

Characterisation of the livestock production system and potential for enhancing productivity through improved feeding in Nabitanga, Sembabule district, 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 livestock production system and in particular feed-related aspects in Nabitanga dairy farmers association (DFBA), in Sembabule district, Uganda. The assessment was carried out through structured group discussions and completion of short questionnaires by key farmers' representatives. The following are the findings of the assessment and conclusions for further action.

Farming system

Nabitanga is located in Sembabule district in the western part of Uganda. Households in this area are composed of approximately 8 (range 6-11) members and utilise on average 75 acres of pastoral land. Table 1 shows farmers perceptions about average land sizes for different categories of farmers.

Category of farmer	Range of land size	% of households that fall into the category
landless	0	0
Small farmer	1 to 20	12
Medium farmer	21 to 50	48
Large farmer	51 to 200	40

Figure 1: Average land sizes owned by different categories of farmers in Nabatanga, Sembabule, Uganda.

The production system is primarily pastoralist focused on livestock keeping with very few farmers growing food, mainly common beans (*Phaseolus vulgaris*), maize (*Zea mays*), and cassava (*Manihot esculenta*) as seen in Figure 2. All crops are grown during the wet season; however, rainfall patterns are becoming unpredictable and unreliable (Table 2). Crops are grown mainly for household food production.

Table 2: Cropping season that occur in the area

Name of season	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Long wet (Efumbi)												
Short wet (Ekyanda)												
Dry (Akanda)												

Milk production is an important means of regular income generation with most farmers possessing the Ankole type of indigenous cattle. These are also sold for meat to provide substantial income when the need arises and to pay dowries. A few farmers keep improved cross bred animals for increased milk production. Goats are also kept by some farmers for sale when funds are needed quickly.

Due to the large size of land holdings and herds, labour is generally required to herd cattle especially in the dry season when herds migrate to look for pasture. However management during migration has become easier since most herdsmen have mobile phones. Herding labour costs between 150,000 – 200,000 UGS (64-85 US\$) per month in addition to provision of food and 4-6 litres of milk daily. Manual labour to open an acre of land is more costly at 70,000-90,000 UGS (29-38 US\$). Factoring in daily provisions overall labour costs become very costly.

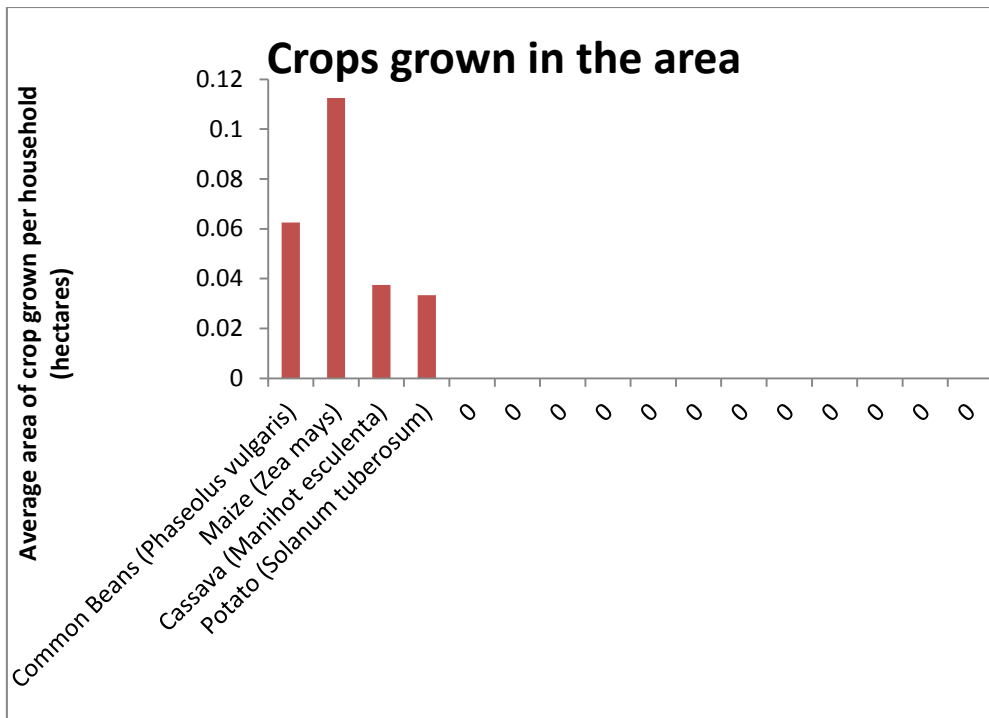


Figure 2: Crop varieties grown in Nabitanga, Sembabule, Uganda.

Major income sources

The main contributor to income is milk sales (70%) (Figure 3). Milk is important because most households in this area own cattle. Crop and livestock sales contribute approximately 25% to household income.

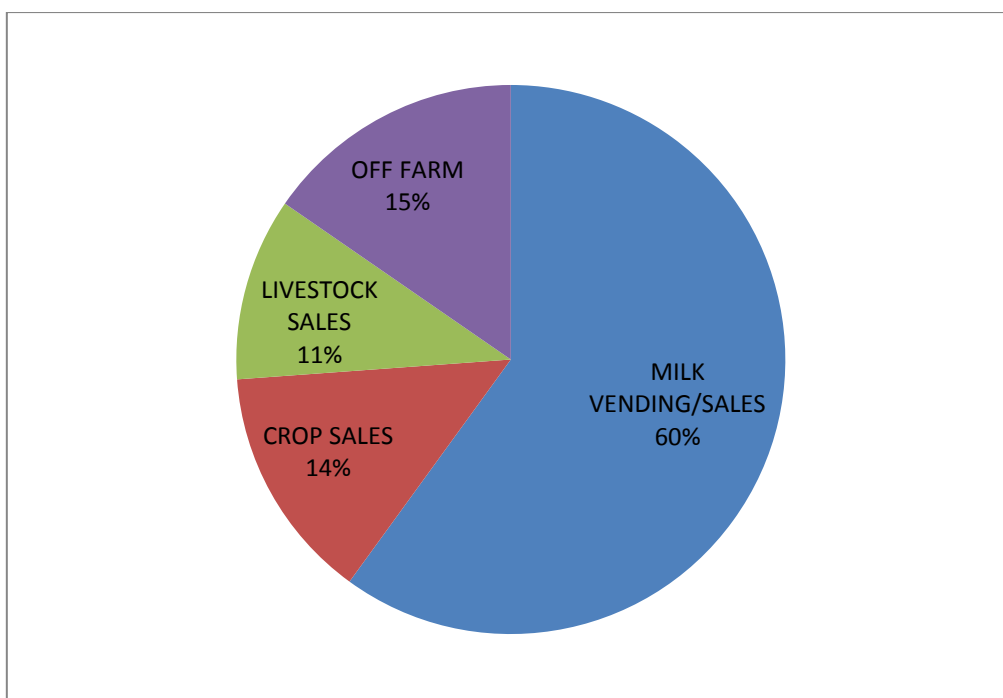


Figure 3: Contribution (%) of livelihood activities to household income

Livestock production system

Cattle are the most important livestock species in this system as they provide milk, meat and cash income to the households (Figure 4). Local indigenous breeds are overwhelmingly the most important in this area kept by approximately 81% of all households.

At present, approximately 25% of the farmers keep improved cattle. Approximately 10% of farmers fatten bulls for steers. All cows (predominately indigenous breeds) are milked regularly during lactation. The average milk production per cow per day is 2.5 litres. The resultant milk is then sold to Nabitanga Dairy Farmer Association (DFBA) and also sold in the local market for an average of 400 UGS (0.17 US\$) per litre throughout the year (range 300-500 UGS/litre (0.13-0.21 US\$)).

Management of livestock species

Crossbred and improved cows are kept and managed separately. Both classes of cattle are grazed throughout the day and confined in kraals overnight. However improved cattle are often grazed on improved pastures while local cattle are allowed to search for pasture in the thickets of trees and shrubs. Improved cattle may be supplemented with additional forage or supplements overnight.

Most farmers access animal health services through check off at the DFBA through the use of contracted Community Animal Health Providers (CAHPs). This is so because the services of both private and government health providers are costly to most farmers. For example treating East Coast Fever (ECF) costs farmers 40,000-60,000 per dose. In most cases farmers buy drugs and administer to the animals by themselves. However, this has great risks as these farmers are not trained and therefore they may end up either over dosing or under dosing animals which is risky.

Artificial Insemination (A.I.) is scanty in Nabitanga just like other pastoral areas. A.I. charges are variable depending on distance and type of practitioner. Nabitanga DFBA charges UGS 40,000 (17 US\$) per service per cow and the same again for repeat services. This includes UGX 10,000, 5,000, and 5,000 for straw, liquid nitrogen and disposable items cost respectively plus UGS 10,000 and 10,000 for labour and transport charges respectively. Most farmers use their own local bull service. However, those who do not have bulls pay USH15,000 (6 US\$) per service. AI adoption is still a challenge in this area, due to the fact that this a pastoral community where animals are grazed communally.

At present cattle prices vary with season increasing during the wet season (700,000 – 800,000 UGS (292-333 US\$) per head) and dropping drastically in the dry season (250,000 – 300,000 UGS (104-125 US\$) per head) during the dry season. Sheep and goat prices tend to remain the same throughout the year ranging 50,000 – 60,000 UGS (21-25 US\$) per head.

Major feed sources through the year

Grazing contributes the largest proportion of the feed base on a dry matter (DM) basis in the area and consequently metabolisable energy (ME) and crude protein (CP). Purchased feed

and naturally occurring feeds are also important. Maize stover is overwhelmingly the most import purchased feed resource in the area.

Grazing is the primary component of the feed base within this area throughout most of the year. However, grazing drastically reduces during the dry season in January – February when crop residues are plentiful compared to grazing as shown in Figure 6. However, after April the quantity of residues are proportionally smaller than grazing but are still present for most of the year. Farmers also purchase small amounts of concentrate feeds throughout the year. Concentrate contains predominately wheat bran. Concentrate feeding tends to be targeted toward improved breeds with higher amounts available during the wet than dry season.

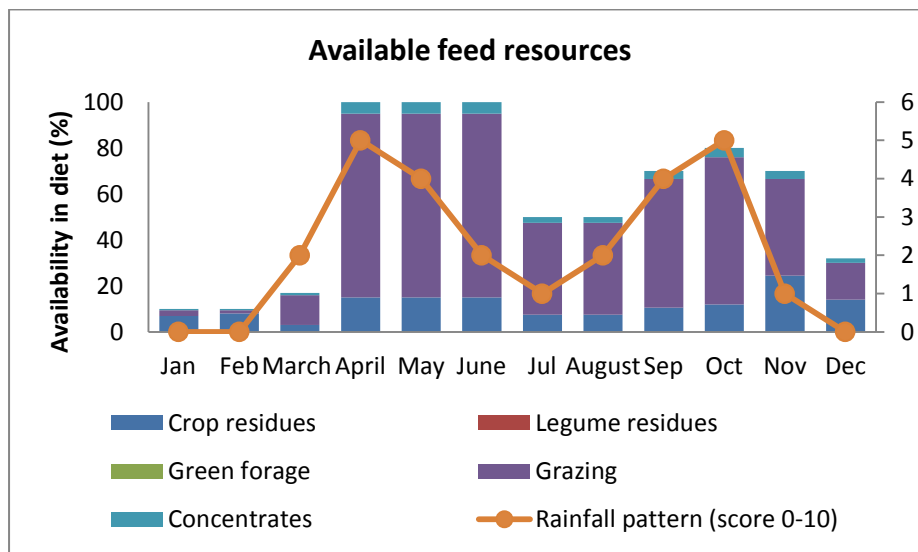


Figure 1: Available feed sources utilised by farmers throughout the year.

Problems, issues and opportunities

The main issues faced by farmers are lack of water especially during the dry season and the bush encroachment problem on grazing pastures. The expansive pastoral system does not have adequate water dams and these are located long distances from most households. Poor use and drainage has compromised water quality (Photo 1). This system relies heavily on grazing and collected feedstuffs such as agro by products as a source of feed. With migration as a result of severe drought within the area, the quantity of collected feeds available each year is decreasing as cropping decreases. The encroachment of bush on grazing pasture has drastically reduced biomass production from grazing lands and this has led to overgrazing. This is aggravated by presence of termites on grazing lands reducing grazing areas even further.

There is an emerging trend in purchasing forage especially crop residues. However, there is no attempt by some farmers to improve the quality of the crop residues. A lack of improved dairy breeds is also a clear constraint to the further development of milk production within the area. Artificial Insemination (AI) services will help disseminate improved genetics;

however, the service is not reliable within the area and is costly to farmers. Other animal health related issues include the prevalence of tick borne diseases.

Potential interventions

The combination of shrinking grazing lands and reduced availability of collected feeds as well as lack of cereal crop residues put the farmers in this area in a difficult position in terms of increasing their productive output as there are very few on-farm options available to them. To alleviate feed constraints it will be necessary for farmers to produce more feed biomass per hectare from grazing. Improved biomass production from grazing can be facilitated through the use of simple pasture improvement technologies such as bush clearing and using over sowing strategies e.g. strip and circular sowing. Integrated termite control strategies will also mitigate the issue of decreasing grazeable area.

Farmers also have the option to purchase larger quantities of concentrate but this will significantly increase the cost of production. Enhancing pasture quality through collective action is a promising option. However, increased milk production will also be required to offset the increased cost of production. Therefore, it will be imperative that an integrated approach is taken and efforts are also made to upgrade existing cattle breeds through improved access to AI services.

Key issues

- Lack of water especially during the dry season
- Termite infestation
- Bush problem leading to decreased grazing pastures
- Lack of feed sources, both in terms of quantity and quality
- Poor milk yields
- Lack of access to AI services and improved dairy cattle breeds

Ways forward

- Introduce strategies to improve pasture through collective action
- Enhance arrangements for purchase of fodder from urban fodder producers
- Commercial hay production
- Improve AI services

Conclusion

This area is predominately extensive characterised by pastoralism with mainly the indigenous type of livestock. At present, milk and livestock sales are the primary agricultural contributors to household income. Cattle are the most important livestock species. The area is currently experiencing feed shortages and farmers are looking into other options such as purchasing feed. Improved milk production is constrained by a lack of feed sources (both in terms of quality and quantity) and access to improved dairy breeds. To mitigate these constraints farmers (and other stakeholders) will be required to take an integrated approach to improve feed production through pasture improvement strategies, importing feed and improving access to AI facilities to ensure farmers can rapidly upgrade the genetic merit of their cattle holdings.