Characterisation of the livestock production system and potential for enhancing productivity through improved feeding in Kijunjubwa, Masindi 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 livestock production system and in particular feed-related aspects in Kijunjubwa dairy farmers association (DFBA) of Kijunjubwa, Masindi 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

Households in this area are composed of approximately 7 (range 6-11) members and utilise on average 35 acres of pastoral land per household. Table 1 shows farmers perceptions about average land sizes for different categories of farmers.

<table>
<thead>
<tr>
<th>Category of farmer</th>
<th>Range of land size</th>
<th>% of households that fall into the category</th>
</tr>
</thead>
<tbody>
<tr>
<td>landless</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Small farmer</td>
<td>1 to 8</td>
<td>30</td>
</tr>
<tr>
<td>Medium farmer</td>
<td>8.1 to 20</td>
<td>34</td>
</tr>
<tr>
<td>Large farmer</td>
<td>21 to 200</td>
<td>36</td>
</tr>
</tbody>
</table>

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

The production system is primarily pastoralist focused on livestock keeping with very few farmers growing food crops, mainly cassava (Manihot esculenta). Other crops are grown in
insignificant quantities while the most of the food is bought mainly for household consumption. It is also important to note that milk forms the major diet of the people in this area. Rainfall patterns are becoming unpredictable and unreliable (Table 2). Crops are mainly grown for subsistence.

### Table 2: Cropping season that occur in the area

<table>
<thead>
<tr>
<th>Name of season</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>April</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long wet (Itumba)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Short wet (Ekyanda)</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Dry (Akanda)</td>
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<td></td>
</tr>
</tbody>
</table>

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. Some 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. Herding labour costs between 80000 – 100000 UGX (35-46 US$) per month in addition to provision of food and 2-3 litres of milk daily. Manual labour to open an acre of land is more costly at 40,000 – 50,000 UGX (17-22 US$). Factoring in daily provisions overall labour costs become very costly.

![Crops grown in the area](image)

**Figure 2: Crop varieties grown in Kijujubwa, Masindi, Uganda.**
Major income sources
The main contributor to income is milk sales (60%) (Figure 3). Milk is important because most households in this area own cattle. Livestock sales contribute approximately 40% to household income.

![Figure 3: Contribution (%) of livelihood activities to household income](image)

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 breed are most dominant type of cattle in this area kept by approximately 80% of all households. However, the area is experiencing a transitional period with many farmers attempting to improve milk production. At present, approximately 30% of the farmers keep improved cattle. The average milk production per cow per day is 2 litres. The resultant milk is then sold to Kijunjubwa Dairy cooperative for an average of 300 UGX (0.16 US$) per litre throughout the year (range 300-450 UGX/litre (0.13-0.19 US$)).
Management of livestock species

Both local and cross breeds are grazed throughout the day and confined in cattle 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. Cattle tend to move longer distances during the dry season than the wet season.

Private and government veterinarians are the most important animal health providers available to farmers in the area. 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. Most farmers use their own local bull service since almost everyone has a bull. AI adoption is still a challenge in this area, due to the fact that this is a pastoral community where animals are grazed communally.

At present cattle prices vary with season increasing during the wet season (800,000 – 1,000,000 UGS (345-435 US$) per head) and dropping drastically in the dry season (400,000 – 500,000 UGS (130-217 US$) per head) during the dry season. Sheep and goat prices tend to remain the same throughout the year ranging 80,000 – 100,000 UGS (35-45 US$) per head.

Major feed sources through the year
Grazing on naturally occurring pastures 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). However, grazing drastically reduces during the dry season in January –

Figure 4: Average livestock holdings per household in Tropical Livestock Units (TLU)
February. Purchased feeds and crop residues are of little importance in this farming system. No purchased feed resources are utilized even for the improved breeds of cattle.

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

**Problems, issues and opportunities**
The main issues faced by farmers are scarcity of water especially during the prolonged dry season and the bush encroachment particularly Lantana reducing the on grazing area. The expansive pastoral system does not have adequate water dams and these are located long distances from most households. The encroachment of bush on grazing pasture has drastically reduced biomass production in grazing lands leading to overgrazing. Termites are also a major problem of economic importance. 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 low grade animals, shrinking grazing lands and water scarcity put the farmers in this area in a difficult position in terms of increasing their milk productivity. Improved biomass production from grazing is inevitable and can be facilitated through the use of natural pasture improvement. Farmers also have the option to purchase and utilize crop residues and concentrates. 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. Promotion of and Integrated Termite Management and water harvesting technologies will be required during the dry season.

**Key issues**
- Scarcity of water especially during the prolonged dry season
- Bushes and thickets especially Lantana leading to decreased grazing pastures
- Lack of forage seed suppliers
- Termites infestation in grazing areas.
- Poor milk yields couple with low prices per litre
- Expensive AI services and lack improved dairy cattle breeds

**Ways forward**
1. Conduct a feedback workshop with the DFBAS
2. Support the DFBAS to development implementation strategies such as:
   - Introduce strategies for natural pasture improvement
   - Linkage with input suppliers for seed and feed.
   - Construct community dams
   - Devise ways of importing crop residues and feed concentrates.
   - Improve AI services

**Conclusion**
This area being a predominantly a pastoral livestock production system, cattle are the most important livestock species and milk and livestock sales are the primary agricultural contributors to household income. Given the fact that farmers are willing to change the farming practices, there need to scale up the recommended interventions to boost milk productivity. The area experiences feed shortages especially during the prolonged dry season and this can be countered by commercial hay production taking advantage of the expensive land holdings. Hay market will not be limited to Kijunjubwa but to neighbouring DFBAs like Bulyasajo, Pakanyi and Kiryandongo. Water solutions can be achieved through lobbying prioritisation through parish develops committees with funds from local government.