

Characterization of the livestock production system and potential for improving productivity through fodder production in communal areas of Gutu District, Zimbabwe

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I Introduction

The Gendered Feed Assessment Tool (G-FEAST) was employed by a team of researchers from Makoholi Research Institute, Oxfam and district local Agricultural Technical and Extension Services (AGRITEX) officers in Zimbabwe to characterize the livestock production system in Gutu District, Zimbabwe. Gutu District is located in the southeast region of Zimbabwe, about 260 km from the capital, Harare (Ministry of Lands, Agriculture, Water, Fisheries and Rural Resettlement 2021). The area falls within Natural Region IV (NR4) of the Zimbabwean ecological classification system (Vincent, Thomas and Staples 1960).

The G-FEAST exercises were carried out from 17 to 21 May 2021 in Gutu District at ward centres. The tool exercises involved both qualitative and quantitative research techniques to prompt the viewpoints and perspectives of female and male farmers concerning feeding practices and livestock production in general. This report presents the findings of the assessment and conclusions for further action.

2 Sample description

For this G-FEAST survey, four focus group discussions (FGDs) were carried out in two wards, separated by gender (Lukuyu et al. 2019), one with only men (23 participated) and another with only women (22 participated). Moreover, individual interviews were conducted with 14 respondents (7 respondents from respective wards FGDs). The composition of the sample is shown in Table 1.

Table 1: Male and female individual interview respondents by wards

Individual interviews	Male respondents	Female respondents
Guuriro	4	3
Jaravaza	4	3
Totals	7	7

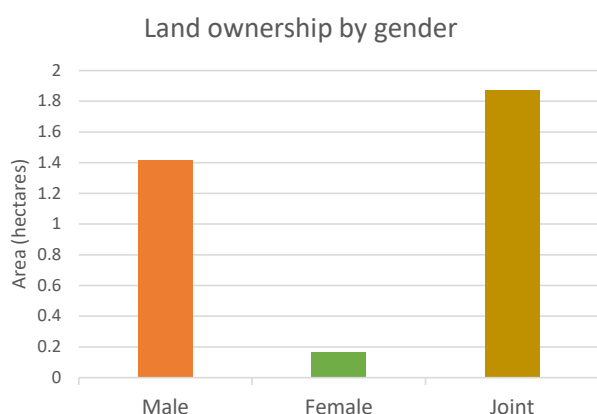
3 Results

3.1 Farming systems

The farming in Gutu communal areas is primarily extensive mixed crop-livestock system. The average land sizes are about 5 ha (20 acres), with most of the land being used for livestock grazing activities. On average, household sizes range between 5–7 people living permanently on the homestead. There is a considerable proportion of female heads of household among the small-scale farmers, which constitute about 25% of households in the study area (average FGD data).

Land ownership is communal system whereby farmers were given land by the government. Figure 1 shows that men and women in a household equally own land either individually or jointly. These findings further show that efforts aimed at empowering women are bearing fruit, given that cultural customs have often restricted land ownership to men. Over time, husbands are sharing land ownership rights equally with their spouses, helping to bridge the gender gap in land ownership.

Figure 1: Land ownership by gender.



A majority of households in the area grow a variety of food crops, including maize (*Zea mays*), rapoko (*Eleusine coracana*), cowpea (*Vigna anguiculata*), cotton (*Gossypium hissurum*) and groundnut (*Arachis hypogea*). Maize is commonly grown for sale in the local and urban markets of Masvingo and is also a staple food for many households in Zimbabwe. Figure 2 indicates that female-headed households are more likely to cultivate maize and groundnut, and less likely to grow rapoko than male-headed households. Male-headed households grow cowpea more than female-headed households probably because of its use in livestock diet.

Figure 2: Dominant crop types by gender of the household head.

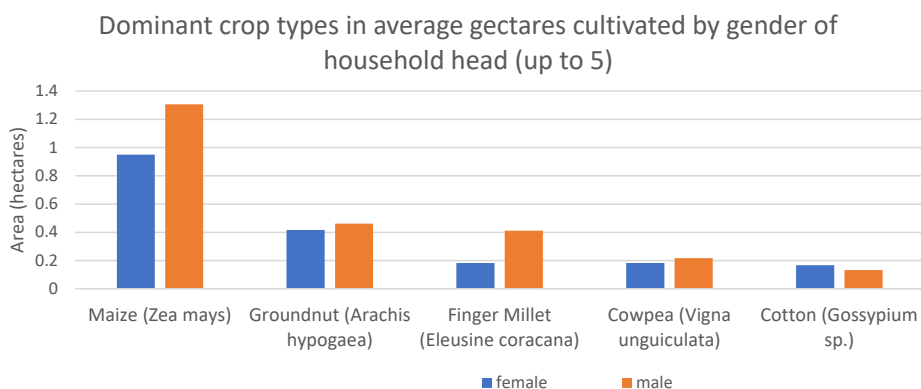
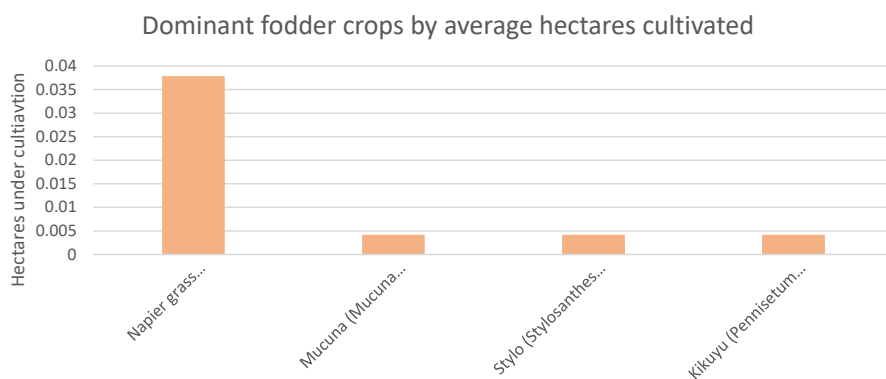


Figure 3 shows farmers also utilize very small pieces of land to cultivate forage crops such as Napier grass (*Pennisetum purpureum*), velvet bean (*Mucuna puriens*) and Stylo (*Stylosanthes spp*). Napier grass is mostly grown in gardens and wet areas and fed to animals as cut and carry. Velvet bean is used as a protein source in livestock feed formulations by very few farmers.

Figure 3: Dominant planted forage crop types in the study area.



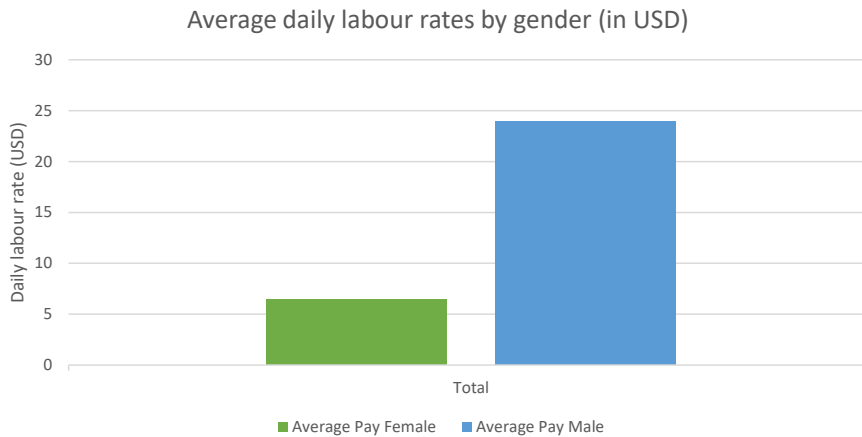
The amount of rainfall in the district is generally below average to support agricultural activities in the area. However, erratic rainfall and unpredictable patterns are becoming common phenomena over time. Farmers therefore resort to alternative water sources that are readily available in the area, including rivers, dams, wells, and tap water. There is open access to these water sources for both men and women regardless of age, farm size or ethnic background. There is some level of equality in access to water sources. There are basically three seasons occurring in the district, ‘zhizha’, ‘chando’ and ‘chirimo’ (Table 2). Zhizha stretches from November to April. This is the summer period, which is the main growing season. Chando is the winter season from May to July. During this time, farmers are involved in winter ploughing, stover collection, gardening and stumping.

Table 2: Seasonal periods in Gutu communal areas

Name of season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Summer season (zhizha)	█											█
Winter season (chando)					█							
Spring (chirimo)								█				

Labour is generally available all the time at an approximate minimum daily rate of ZWL600 (equivalent to USD6) and a maximum of ZWL2,300. The costs vary by task and labour becomes scarcer during the planting season. This daily wage rate is considered high given that a majority of the population, especially youth and men, are migrating to nearby countries such as South Africa and even overseas in search of better employment opportunities. In Gutu communal areas, 70% of youth migrate away from the area, followed by 25% of men and 5% of women. There is also an observable difference in the daily wage rates earned by men and women (Figure 4). This may be because of the type of task and, for women, time allocated to labour is limited as they are also responsible for other family duties, such as preparation of meals.

Figure 4: Average daily labour rates by gender.



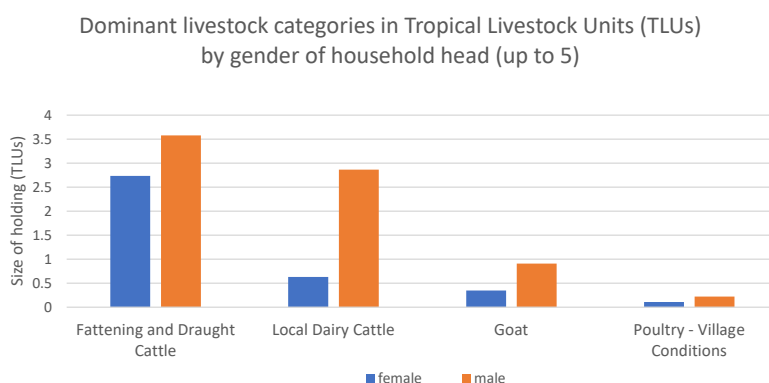
3.2 Livestock production systems

Farmers in Gutu District predominantly keep cattle and poultry as shown in Figure 5. Other livestock kept include goats. Cattle are kept mainly for milk, meat, draught power and as a source of manure (FGD data). The focus groups for men and women found no differences between genders in their purposes for rearing the main livestock species. Farmers have adopted rearing of indigenous goats due to limited grazing lands and their tolerance to drought. The most dominant cattle breeds are Mashona and Brahman crosses.

Male-headed households have far more cattle than female-headed households and all households keep relatively few goats. Given the nature of the extensive mixed crop-livestock system in Gutu communal areas, households keep a negligible poultry population, mostly of local and indigenous chicken breeds.

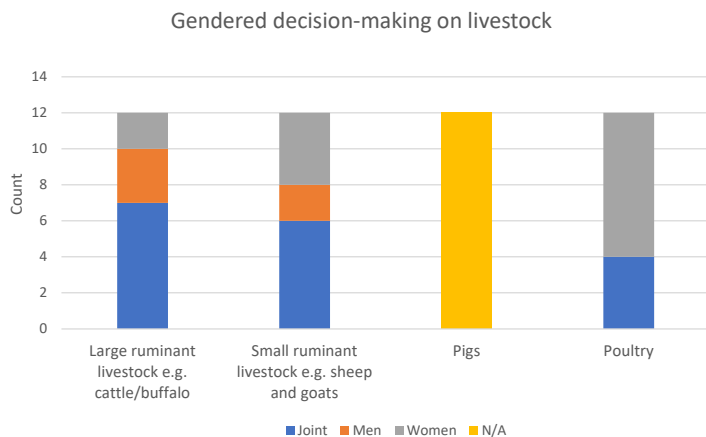
Livestock, especially cattle, are mainly confined in grazing paddocks without separating cattle by breed, sex or age. This form of husbandry relies on grazing as the main style of feeding. The most common livestock diseases in the area include January disease, heartwater, lumpy skin and foot-and-mouth disease (FMD). Farmers rely mainly on public and private veterinary officers when they need veterinary services. In rare cases, they use traditional veterinary practices to control FMD. Artificial insemination (AI) services are not available. However, all farmers (100%) often rely on bull services for reproduction, usually using their local bulls giving chances of inbreeding.

Figure 5: Dominant livestock categories by gender of the household head.



The FGDs revealed a gendered pattern in terms of access to input and services. The men listed more input suppliers for both crops and livestock compared to women, indicating that men are more knowledgeable with veterinary supplies than women. This may be because men make most decisions regarding large ruminants (Figure 6). This may also imply that men have more access to services such as veterinary than women.

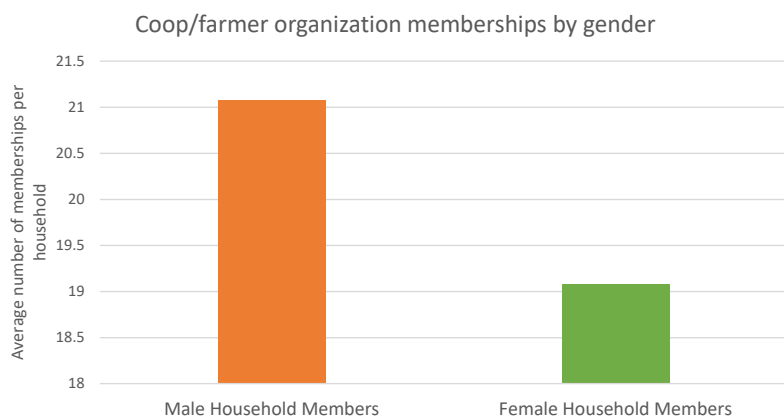
Figure 6: Gendered decision-making on livestock.



The main sources of financial services (credit) are village savings (VSs), cooperative organizations and moneylenders ('fushai'). Informal credit is commonly used for household expenses such as school fees as well as investments in agricultural production such as the purchase of goats and chicken or paying for farm labour. An estimated 10% of farmers have access to formal credit. Informal credit facilities dominate the sector (over 80%). On a scale of 0–4, male FGD participants rated the ease of accessing credit at 3 while women rated it at 2, implying men could more easily access credit from informal sources. Women and youth are disadvantaged in accessing credit probably due to lack of collateral.

There is a gender balance between men and women in terms of membership in cooperatives and farmer organizations. (Figure 7). Approximately 21 males per village belong to a cooperative compared to 19 females per village. This implies that, at least within each village, men and women have an equal chance of becoming members of a cooperative or farmer association.

Figure 7: Average cooperative or farmer organization memberships per village by gender.

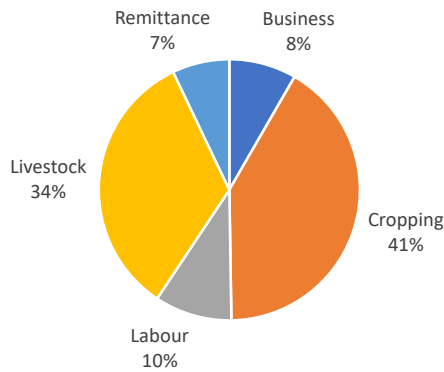


3.3 Major income sources

Results shown in Figure 8 indicate that cropping-related activities (predominantly food crops) contribute the highest share to household income (41%). The income from livestock is mainly from goats, poultry and some cattle sales (34%). Other sources of income are provision of labour (10%), business (8%) and remittance (7%).

Figure 8: Primary sources of household income.

Average household income by activity category



As for women’s incomes, food crops and cash crops contribute the highest share of the total. Other income sources include fattening small stock (shoats) and labouring (Figure 9).

Figure 9: Relative contribution of income sources to household and women’s income.

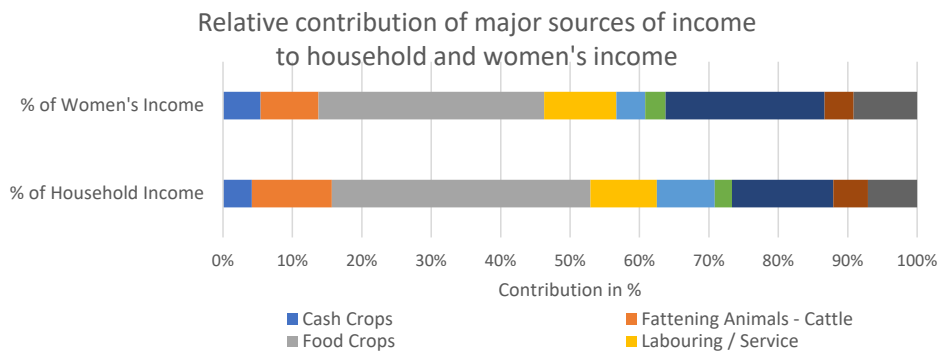


Figure 10 indicates that men and women make equal decisions on income from fattening cattle, whereas women make most decisions on food crops, small ruminants and poultry. The findings suggest that cattle production is both a male- and female-dominated enterprise among farmers in the Gutu communal area.

Figure 10: Gendered decision-making on major sources of household income.

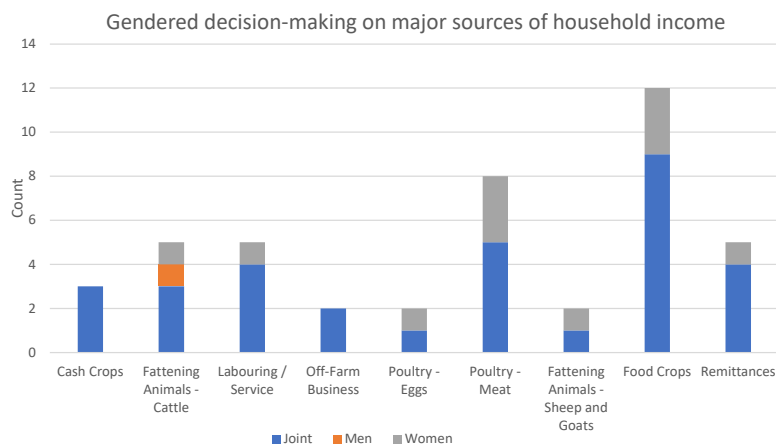
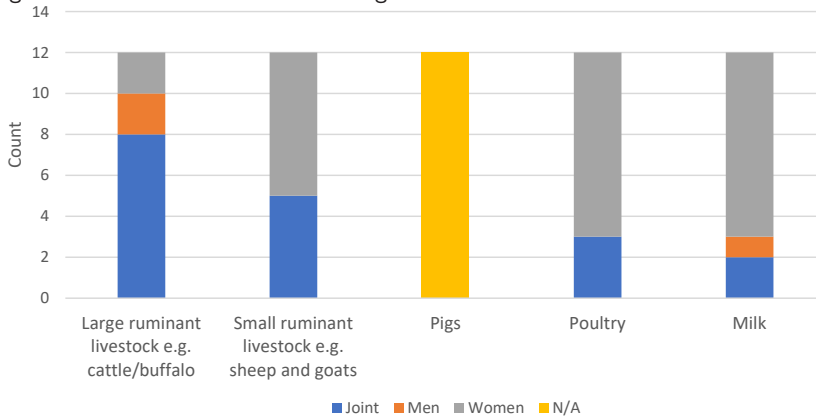


Figure 11 further disaggregates decision-making on livestock and shows a similar trend of males and females equally making decisions regarding large ruminants. In some households, there is joint decision-making across all types of livestock and their products. Women generally dominate in decision-making regarding small ruminants and poultry sales. Women generally dominate in decision-making regarding small ruminants and poultry sales.

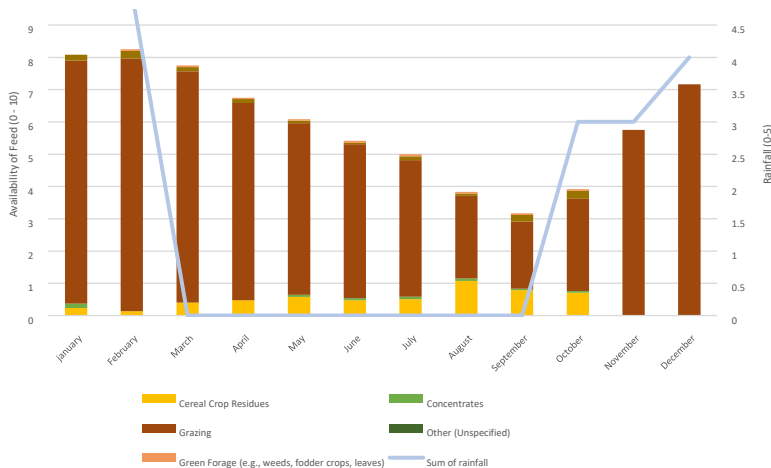
Figure 11: Gendered decision-making on the sale of livestock and milk.



3.4 Major feed sources

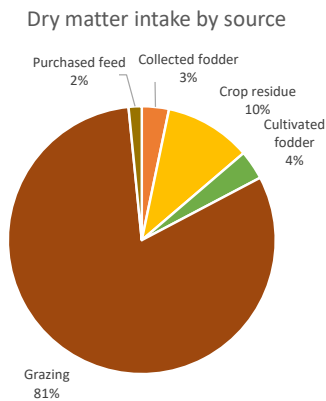
Livestock diets are primarily composed of grazing pastures, crop residues, leguminous crop residues and concentrates (Figure 12). Grazing contributes the most significant share of animal diets. Farmers utilize a free range paddocking system where resources are shared to rear their cattle. Grazing intensity increases during the one annual wet season (October–March). During the dry season, green forages such as fodder crops and cereal crop residues supplement grazing. Remarkably, there is minimal use of concentrates throughout the year.

Figure 12: Composition of cattle diets in Gutu communal areas throughout the year in relation to rainfall pattern.



Grazing contributes the largest proportion of animals’ on-farm diets (80%), followed by crop residues (10%), cultivated fodder (8%), which includes Star grass, Napier grass and Velvet bean (Figure 13). Crop residues that include residue from cereal crops and legumes constitute about 10% of animal diets. Purchased feeds such as commercial feed and concentrates (2%) are used in minimal quantities. Furthermore, most farmers reported not using purchased feeds.

Figure 13: Contribution to total dietary dry matter by feed source.



The contributions of different feed sources to total metabolizable energy (ME) and crude protein (CP) are shown in Figures 14 and 15, respectively. As observed, grazing contributes the highest share to both ME (82%) and to CP (71%). This is followed by cultivated fodder, which contributes 17% of ME and 28% of CP.

Figure 14: Contribution to total metabolizable energy (ME) in on-farm diet by feed source.

Metabolisable energy intake by source

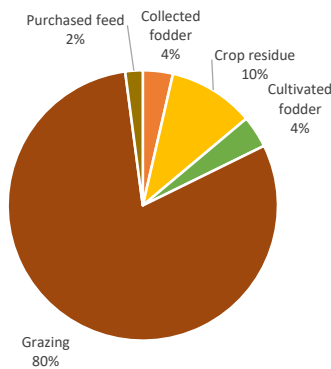
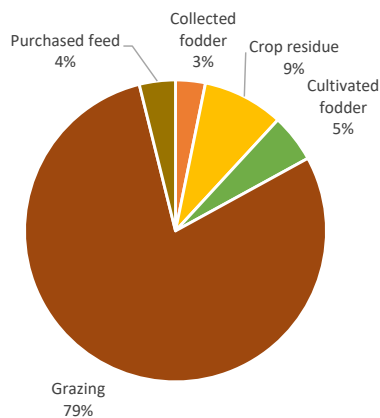


Figure 15: Contribution to total crude protein (CP) in on-farm diet by food source.

Crude protein intake by source



3.5 Gender division of labour and gendered decision-making in livestock, feed related activities

Figure 16 shows different activities in forage production and the different roles played by household members. Men dominate in most of the forage production activities, including ploughing, planting, harvesting and processing of feed. In the FGDs with men and those with women, the proportion of men involved in feed processing was found to be higher (90%) than it was among women (10%). Women, children and youth are left with responsibilities often considered less difficult such as cleaning feed and watering facilities, feeding, feed mixing and collection of off-farm forages.

Figure 16: Gender division of labour in feed production, harvesting and feeding.

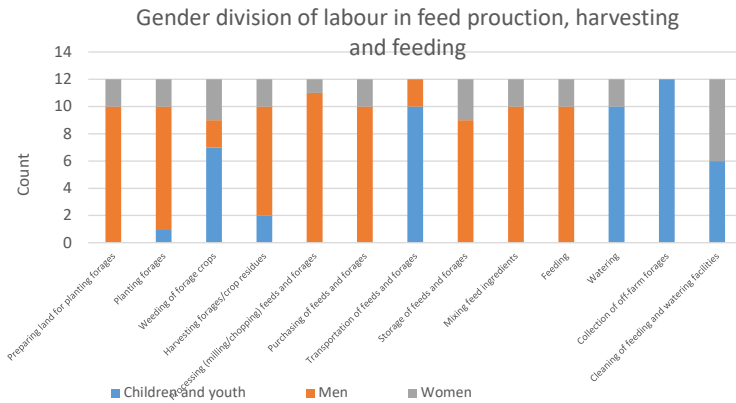
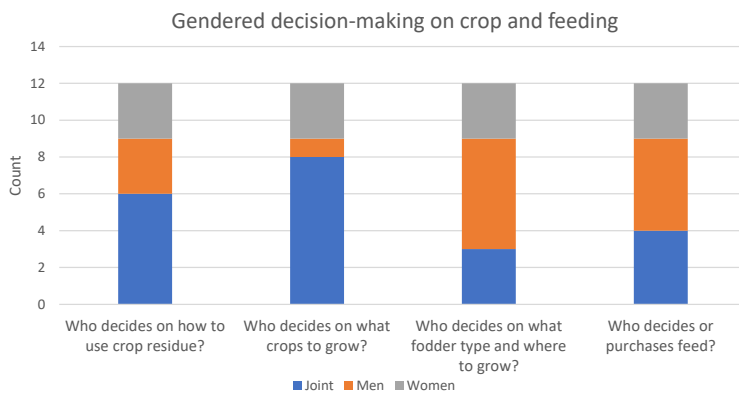


Figure 17 shows the decision-making roles of men and women regarding crops and feed. Decisions on the type of fodder to grow and where to grow it as well as the purchasing of feed were predominantly made by men. Women, on the other hand, are involved in deciding on what crops to plant and the use of crop residues.

Figure 17: Gendered decision-making on crops, feeds and feeding.



3.6 Problems and opportunities

Farmers were asked to list and rank the five most important problems affecting livestock production in their area and possible solutions (Table 3). The main challenges identified by men in the communities are diseases, mostly tick-borne diseases, feed scarcity, breeds and breeding, theft of livestock and lack of market. The main problems identified by women in the communities are diseases, theft, breeds and breeding, lack of forage and market. Both men and women view animal diseases as the main problem.

Table 3: Problems, issues and proposed farmer solutions within production systems.

Main problem	Proposed farmer solutions	Ranking by men	Ranking by women
Diseases	Vaccination and frequent dipping	1	1
	Quarantining infected animals		
	Training on disease management		
Breeds and breeding	Introduction of AI	3	3
	Acquiring improved breeds		
Theft of livestock	Livestock structures to be near homesteads	4	2
	Organizing neighbourhood watch committees		
	Permanent identification, for example branding		
Scarcity of feed	Own feed formulations	2	4
	Destocking where there is overstocking		
	Pasture/fodder conservation		
	Veld reinforcement		

4 Potential interventions

The findings show that seasonality influences the feed availability in Gutu communal areas. Farmers reported feed scarcity particularly in the dry season. Grazing is the most dominant source (80%) of feeding followed by crop residues (10%), planted fodder (8%) with very little reliance on purchased feed (2%). Most farmers are not well informed as far as fodder production is concerned. The grazing and livestock condition deteriorate as the season approaches winter, this leaves the animals vulnerable, losing weight, fetching low prices and not strong enough to provide draught power in the subsequent season. In order to increase forage production, farmers can adopt adding value to locally available crop residues. This can be done by training farmers on strategies to better use maize stover. There is also need to introduce new fodder crops with higher nutritional quality. In addition to pastures and planted forages, farmers need to be educated on feed conservation, processing and utilization technologies such as hay and silage making. Farmers in Gutu communal areas cited land as a limiting factor, therefore planting of legume forage trees (multipurpose trees) as fodder banks around homesteads, fields and backyard is recommended. This practice encourages effective use of the same land resources where the tree biomass is used for feed as well as enriching the soil. Farmers predominantly keep local breeds which are adapted to the environment. Therefore, it is important that farmers are trained on cross-breeding to improve their local breeds and increase production of meat and high-quality milk. Since the findings clearly indicate that farmers need different types of training, targeted members of the households must be equipped depending on which roles they play in managing forages as well feeding animals. Other proposed interventions to address constraints identified by farmers include introducing alternative disease control measures to reduce the prevalence of especially tick-borne diseases.

5 Conclusion

The farming system in Gutu communal areas is characterized by mixed crop and livestock production system with cereals as major crops. Majority of the farmers cultivate less than five hectares of land. Livestock rearing is the next most important economic activity after crop cultivation. In terms of key issues, farmers highlighted diseases, nutrition, breeding and theft as major problems affecting the area. Farmers articulated a need for several animal nutrition-related interventions, especially focusing on the production, processing, conservation and utilization of forages. This may indicate that farmers have an idea on fodder production but lack seeds and knowledge of how to conserve and use forages, for example. As a result, the introduction of high-quality planted forages should be encouraged. Farmers should be exposed to existing improved forage varieties and offered training on forage production, management, conservation and use. Farmers should also receive training on animal nutrition and use of balanced feed rations for increased livestock production. Capacity building for extension staff should also be encouraged in order to promote improved animal health management. Women and youth participation in livestock production activities can be increased by promoting value chain and commercialized forage production.

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