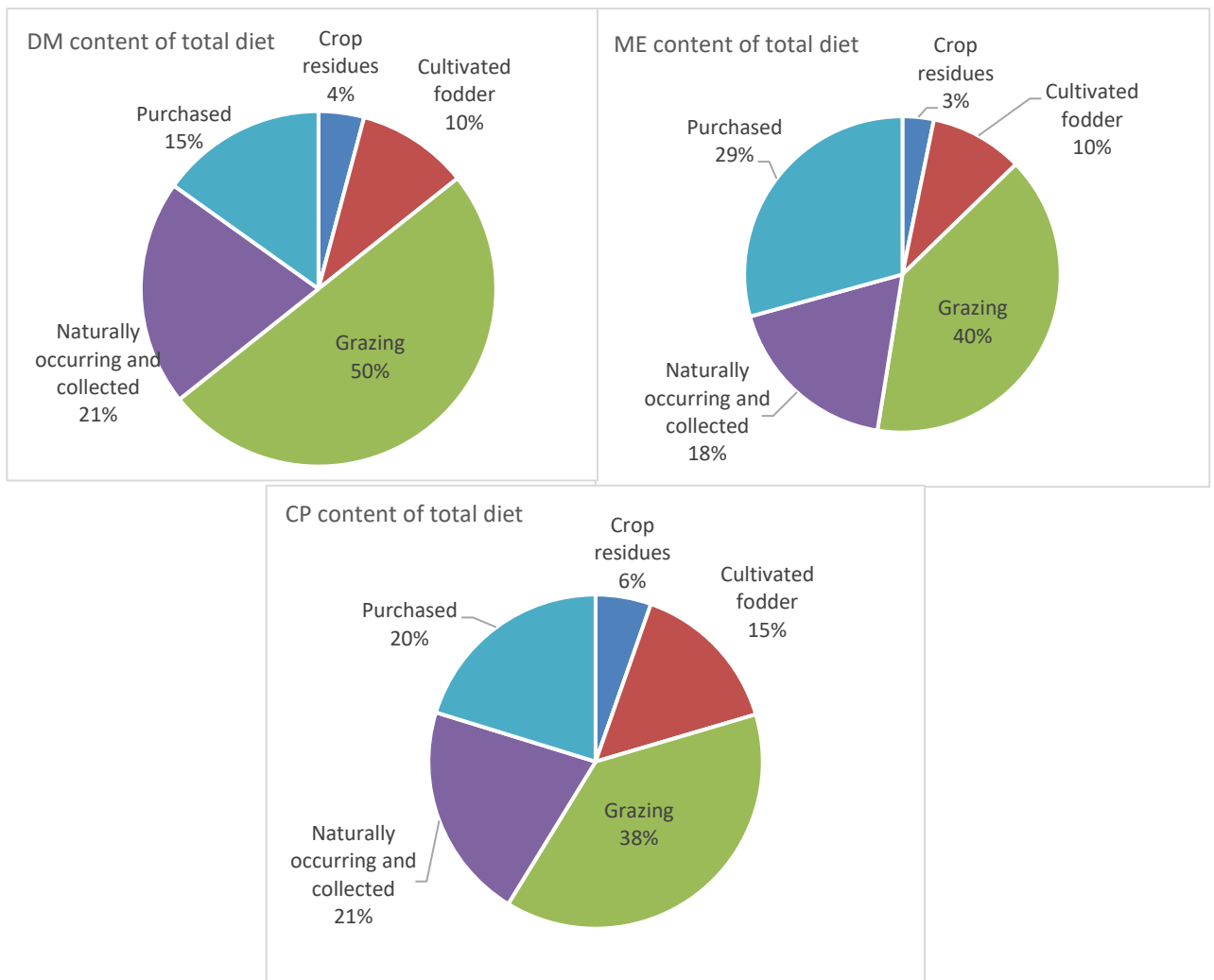


Figure 5: Contribution of various feed sources to the DM, ME and CP intake of livestock

Experiences and observations on FEAST village survey

The following are issues experienced and observed during the FEAST village surveys in Mwanza, Gosha, Chipikiri, Marimo and Matyaire:

- Most agricultural activities are mainly done by women because men are engaged in off-farm cash generating activities.
- Participants indicated a poor farmer extension interface in their ward.
- Participants were willing to learn and adopt new technologies to improve livestock production.
- The farmers cannot afford to purchase veterinary drugs for their animals due to the high cost, even though they are locally available.
- Participants depend on rangelands as the main source of feed, but it is not adequate to feed the animals during the dry season.
- Women and men equally contributed to the discussions, including information on livestock ownership.

Challenges and suggested interventions

A ranking exercise was carried out with the farmers on the challenges they faced. The results of this exercise are presented in Table 3.

Table 3. Challenges and suggested interventions

Challenges	Suggested interventions
1. Inadequate knowledge and skills in animal husbandry	Improve delivery of extension services
2. Insufficient feed	Introduce hay making and increase the production of planted forage to meet dry season feed needs of animals
3. Poor breeds with low productivity	Introduction of improved breeds possibly through AI. This was discussed at an innovation platform meeting.
4. Inadequate dips and expensive acaricides and veterinary drugs	Construction of more dips and also bulk purchase of acaricides by farmers to reduce costs.
5. Difficulty to compete with commercial poultry farmers	

Conclusions

The farming system in Mwanza villages is a mixed farming system. Cattle are the dominant animals kept by farmers in the area. Their major uses in the five villages are for milk production, meat and a source of cash.

Labour was found to be the major contributor to household income in all the villages, mainly through working in the neighbouring farms and the women working in the village fields. However, livestock and crop farming (maize) also contribute to their income.

In all the villages, natural grazing is the major feed resource for the animals and makes the highest contribution to the nutrient intake of livestock. Crop residues from maize stovers and pulses also make up a portion of the nutrient intake. The availability of these major feed resources is seasonal and leads to underfeeding during the dry season, with a decrease in production and productivity of livestock. Introduction of improved forages in rangelands by seeding can help improve the quantity and quality of feed available. Also, treatment of crop residues with urea could enhance their quality for livestock feeding. There is a need to increase the knowledge base pertaining to livestock feeding systems through research and extension.

References

ILRI. 2015. Feed Assessment Tool (FEAST) data application user manual. Nairobi: ILRI