

Characterisation of the livestock production system and potential for enhancing productivity through improved access to forage seed value chain in Kiruhura District, Uganda

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I Introduction

The Gendered Feed Assessment Tool (G-FEAST) was implemented by a team of researchers from the National Livestock Research Institute (ILRI) and district local government livestock officers in Uganda to characterise the livestock production system in Kiruhura District, Uganda. Kiruhura District is located in the western region of Uganda, about 254 km from the capital, Kampala (Uganda Bureau of Statistics 2017). It is classified as having an improved extensive crop-livestock production system and has a strong dairy cooperative network, large-scale farms with mixed crop farming planted with improved pastures for grazing livestock.

The G-FEAST exercises were carried out on 20 February 2020 in Nyakashashara subcounty headquarters. The G-FEAST tool involved both qualitative and quantitative research techniques to elicit the viewpoints and perspectives of female and male farmers regarding 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, two focus group discussions (FGDs) were carried out, separated by gender: one with only men (17 men participated) and another with only women (15 women participated). Additionally, individual interviews were conducted with 14 respondents (7 respondents from each FGD). The composition of the sample was as follows:

Table 1: Male and female individual interview respondents by farm size

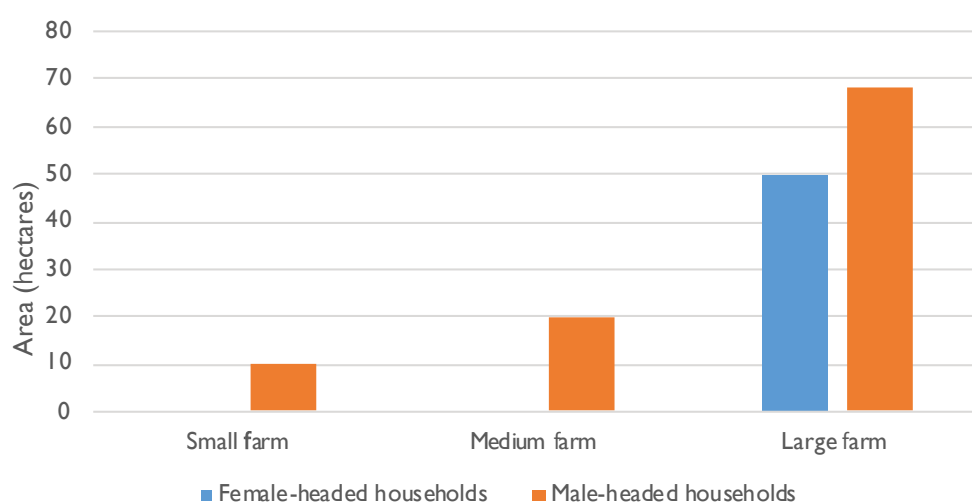
Individual interviews	Male respondents	Female respondents
Small farm size (0–15 ha)	3	2
Medium farm size (15–65 ha)	3	2
Large farm size (65 ha and above)	2	2
Totals	8	6

3 Results

3.1 Farming systems

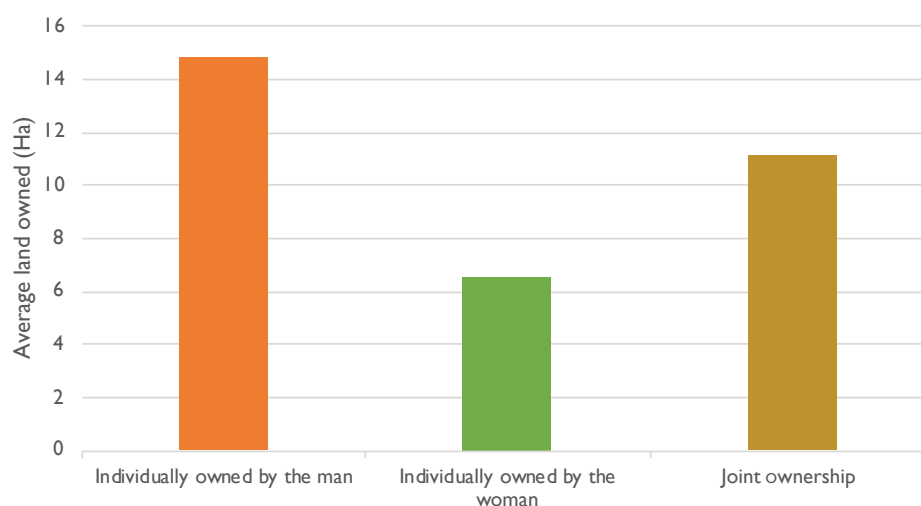
The farming in Kiruhura district is primarily an improved extensive mixed crop-livestock system. The average farm sizes in Kiruhura district are about 20 ha (49.4 acres), with most of the land being used for livestock grazing activities. On average, household sizes range between 8–10 people living permanently on the farm. Figure 1 presents farm sizes by gender of the household head. There is a considerable proportion of female heads of household among the large-scale farms, which constitute about 10% of households in the study area (average FGD data).

Figure 1: Farm size by gender of household type



Land ownership is mostly a leasehold system whereby farmers have bought land from the government (both local and national). Figure 2 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 norms 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 2: Land ownership by gender



A majority of households in the area grow a variety of food crops, including bananas (*Musa acuminata*), maize (*Zea mays*), common beans (*Phaseolus vulgaris*), cassava (*Manihot esculenta*) and coffee (*Coffea arabica*). Bananas are grown on a large scale for commercial sale in the urban markets of Kampala and are also a staple food for many households in Uganda. Figure 3 indicates that female-headed households are more likely to cultivate bananas, maize, beans and cassava and less likely to grow coffee than male-headed households.

Figure 3: Dominant crop types by gender of the household head (top 5)

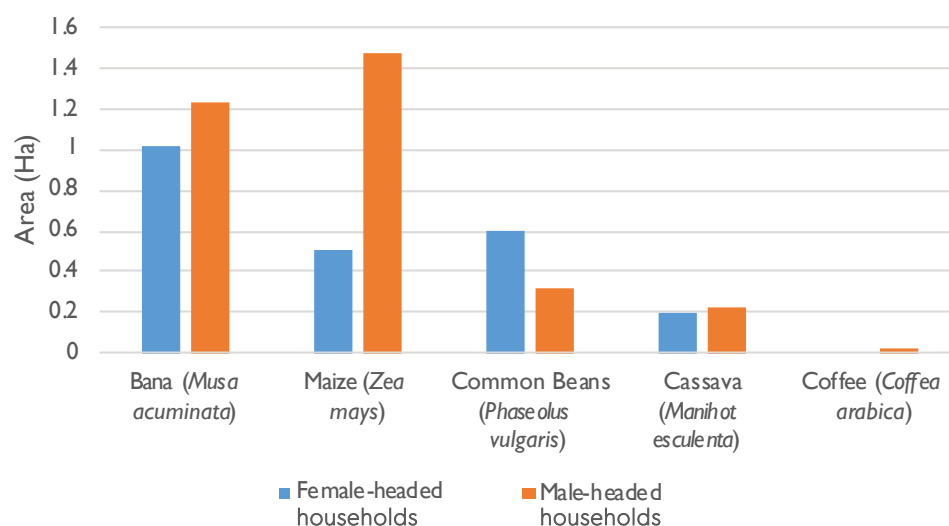
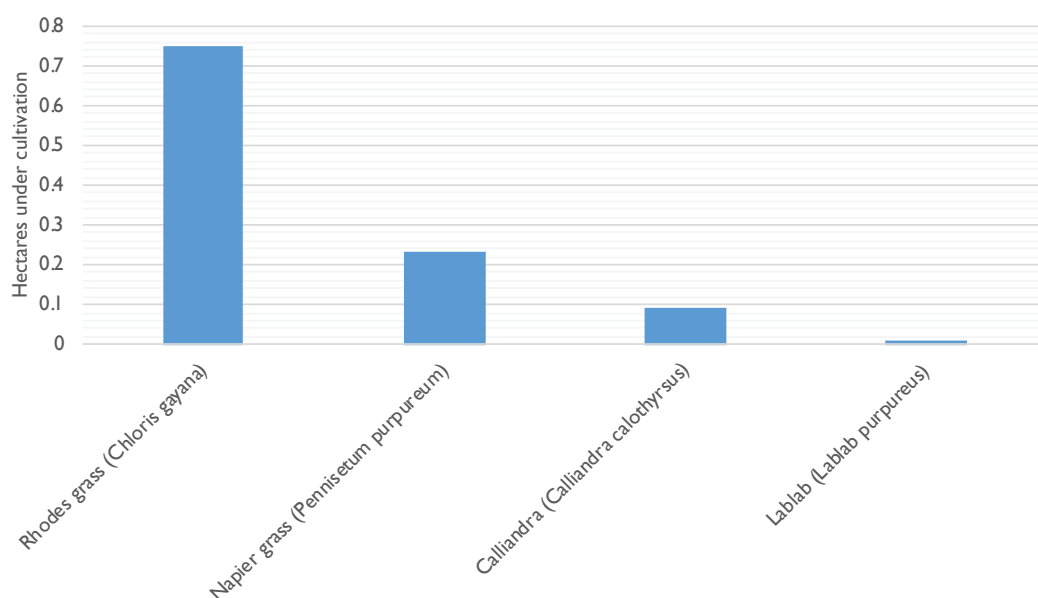


Figure 4 shows farmers also utilize their land to cultivate forage crops such as Rhodes grass (*Chloris gayana*), Napier grass (*Pennisetum purpureum*), *Calliandra calothyrsus* and Lablab (*Lablab purpureus*). Rhodes grass is grown on a large scale for grazing cattle, which is a unique and recent development in the study site.

Figure 4: Dominant planted forage crop types in the study area.



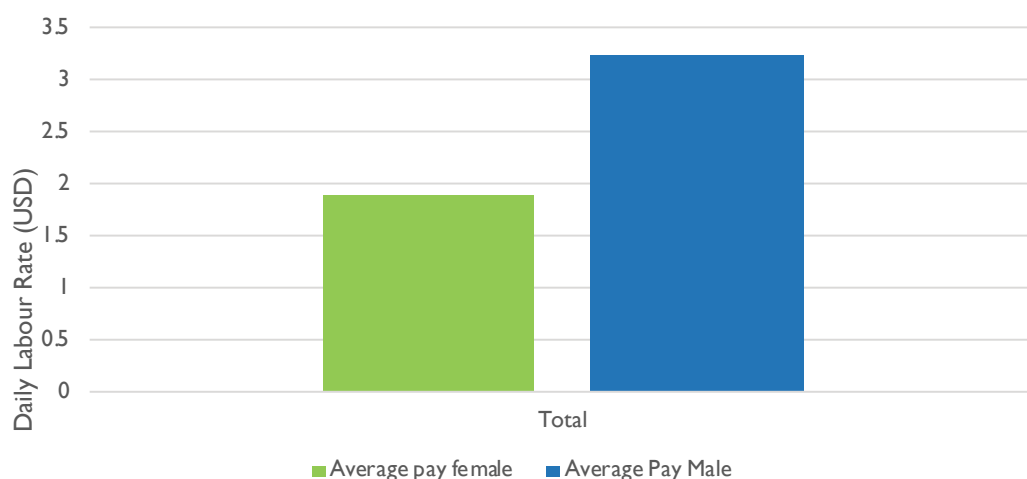
The amount of rainfall is generally adequate to support agricultural activities in the area. However, erratic rainfall and unpredictable patterns are becoming common phenomena over time. Farmers therefore resort to alternative water sources readily available in the area, including private and public dams, wells, lakes 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. Table 2 shows the rainfall pattern by season.

Table 2: Seasonal cropping patterns in Kiruhura district

Name of season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dry season (Ekyanda)												
Short wet season (Katumba)												
Long wet season (Itumba)												

Labour is generally available all the time at an approximate minimum daily rate of UGX5,000 and a maximum of UGX10,000. 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, are migrating to urban centers like Kampala and even overseas in search of better employment opportunities. In Kiruhura district, 60% of youth migrate away from the area, followed by 30% of men 10% of women. There is also an observable difference in the daily wage rates earned by men and women (Figure 5). This may be because the time allocated women can allocate to labour is limited as they are also responsible for other family needs, such as preparation of meals.

Figure 5: Average daily labour rates by gender



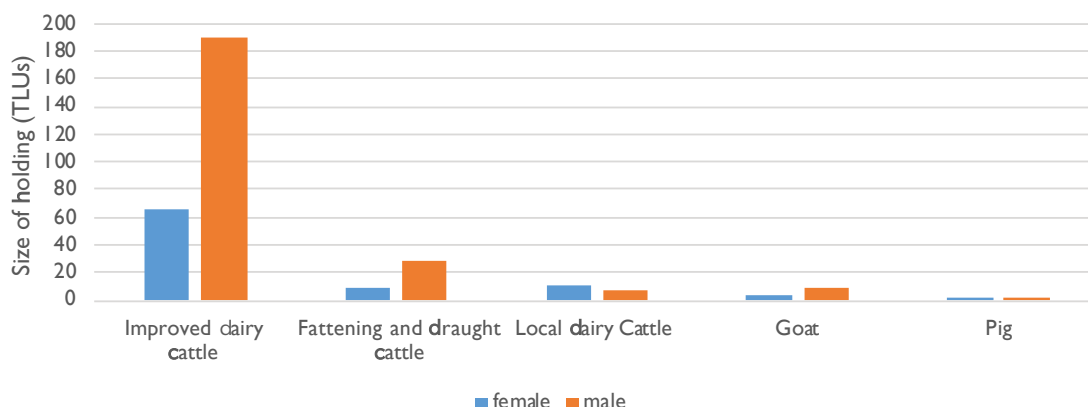
3.2 Livestock production system

Farmers in the area predominantly keep cattle, as shown in Figure 6. Other livestock kept include goats and pigs. Cattle are kept mainly for milk, meat and as a source of manure (FGD data). The focus groups for men and women found no difference between genders in their purposes for rearing the main livestock species. Farmers have adopted the use of improved dairy cattle breeds for milk as well as Nganda and Ankole cattle for fattening and draught-resistance. The most dominant breeds among improved cattle are Friesian and Jersey 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 system in Kiruhura, households keep a negligible poultry population, mostly of local and indigenous chicken breeds.

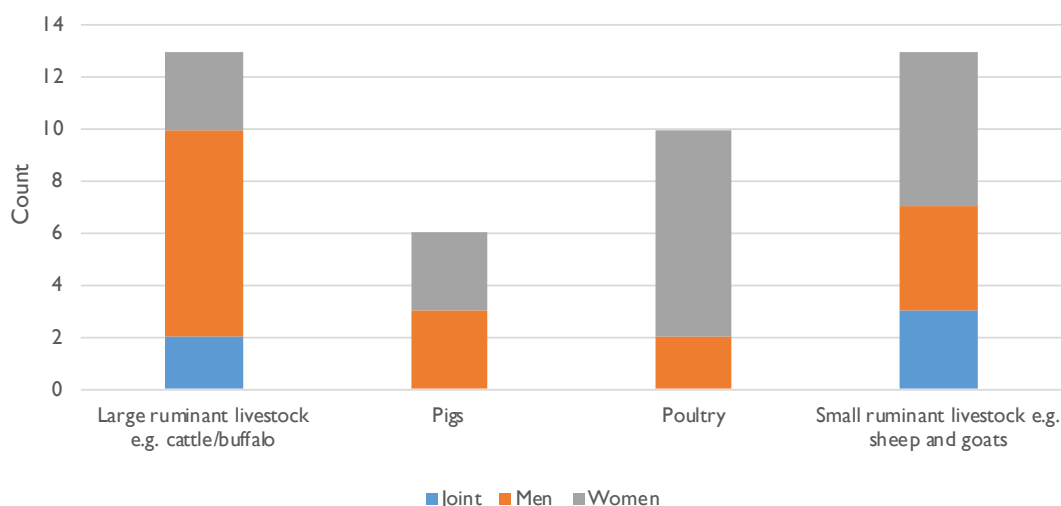
Livestock, especially cattle, are mainly confined in grazing paddocks without separating cattle by breed, sex or age. This form of husbandry relies on grazing as the main style of feeding. The most common livestock diseases in the area include mastitis, brucellosis and foot-and-mouth disease (FMD). Farmers 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 readily available. However, the majority of farmers (95%) often rely on bull services for reproduction, usually using their improved bulls.

Figure 6: 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 conversant with veterinary supplies than women. This may be because men make most decisions concerning large ruminants (Figure 7). This implies that men have more access to services such as AI, bull and vaccinations than women.

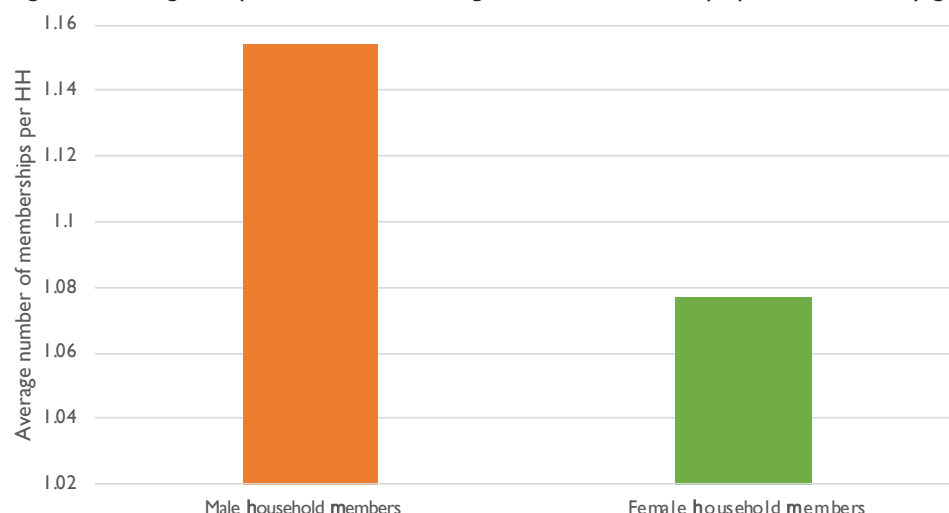
Figure 7: Gendered decision-making on livestock



The main sources of financial services (credit) include banks; village saving and loan associations (VSLAs); savings and credit cooperative organizations (SACCOs); cooperatives, and moneylenders (abawola). Credit is commonly used for household expenses such as school fees as well as investments in agricultural production such as the purchase of bulls or paying for labour on farms. A common condition for obtaining credit is surety such as a land title, other tangible property or membership in the case of cooperatives and SACCOs. An estimated 80% of farmers have access to credit. Formal credit facilities dominate the sector (over 70%). 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 formal sources. Women and youth are disadvantaged in accessing credit partly due to lack of collateral.

There is a gender balance between men and women in terms of membership in cooperatives and farmer organizations (Figure 8). Approximately 1.14 males per household belong to a cooperative compared to 1.07 females per household. This implies, at least within each household, that men and women have an equal chance of becoming members of a cooperative or farmer association.

Figure 8: Average cooperative or farmer organization memberships per household by gender



3.3 Major income sources

Results shown in Figure 9 indicate that livestock-related activities (predominantly dairying) contribute the highest share to household income (72%). The income from livestock is mainly through milk sold and not sale of cattle. Income from crops is mainly through sale of banana as cash crop (19%). Other sources of income are off-farm business (8%) and provision of labour services (1%).

Figure 9: Primary sources of household income

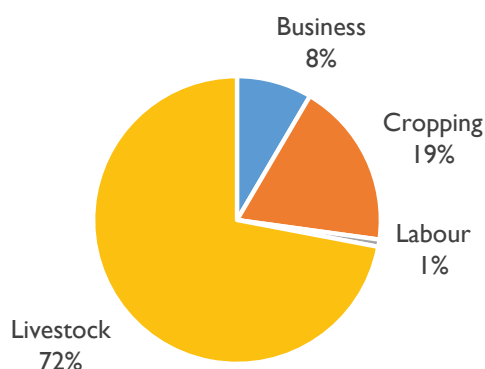
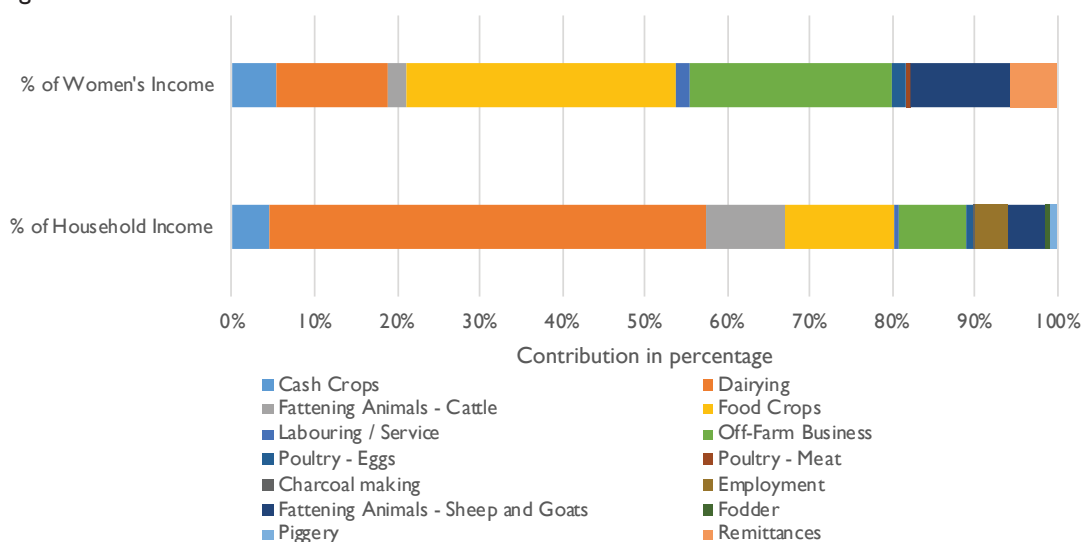


Figure 10: Relative contribution of income sources to household and women's income



As for women's incomes, food crops and off-farm businesses contribute the highest share of the total. Other income sources include fattening small stock (shoats), piggery and remittances from either spouse or relatives.

Figure 11 indicates that men make most decisions on income from dairying and fattening cattle, whereas women make most decisions on food crops, small ruminants and poultry. The findings suggest that cattle production is mainly a male-dominated enterprise within farmers in Kiruhura district.

Figure 11: Gendered decision-making on major sources of household income

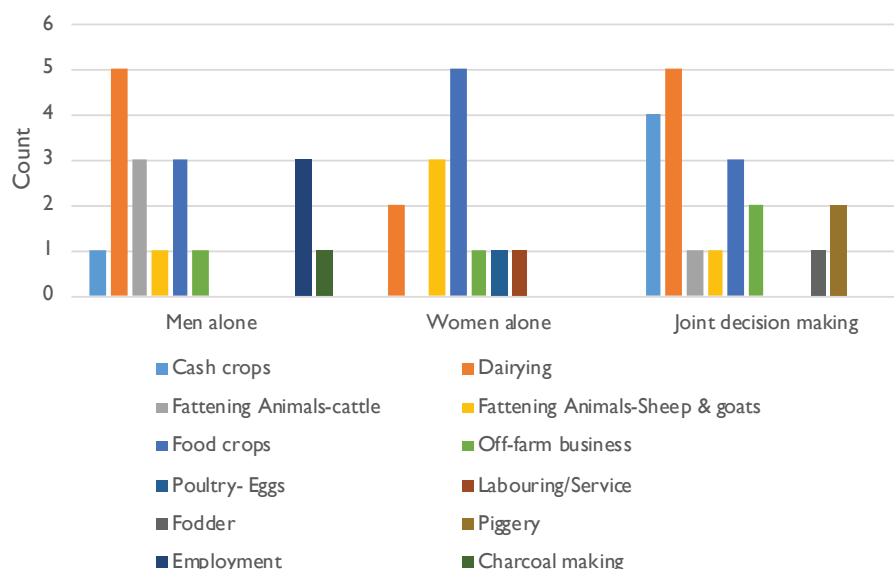
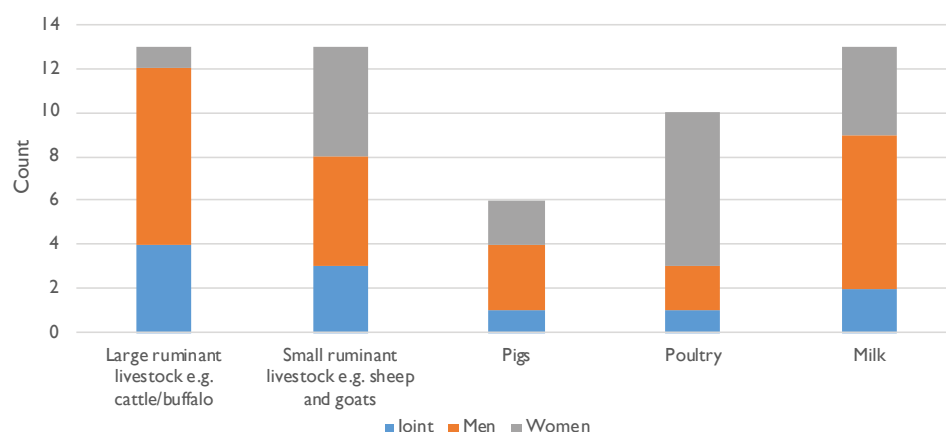


Figure 12 further disaggregates decision-making on livestock and shows a similar trend of men dominating decision-making regarding large ruminants. In some households, there is joint decision-making across all types of livestock and their products. Women generally dominate in decision-making regarding small ruminants and poultry sales.

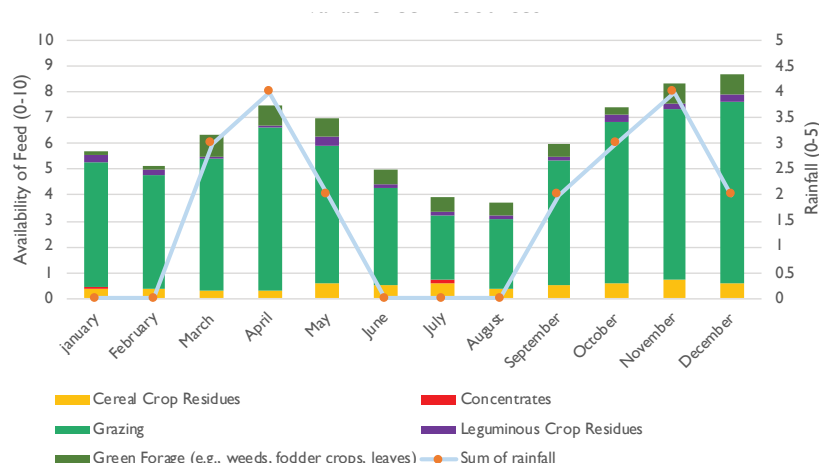
Figure 12: Gendered decision-making on the sale of livestock and milk



3.4 Major feed sources

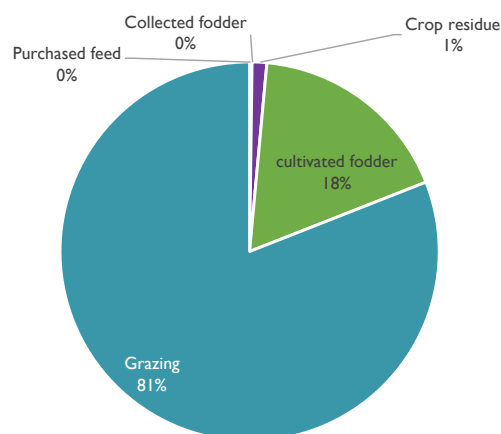
Livestock diets are primarily composed of grazing, crop residue, green forages, legumes and concentrates (Figure 13). Grazing contributes the most significant share of animal diets. Farmers utilize a paddocking system to rear their cattle. Grazing intensity increases during the two annual wet seasons (March–June and September–December). During the dry season, green forages such as fodder crops and cereal crop residues supplement grazing. Surprisingly, there is minimal use of concentrates throughout the year.

Figure 13: Composition of cattle diets in Kiruhura throughout the year in relation to rainfall pattern



Grazing contributes the largest proportion of animals' on-farm diets (80%), followed by cultivated fodder (18%), which includes Rhodes grass, Napier grass, and Calliandra. Crop residues constitute about 1% that includes residue from cereal crops, banana, and legumes. Purchased feeds such as maize bran and concentrates are used in minimal quantities. Moreover, most farmers reported not using purchased feeds.

Figure 14: 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 15 and 16, 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 15: Contribution to total metabolizable energy (ME) in on-farm diet by feed source

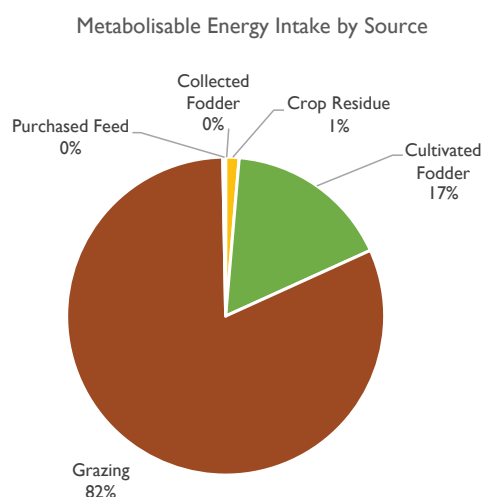
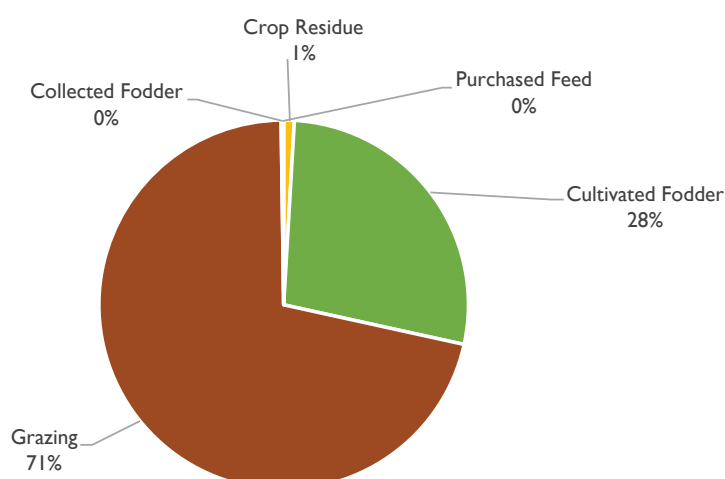


Figure 16: Contribution to total crude protein (CP) in on-farm diet by food source



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

Figure 17 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 17: Gender division of labour in feed production, harvesting and feeding

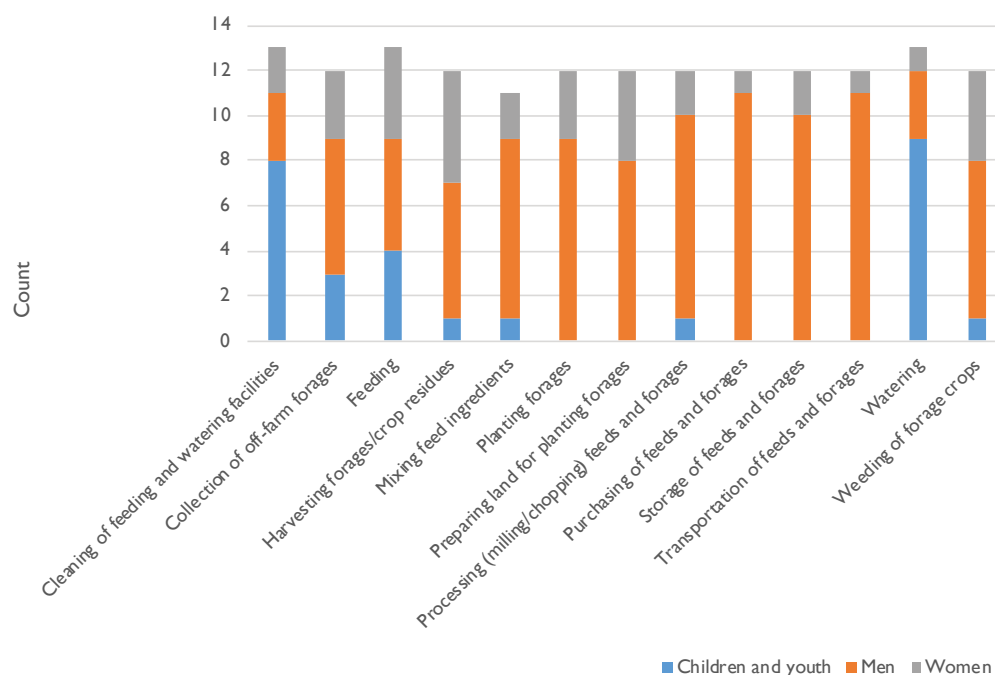
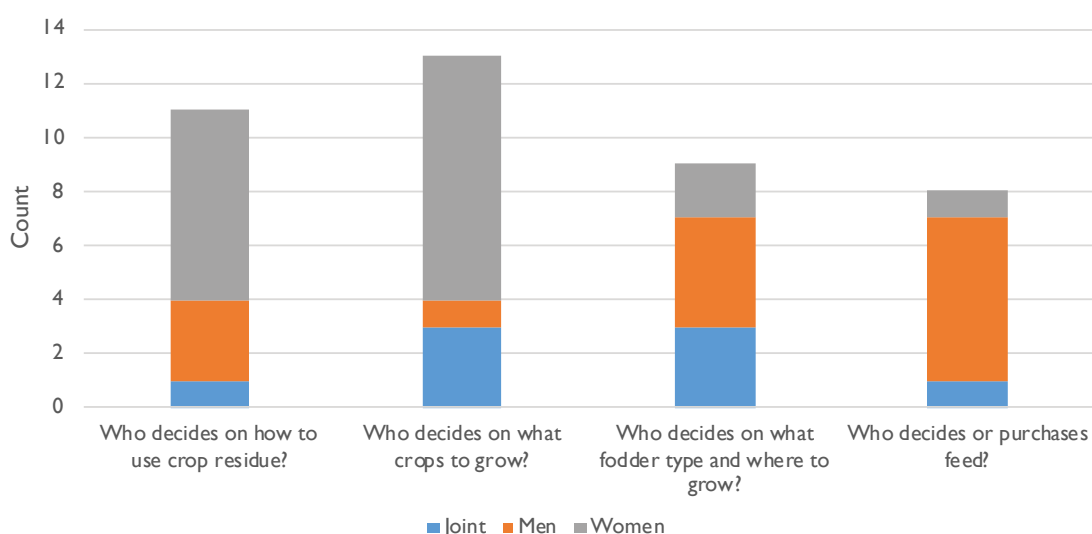


Figure 18 shows the decision-making roles of men and women regarding crops and feed. Decisions on the type of fodder to grow and where to grow it as well as the purchasing of feed were predominantly made by men. Women, on the other hand, are involved in deciding on what crops to plant and the use of crop residues.

Figure 18: 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 such as FMD, low milk prices, low quality of drugs, feed scarcity and theft of cattle. The main problems identified by women in the communities are lack of vaccines against tick-borne diseases, antimicrobial resistance, Tsetse flies, low milk prices, and a lack of forage and feed. Men view diseases as the main problem while women view resistance of the animal to disease 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 - Higher quality drugs - Increased number of veterinary personnel	1	3
Antimicrobial resistance	- Higher quality drugs - Alternative treatments, including traditional medicine	2	1
Low milk prices	- Value addition of milk - Formation of cooperatives - Increasing quality of milk production through better feed	4	2
Scarcity of feed	- Pasture improvement - Destocking where there is overstocking - Pasture/fodder conservation - Increased use of a paddocking system	3	4

4 Potential interventions

The findings show that seasonality influences the feed availability in Kiruhura district. Farmer reported feed scarcity especially in the dry season. Grazing is the most dominant source (81%) of feeding followed by planted fodder (18%) with very little reliance on crop residues (1%). Farmers are putting in much effort to plant improved forages. However, in order to increase forage production, there is need to introduce new fodder species with higher nutritional quality and train farmers on proper fodder husbandry and production techniques. Despite abundant availability of pastures and planted forages, there is still seasonal fluctuation of feeds and it is evident that farmers need to be trained on feed conservation and processing technologies such as haymaking and silage. Farmers predominantly keep improved breeds which require better feeding management. Therefore, it is important that farmers are trained on better feeding practices to increase production of high-quality milk including introducing feed supplementation with legumes. However, the findings clearly indicate that various trainings need to be well targeted to various members of the household depending on which roles they take in managing forages as well feeding animals. Other proposed interventions to address constraints identified by farmers include introducing alternative pest and disease control measures to reduce disease prevalence. To address farmers concerns about low milk prices, it is imperative to build the capacity of local dairy cooperatives on value addition for milk to improve their access to markets.

5 Conclusion

Farmers in Kiruhura district derive focus in large part on dairy production and fattening of cattle for meat in improved extensive systems. In terms of key issues, they highlighted diseases and low efficacy of medicines against these diseases. Farmers voiced a need for several animal nutrition-related interventions, especially regarding the processing, conservation and use of forages. This may indicate that farmers have adequate amounts of forages but lack quality feeds and knowledge of how to conserve and use forages. 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 balanced feed rations for increased livestock production. Capacity building for extension staff should also be encouraged in order to promote improved animal health management. Low milk prices are a disincentive to livestock production. Women and youth participation in livestock production activities can be increased by promoting value addition for milk in cooperatives as well as for commercialized forage production.

6 Reference

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