

Characterisation of the livestock production system and potential for enhancing productivity through improved feeding in Dairy Farmers Business Associations (DFBAs) in Jinja district of Uganda.

By: Jane Kugonza, Ronald Wabwire, Pius Lutakome, Ben Lukuyu and Josephine Kirui

East African Dairy Development Project (EADD)

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 Jinja 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 farms¹. 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 1.5 acres (0.6 ha) on average with most of the land being used for cropping. A typical household size is 6 people who live permanently on farm on average per year. Households in the area commonly grow a variety of food crops including; sugar cane (*Saccharum officinarum*), coffee (*Coffea arabica*), cassava (*Manihot esculenta*), sweet potatoes (*Ipomoea batatas*), groundnuts (*Arachis hypogea*) and maize (*Zea mays*). Farmers mostly grow Napier grass (*Pennisetum purpureum*) as the main basal forage crop. A few farmers grow fodder legumes such as *Lablab purpureus* and *Mucuna pruriens* as well as fodder shrubs mainly *Calliandra calothyrsus* and *Leucaena* spp. The average area of land used for production of food crops is shown in Figure 1.

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 and manure. On average most households have two or three milking cows. In addition, many households have 3-4 sheep and/or goats. Indigenous chickens are kept by households to meet household meat, egg and

¹ The very small number of respondents for questionnaires means that the figures in this report are only indicative and should not be considered an accurate reflection of quantitative aspects of the farming system. However, they are adequate to give a crude overall impression for the purposes of guiding thinking about constraints and interventions.

cash needs. The local zebu cattle commonly known as Nsoga is kept by more than 85% of households but they are not popular with farmers due to their low milk production capabilities. Improved cross bred cattle are kept by about 15% of the households. Cross breeds comprise mainly of Friesian, Jersey breeds with the local Nsoga 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 30,000 Uganda shillings per month. In addition to this wage workers are given meals, milk and some health care cover. This total price package is considered very expensive. Livestock oriented labour is mainly needed during the dry season while the crop oriented labour is required mainly required in the wet season. Labour is sometimes expensive especially when many rural people migrating to Kampala city to look for better paying jobs. Rainfall levels are generally adequate to support cropping activities; however, rainfall unreliability is increasingly becoming common (Table 1). Water is not a major constraint in the area and no large scale irrigation is carried out. However, during the dry season, there is water scarcity which significantly reduces milk production on farm.

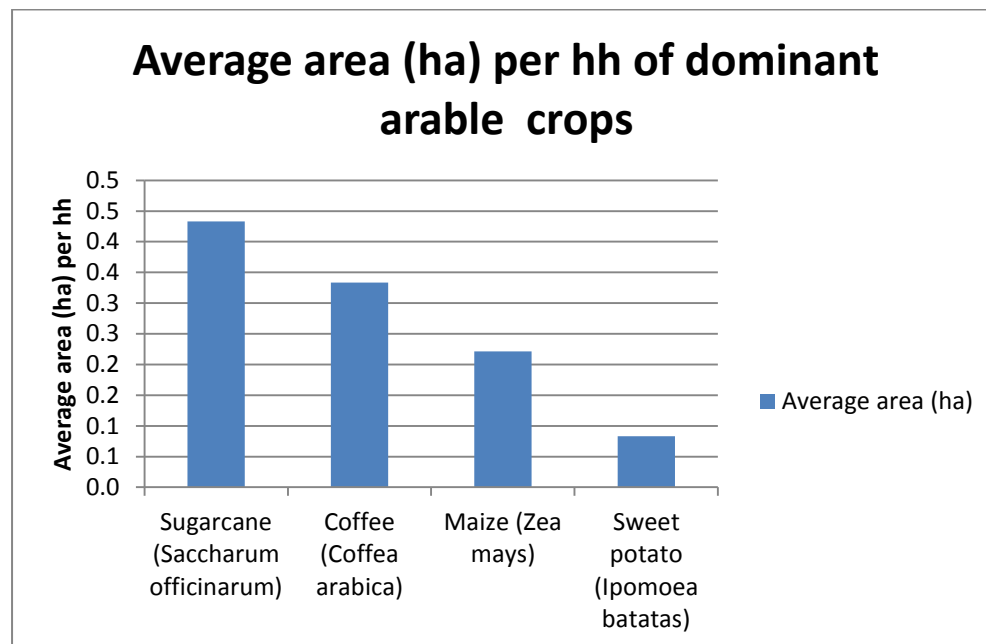


Figure 1: The average area of land utilised for the various food crops grown in Jinja district

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												
Short wet season												
Dry season months												

Major income sources

Farming is the primary contributor to household income. An average of 60% of all household income comes from the sale of livestock products particularly milk. Crops, mainly sugarcane, maize, beans, groundnuts and sweet potatoes also make a very important contribution to household income. The contribution from petty trading is considered relatively important at 31% collectively for some households (Figure 3). The rest of the income is sourced from the salaries and wages for some farmers who are employed. Income from farming activities is seasonal depending on the rainfall pattern. Income received from the regular sale of livestock is uncommon in the area. 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.

Livestock production system

The livestock production system is mainly semi-intensive ie stall feeding with some grazing (tethering). Improved dairy breeds, namely Friesian crosses and a few Jersey crosses dominate livestock holdings as shown in Figure 4. Milk produced on the farm is sold to the neighbouring areas at an average price of 800 Ugandan shilling (UGX), (0.26 USD; ranging from 800-1000; 0.33-0.43 USD) per litre. The average milk production per cow per day in the area is 8litres.

Indigenous local breeds are normally grazed while improved cows are confined and fed in cattle sheds throughout day and night. Generally households with larger land holdings tend to graze cows while those with smaller land holdings confine their cows in a small fenced area (sometimes with a cattle shed). Sheep and goats are normally tethered in homesteads and along the road side for grazing. The common feeding strategies in the area include grazing, feeding chopped green fodder and or crop residues especially maize stover, potato vines and rice straws. Less than 40% of the farmers use conserved feeds like Hay and silage.

Despite the presence of many agro-industrial facilities like breweries and sugar factories, farmers have not utilised the bi-products like molasses and brewers waste. This has been attributed to partly lack of knowledge but mainly due to price limitations and the fact that they are sold at source and in bulk.

Artificial Insemination (AI) services are readily accessible for all farmers in the area from the technicians attached to the DIGs and it is becoming an important method of reproduction. Bull services are also available from neighbours and the bull scheme is at a cost of UGS 20,000 (8 USD) per successful service. The price of semen varies significantly and AI services cost UGS 40,000 – 50,000 (17- 21USD per service) per service. Farmers pay UGS 35,000 for any repeats. Farmers consider this price expensive. They would like to be trained on heat detection to improve conception rates. Service providers use bull catalogues to decide which semen to give. The type and quality of semen is given to farmers depending on the provider's perception of the farmer's management capabilities.

The Animal Health Service Provider(CAHP) to farmer ratio is quite low leading to poor service delivery. The price of veterinary treatments depends largely on the nature of the problem. For example East Coast Fever (ECF) vaccination costs over 80,000UGX (33 USD) which is considered unaffordable to most farmers. Farmers vaccinate animals against common diseases such as

trypanosomosis, Contagious Bovine Pleural Pneumonia (CBPP), foot and mouth disease (FMD) and lumpy skin disease (LSD). Veterinary services are provided by private health technicians and government animal health workers. Farmers individually buy acaricide and spray animals themselves to control ticks.

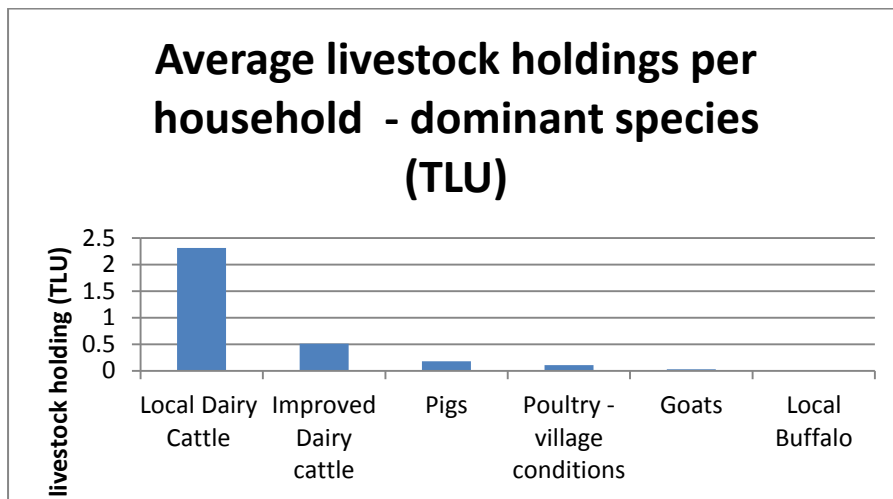


Figure 4: Average livestock holdings per household in Jinja in Tropical Livestock Units (TLUs)

Major feed sources through the year

The diet is primarily composed of bulk forages mainly Napier grass and crop residues 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 forage 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. Cultivated fodder and crop residues contribute 85 and 15% of the total diet on farms (Figure 6).

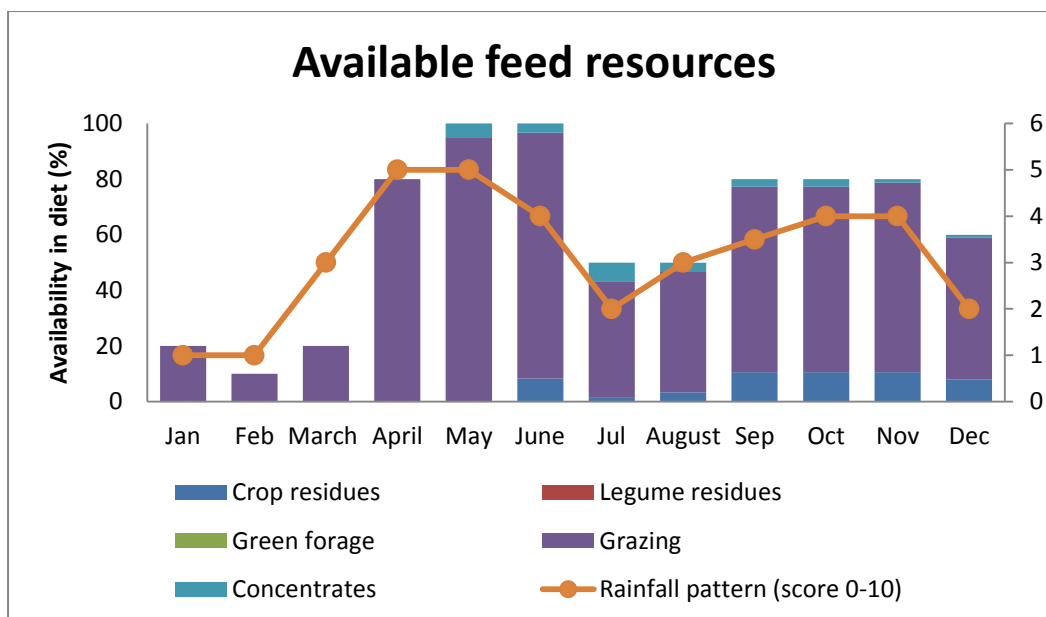


Figure 5: The dietary composition of cattle in Jinja district, Uganda throughout the year in relation to rainfall pattern.

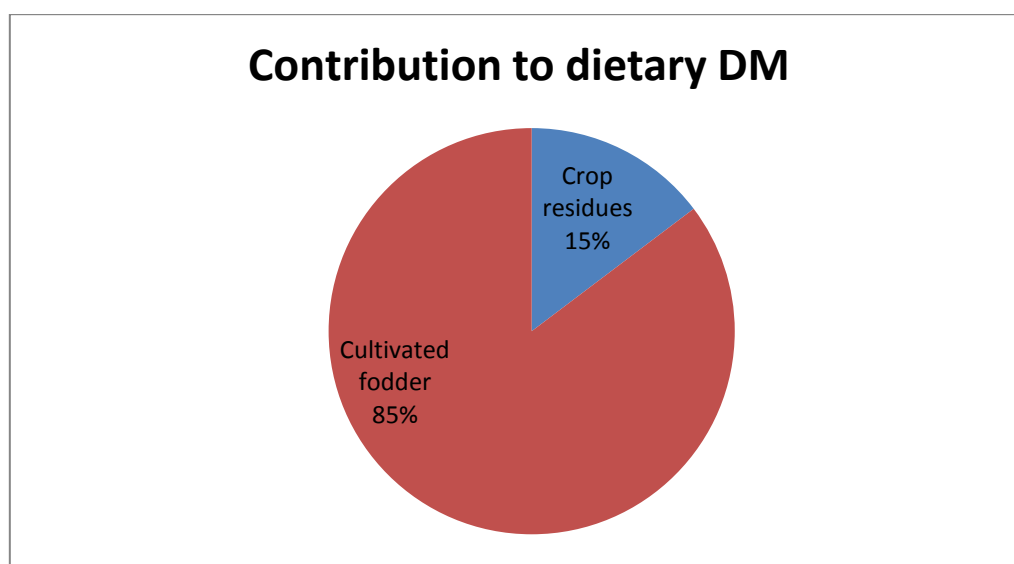


Figure 6: The contribution of dietary dry matter (DM) to the total diet on farm in the area.

Problems, issues and opportunities

The main constraint to production in this area is tick born diseases especially ECF. Limited sources of quality germplasm leading to insufficient forage options for the animals were ranked second most important. Water scarcity is the third most important problem especially in the dry season. Other constraints include limited number of animal health providers, fluctuation of milk prices in the dry and wet season. Farmers attribute price fluctuation to seasonality of feed resources among other factors. During glut, prices are relatively lower compared to dry season when milk volumes are low. Although not listed as a major problem concentrate feeds are considered to be unaffordable as

compared to cost of milk production. 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	Unavailability of forage pasture	<ul style="list-style-type: none"> - Link seed companies to farmers through DFBA - Enhance network between farmers so that those who have e.g. demo farmers share with others - Help farmers to start community seed production
2	Animal diseases and expensive drugs	<ul style="list-style-type: none"> - Increase number of local drug shops - Increase number of service providers - Education on control of diseases and vaccinations
3	Unavailability of water – especially in the dry season	<ul style="list-style-type: none"> - Education on water harvesting technologies such as valley dams, underground water tanks etc.
4	Limited animal health services. Farmer consider the causes as: <ul style="list-style-type: none"> - Farmers reluctance to pay for services - Service providers are overloaded with many cases hence slow in responding to cases - They are occupied with other personal tasks such as business. 	<ul style="list-style-type: none"> - Service provider should separate personal and animal health roles - Service provider should specialise in technical roles such as A.I., clinical and animal husbandry services rather than mixing them.

Potential interventions

One of the key interventions to address the effects of feed constraints is to increase acreage under the cultivation of fodder. Farmers consider that the main reason limiting this is limited sources of affordable and quality pasture seeds and prolonged dry period.

Improving pasture quality can significantly increase DM available for feeding. To ensure quality standards in forage production, there is need to link farmers/groups to seed companies and other producers with good quality seeds. There is also need to catalyse community seed production and marketing.

To mitigate the effects forage scarcity in the dry season, efforts will have to be made toward forage conservation techniques such as hay and silage making and onfarm ration formulation. The use of polythene bags or small scale silage pits may be viable options. This will help alleviate dry season feed shortages and enable farmers produce more milk during the dry season when milk prices are high hence to earn more money

The variation in price received for milk indicates an oversupply of fresh milk in the area compared to the available market, particularly during the wet season.

Green forage forms a substantial amount of the feed resource to households. Supplementation of the crop residues with concentrate feeding and practices such as chopping will enhance usage amongst farmers and improve milk production. However, as the price received per litre of milk is relatively low, the extra expense of additional concentrate feeds is unlikely to be off-set by the potential increases in milk yields that may be achieved with higher levels of concentrate feeding especially where the Dry Matter intake is low.

Establishing linkages between DFBA's and Kakira Sugar Company and Nile breweries for access to molasses and breweries wastes is inevitable. Distribution channels for these products should be in place to bring them closer to farmers.

To mitigate the high incidences of animal diseases attempts need to be made to increase the number of local drug shops, increase the number of service providers and enhance education on control of diseases and vaccinations. Again some of these are outside the scope of what farmers can change themselves and will need institutional interventions to solve them.

Key issues

- Inadequate forage biomass/feed for the animals.
- Limited sources of quality seeds/germplasm.
- Limited use of concentrate feed.
- Limited BDS linkages agro-inputs suppliers for molasses, feed processing machines, pasture seed, concentrates.

Way forward

1. Feedback workshop with DFBA's and stakeholders.
2. Develop a participatory implementation strategy for the recommended interventions including:
 - Initiate community based pasture seed production either through groups or interested people as a business.
 - Enhance training on simple silage making techniques on farms.
 - Enhance efficient supplementary feeding of especially milking animals.
 - Establish linkages for inputs especially seeds, molasses and breweries wastes.
 - Improve animal health service delivery amongst farmers.
3. Review implementation progress and document best practices.

Conclusion

Farming is the main contributor to household income in this subsistence based mixed/crop livestock system. Farm sizes in the area are an average size of 2.5 acres (1 ha) most of which is used for cropping. Every household has at least 2-3 milking cows and 2-3 goats. The primary crops of importance are sugar cane, coffee, maize, groundnuts, sweet potatoes and beans. The main constraint to the further intensification and development of dairying in the area is a scarcity of feed resources especially in the dry season. Napier grass provides the bulk of basal while Calliandra and lablab form the main stay of supplementary forages. Most farmers keep both local and improved

cattle. Milk prices are generally unstable and vary throughout the year due to an oversupply in the wet season.