

Characterisation of the livestock production system and potential for enhancing productivity through improved feeding in Kiryandongo Dairy Farmers Business Association in Kiryandongo district of Uganda.

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The Feed Assessment Tool (FEAST) is a systematic method to assess local feed resource availability and use. It helps in the design of intervention strategies aiming to optimize feed utilization and animal production. More information and the manual can be obtained at www.ilri.org/feast

FEAST is a tool in constant development and improvement. Feedback is welcome and should be directed feast@cgiar.org. The International Livestock Research Institute (ILRI) is not responsible for the quality and validity of results obtained using the FEAST methodology.

The Feed Assessment Tool (FEAST) was used to characterize the feed-related aspects of the livestock production system in Kigumba, Kiryandongo district of Uganda. The assessment was carried out through focused group discussions and completion of short questionnaires by three key farmer representatives owning small, medium and large scale farms. The following are the findings of the assessment and conclusions for further action.

Farming system

The farming system is primarily a subsistence based, mixed crop/livestock system. Farm sizes in the area are around 8 acres (3.2 ha) on average with most of the land being used for cropping. A typical household size is 7 people who live permanently on farm on average per year. Households in the area commonly grow a variety of food crops including; maize (*Zea mays*), beans (*Phaseolus vulgaris*), sunflower, cassava (*Manihot esculenta*), groundnuts (*Arachis hypogea*) and vegetables. Farmers grow Napier grass (*Pennisetum purpureum*) is the most common forage crop grown by 55% of the farmers. A few farmers grow fodder legumes such as *Lablab purpureus* and *Mucuna pruriens* as well as fodder trees and shrubs such as *Calliandra calothyrsus*. The average area of land used for production of food crops is shown in Figure 1 and fodder crops in Figure 2.

Each household also raises a variety of livestock species including cattle, goats, chicken and pigs for various purposes. Cattle are kept mainly for milk, cash income from animal sales, drought power and manure. On average most households have 5-10 milking cows. In addition, many households have 5-10 goats. Indigenous chickens are kept by households to meet household meat, egg and cash needs. Ankole type cattle are kept by about 60% of households but they are not popular with farmers due to their low milk production capabilities. Improved cross bred cattle are kept by about 40% of the households. Cross breeds comprise mainly of Friesian, Jersey breeds with the local Ankole cattle. Goats are also raised by 10-20% of the households for quick sale when funds are required. Labour is

generally available all the time at approximately 60,000 Uganda shillings per month. In addition to this price workers are given meals, milk and some health care cover. Rainfall levels are generally adequate to support cropping activities; however, rainfall unreliability is increasingly becoming common (Table 1). Water is a major constraint in the area but no large scale irrigation is carried out.

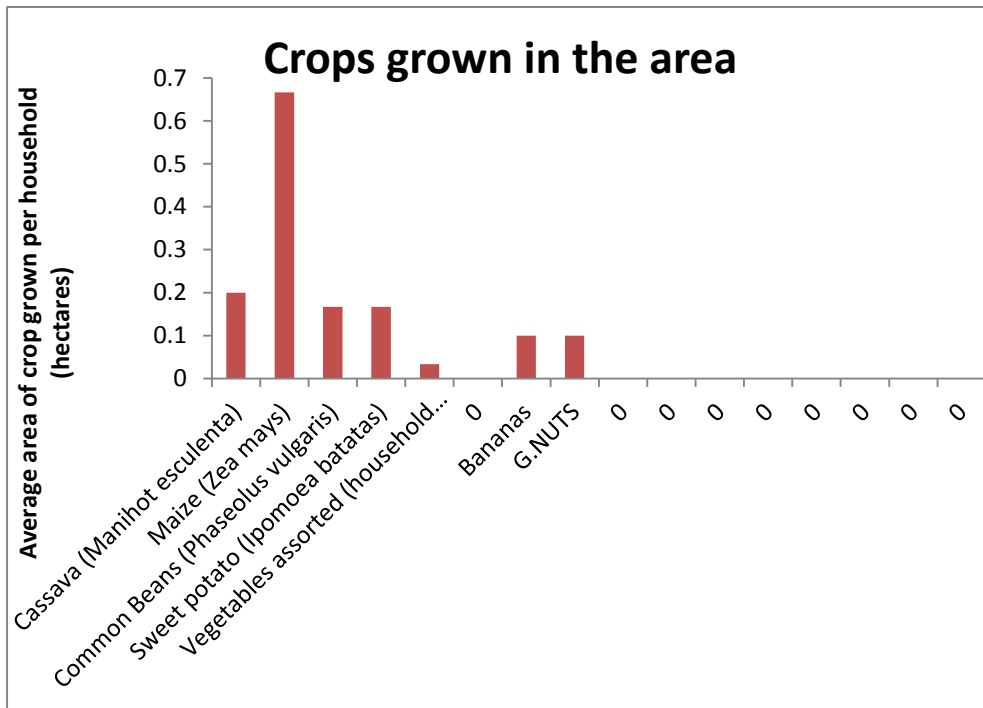


Figure 1: The average area of land utilised for the various food crops grown in Kigumba, Kiryandongo district

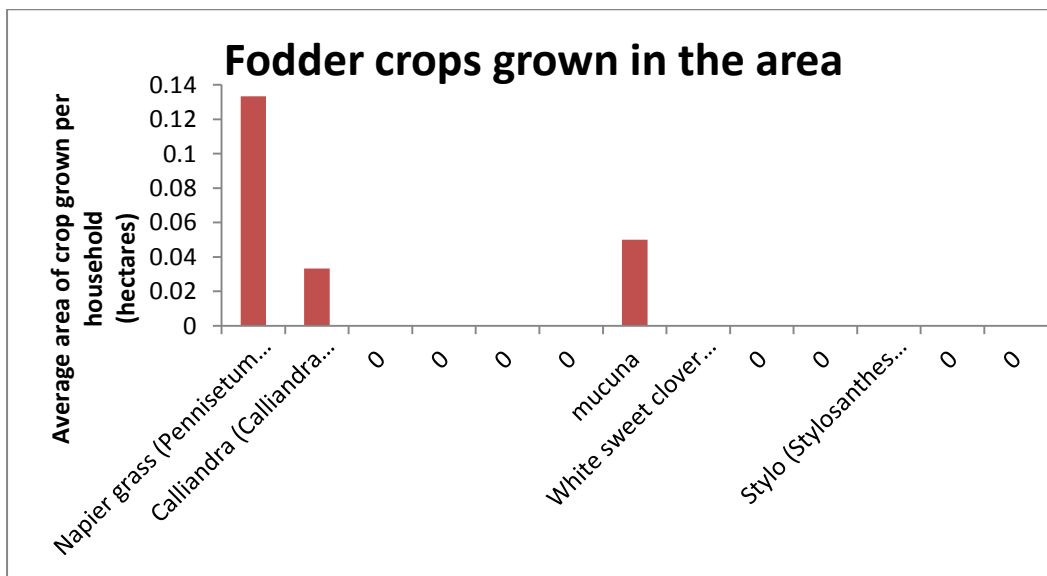


Figure 2: The average area of land utilised for the various fodder crops grown in Kigumba, Kiryandongo district

Table 1: Cropping seasons that occur in the area

Name of season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Long wet season(Itoigo)												
Short wet season (Ebyendkand)												
Dry season months												

Major income sources

Milk sales are the primary contributor to household income. An average of 80% of all household income comes from the sale of milk. Crops, mainly maize, beans, bananas, groundnuts and cassava make an important contribution of approximately 13% to household income. The contribution from off-farm activities such as business is considered relatively minor at 10% collectively for some households (Figure 3). The contribution of livestock sales varies substantially throughout the year based on climatic conditions. Sale of animals generally occurs in an ad-hoc manner when funds are required quickly or undesirable animals such as bull calves and unproductive old cows need to be culled.

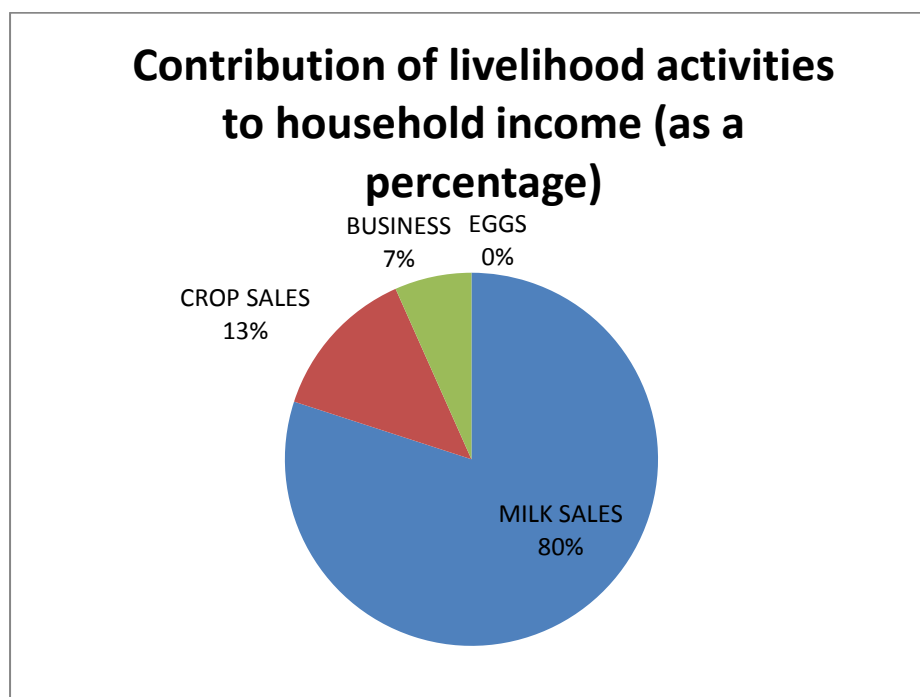


Figure 3: The primary contributors to household income in the area

Livestock production system

The production system is mainly extensive with 40% of the farmers practicing semi-intensive management. Improved dairy breeds, namely Friesians and a few Jerseys dominate livestock holdings as shown in Figure 4. Milk produced on the farm is sold by individuals or through milk collection centres to different middlemen at an average price of 600 Ugandan shilling (UGS), (0.2 USD; ranging from 500-800; 0.21-0.33 USD) per litre. The average milk production per cow per day in the area is 5 litres. Management of the cows varies with type of cattle. Goats are left to graze freely and returned home in the evenings. The common feeding strategies in the area include grazing, feeding chopped green fodder and or crop residues especially maize stover. Hay and silage is not a common technology among farmers.

Artificial Insemination (AI) services are available for all farmers in the area from Kiryandongo dairy farmer business associations (DFBAs) and it is not currently the preferred method of reproduction. Bull services are also available from individual farms at a cost of UGS 10,000 (4.3 USD) per successful service. The price of semen varies significantly and AI services cost UGS 30,000 – 40,000 (13-17 USD per service) per service. Farmers pay UGS 30,000 for any repeats.

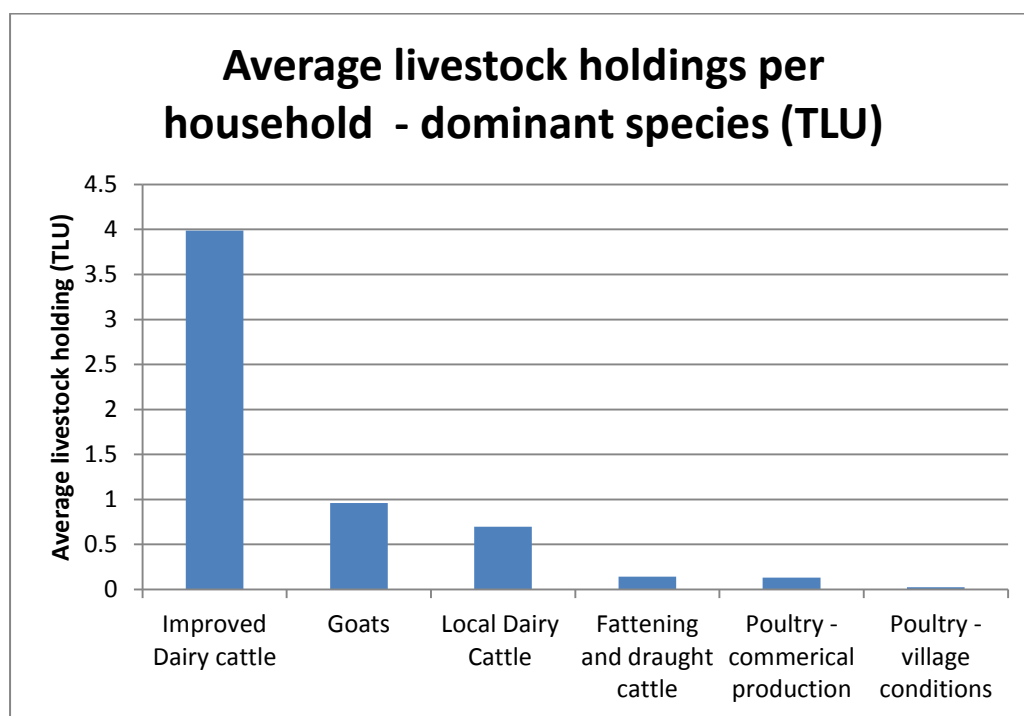


Figure 4: Average livestock holdings per household in Kiryandongo in Tropical Livestock Units (TLUs)

Major feed sources through the year

The common feed resources include: Natural pastures, Napier grass, crop residues, legumes and concentrates as shown in Figure 5. The contribution made by these feed sources to the diet varies throughout the year. During the main part of the wet season (April-June) and (September -November), green forages, legumes and grazing compose the largest part of the diet. During the dry season (January – March and July- August) crop residues are found in the diet in larger quantities. Grazing, purchased feeds, naturally occurring and collected feeds, cultivated fodder and crop residues

contribute the greatest proportion of the total ME (MJ/kg) and crude protein (CP; %) to the total diet on farms. Supplements such as maize bran and dairy meal can be purchased for 500 UGS (0.21 USD) per kg and 60,000 UGS shillings (24 USD) per 100 kg bag respectively.

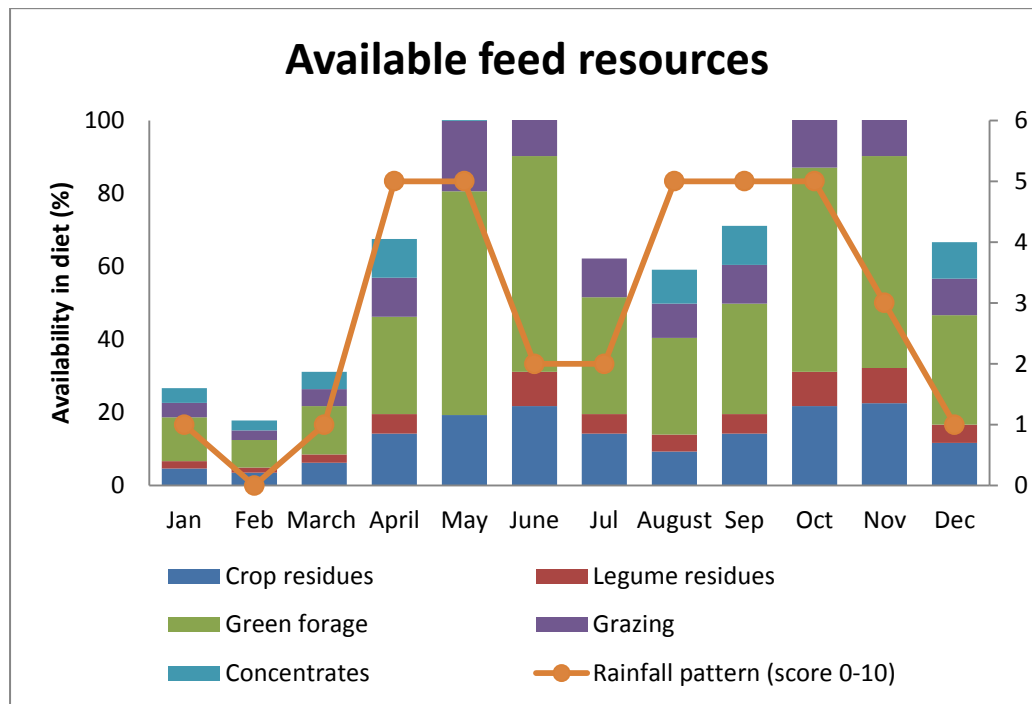


Figure 5: The dietary composition of cattle in Kigumba, Kiryandongo district Uganda throughout the year in relation to rainfall pattern.

Problems, issues and opportunities

According to farmers, the main constraint to production in this area is the lack of a forage pulverizer and pasture scarcity and water shortage. Pasture scarcity is partly due to insufficient forage seed needed for establishing high yielding forages. Animal diseases, especially tick borne diseases and lumpy skin disease are also important problems in the area. Water scarcity is very important problem especially in the dry season. Other problems include unavailability of animal health providers. Farmers also consider fluctuation of milk prices in the dry and wet season as a major problem to sustainable incomes. Farmers attribute price fluctuation to the monopoly of the milk processor in the area. A summary of problems and farmer proposed solutions are shown the (Table 2).

Table 2: Problems, issues and proposed farmer solutions within the production systems

Problem (in order of importance)	Main problem	Proposed farmer solutions
1	Water shortage in the dry season	<ul style="list-style-type: none"> • Construction of valley dams • Rain Water harvesting • Linkages with government water programmes
2	Lack of a feed processing equipment	<ul style="list-style-type: none"> - Help farmers contribute funds towards purchase of the equipment. - Link farmers to companies locally fabricating these equipment to acquire low cost machine.
3	Scarcity of pasture seed.	<ul style="list-style-type: none"> - Community seed multiplication centres - Linkages to seed companies for quality control. - Enhance network between farmers so that those who have e.g. demo farmers share with others
	Animal diseases and expensive drugs and equipment. Limited animal health services providers.	<ul style="list-style-type: none"> - Increase number of local drug shops - Increase number of service providers - Education on control of diseases and vaccinations - Introduce check-off for the drugs at the DFBA.
4	- Low milk prices	<ul style="list-style-type: none"> - Enhance collective bulking selling through the DFBA.

Potential interventions

One way of mitigating the effects of feed related constraints is to collaboratively work with the farmers through the DFBA to increase production of more feed biomass per hectare and linking them to fabricating companies to access a low cost pulveriser to be used on a communal ownership arrangement. To mitigate the effects of lack of forage seed, efforts will have to be made to engage in community seed production either through groups or interested people as a business. There is also an avenue of linking seed companies to the DFBA to supply seed in small packages that are affordable to farmers.

Fodder conservation technologies should be promoted as polythene bags or small scale silage pits may be viable options. Grazing forms a substantial amount of forage to households. Improving pasture quality can significantly increase DM available for feeding. Simple methods of improving pasture such as bush clearing, strip and circular sowing are viable options given that farmers own small portions of land. Since the maize growing is very dominant in the area, there need to exploit use of maize Stover more seriously.

Key issues

- Lack of pasture seeds leading to pasture scarcity.
- Lack of forage pulveriser to make use of crop residues during the dry season.
- Limited use of crop residues.
- High incidences of animal diseases caused by unavailability and high cost of drugs and vaccines.
- The price received for milk is low and variable throughout the year.

Ways forward

- Feedback workshop to design implementation strategy and action planning
- Support DFBA to operationalise implementation of activities
- Build capacity for DFBA extension workers to conduct and implement feed plans

- Enhance efficient concentrate feed delivery chains to farmers and train them on optimum concentrate usage.

Conclusion

Crop growing is the most important activity followed by milk production for subsistence and commercial purpose. Farm sizes in the area are an average size of 8 acres (3.2 ha) most of which is used for cropping. Every household has at least 3-8 milking cows and 5-10 goats. The primary crops of importance are cassava, maize and beans. The main constraints to the further intensification and development of dairying in the area are a lack of forage pulverizer to make use of crop residues especially in the dry season, pasture scarcity and water shortage and high incidence of diseases. Napier grass is the main type of fodder. Farmers keep both improved and Ankole cattle. Milk prices are generally unstable and vary throughout the year due to an oversupply in the wet season.