

# **Characterization of the livestock production system and the potential for enhancing productivity through improved feeding in Atongoko-Woromite village, Lira District, Uganda**

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## Methodology

The Feed Assessment Tool (FEAST) was used in the combined villages of Atongoko and Woromite of Barr sub-county, Lira district, to assess livestock production and local feed resources. For ease of reference, the name of Woromite is used to represent the two villages. A focus group discussion (FGD) involving 16 pig farmers (8 female, 8 male) was held on February 17, 2015. A total of 24 pig farmers, including the 16 farmers who participated in the FGD, were then interviewed individually. The key highlights of the assessment are categorized into farming systems, management of livestock species and constraints and opportunities within the system, as discussed below.

## Results and discussion

### Income sources

Figure 1 shows that the main income source for the households in Woromite is agriculture, closely followed by livestock, thus depicting a typical rural situation. A small proportion of household income is derived from wage labour, while business accounted for the smallest proportion. Respondents reported informal credit as the main source for financing livestock and/or cropping activities, with only small numbers of instances of formal credit. Over 80% of local farmers said they have access to credit and 94% of the members who participated in the FGD tried to get credit in the last two years. Lack of acceptable collateral was cited as hindering the acquisition of credit from the formal sector. Most household members participate in village savings and loan associations from where they borrow money to finance their agricultural activities.

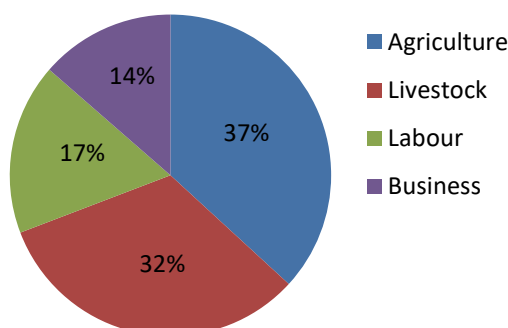


Figure 1: Income sources for households in Woromite

### Farming systems

Most households in these villages are smallholder farmers, with an average landholding of 0.81 ha (ranging from 0.2-3.2 ha). The average household size is six people but ranges from three to 10 members. Most households use the customary land tenure system of inheritance from their predecessors, while others own land bought locally under the witness of the local council authorities, but without secure title. The farmers were not able to cite examples of households who own land with title deeds.

Cultivated land is not common in the area and it is decreasing over time due to population pressures. Intercropping is the major cropping system in the area. Because of the limited land area for cultivation, land fallowing is not common. On average, 90% of land in the area is used for subsistence farming and 10% for cash crop production, while no land is allocated for fodder production.

Farmers access labour within their family and at times they hire from other community members. Hired labourers for garden work are paid UGX 3,000-4,000/day (USD 1.1-1.4), commonly referred to as 'katala'. There is no gender wage difference although certain activities such as harvest of rice and millet are done by women.

Table 1 shows the livestock types kept, the proportion of households keeping each type and their primary uses. Livestock of almost all types are kept for income generation and consumption, in addition to other cultural and customary roles like marriage and social events. Every household keeps poultry under typical village conditions, while about 80% keep goats. There are a greater number of households who keep fattening cattle compared to local dairy cows.

Table 1. Types, uses and ownership of livestock in Woromite village

Livestock type	Primary uses	% of households owning type	The average number of animals/household
Local dairy cows	Milk, meat	30	2
Draught/Fattening cattle	Cultivation, sale	70	2
Goats	Meat, marriage	80	4
Pigs	Income	40	2
Poultry (village)	Meat, income	100	10

## Cropping seasons and crops grown

Crops commonly grown for subsistence and cash income are cassava (*Manihot esculenta*), maize (*Zea mays*), finger millet (*Eleusine coracana*), broad bean (*Vicia faba*) and pigeonpea (*Cajanus cajan*) as shown in Figure 2.

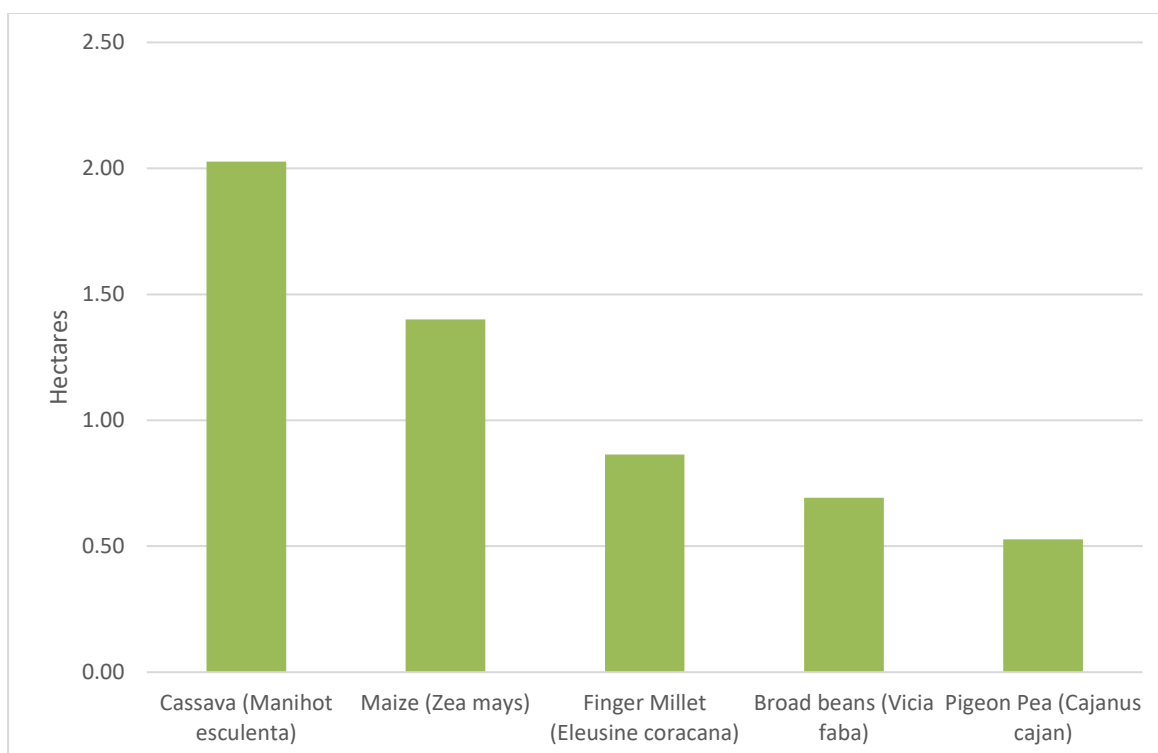


Figure 2: Average land area occupied by dominant arable crops in Woromite

The cropping seasons in Woromite are closely linked to rainfall patterns. The first rainy season is in April and May. The second cropping season occurs from August to November. Moderate rainfall was reported during the months of March, July and October while the months of January, February, June and December receive little or no rain (Table 2). About 30% of households reported using irrigation to support crops grown during the dry season in wet land. Green vegetables, beans, maize and sweet potato grow in wetlands and water is provided to maintain moisture. Water is available to households throughout the year, with boreholes and spring wells being the major sources within a radius of 300 to 500 meters.

Table 2. Cropping seasons in Woromite village

Season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainy seasons												
Dry season												

### Livestock management

In terms of tropical livestock units (TLU), the dominant kinds of livestock kept by farmers in Woromite include fattening and draught cattle (0.8 TLU/household), local dairy cattle (0.3 TLU/household), goats (0.1 TLU/household), pigs and poultry (Figure 3). Pigs do not occupy a central position among livestock kept in Woromite village.

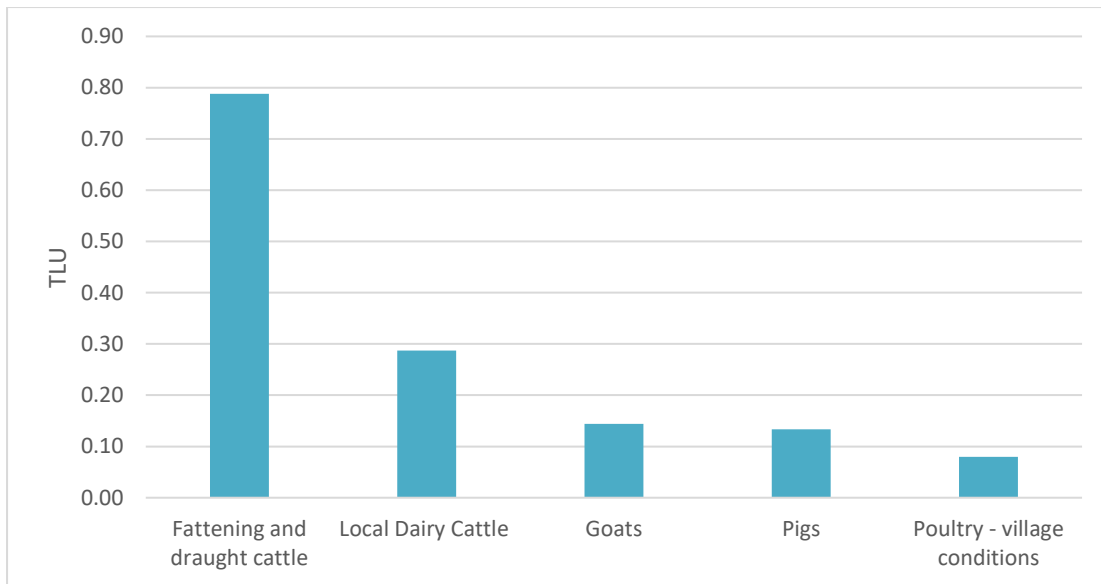


Figure 3: Average livestock holdings per household in Woromite village in tropical livestock units

### Classification of pig farmers

According to participants in the FGD, pig farmers in the area fall into three categories: small, medium and large farmers, owning 1, 2 and >2 pigs, respectively. Almost half of households own one hectare of land, 38% of households own two hectares and only 18% are large-scale, owning more than two hectares (Figure 4).

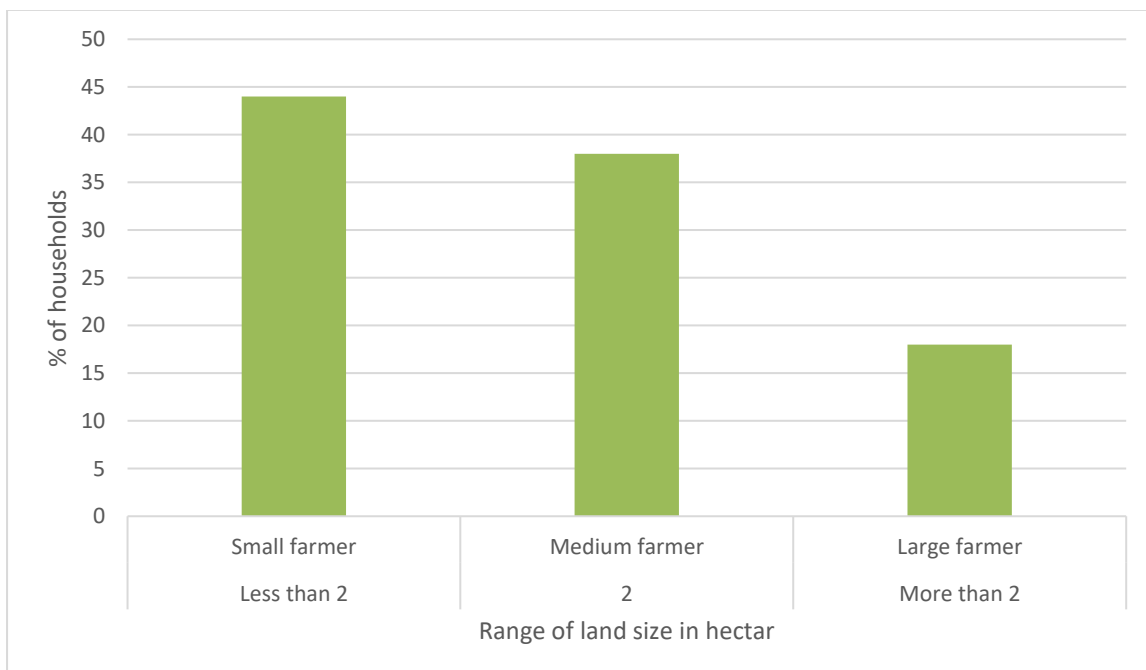


Figure 4: Average land size owned by different categories of pig farmers in Woromite village

Pig production management in Woromite is of mixed semi-intensive and extensive systems. The pigs are usually tied under trees or around the huts during the rainy season and are left to scavenge during the dry seasons. The animal houses used are made of locally available materials. Farmers combine stall feeding and tethering using feeding troughs made of plastic and wood. Plastic troughs were used more in the tethering system while wooden ones were used in the intensive system. Pigs generally graze around the homesteads, under observation. Concentrates are fed to animals using troughs, whereas forages were left on the ground.

No farmer reported the use of commercially mixed concentrates. Seasonal differences were noted in the types of feeds used, with homemade concentrates being used mostly in the dry season and forages fed during the rainy season. The common types of health-related problems faced by the pig farmers of Woromite are animal diseases and worm infestation. They get veterinary services from local untrained practitioners and trained veterinarians who come from Lira town, about 10 km away to carry out de-worming, castration and nose notching. Some farmers keep boars in their farms for breeding services, but the majority tend to borrow or hire boar service from fellow farmers, while at times the sows/gilts get served by boars that may be roaming during the dry season. In the case of a hired boar, payment is made in terms of a piglet or equivalent amount of money when there is successful farrowing and weaning.

### **Feed availability**

Figure 5 shows the availability of feed resources and rainfall over an average year. Rainfall was estimated by farmers on a scale of 1-10 where 10 is abundant and 1 is very scarce. Similarly feed availability was estimated by farmers on a scale of 10-100 where 100 corresponds to abundant feed available and 10 denotes very little feed. Feed availability is strongly associated with season. Concentrate feeds, especially maize bran and gluten are more available during the months of July, August and September that correspond to the second cropping season. However, concentrate feeding is limited and most farmers use collected green fodder and crop residues to feed to their pigs.

The relatively low feed availability observed during the months of January and February is because of the dry spell that significantly reduces the availability of green forages. The low availability of feeds noticeable in June is probably attributed to the scarcity of human food that directly affects the amount of swill (leftover food) available from school, household and hotels. Despite the heavy rainfall in the months of April and May, this period is characterized by relatively low feed availability as farmers tether their pigs to minimize damage to crops.

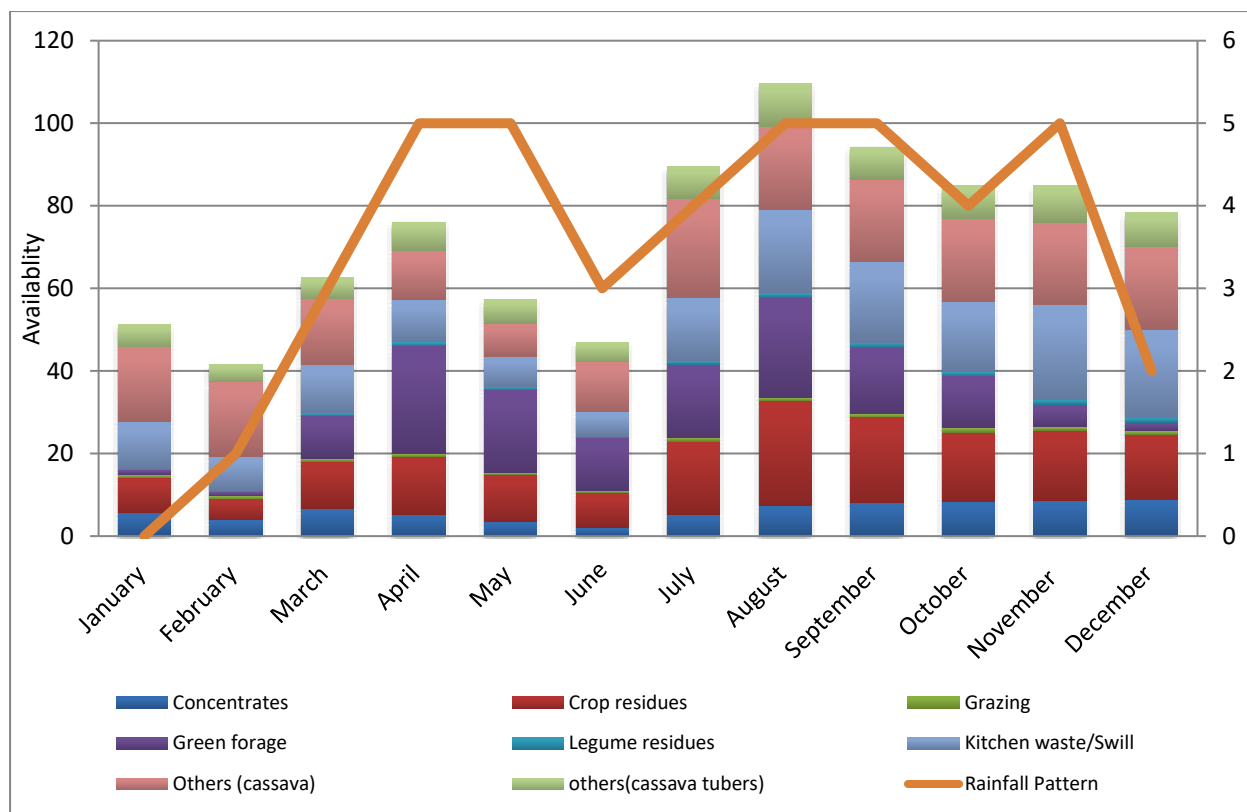


Figure 5: Availability of feed resources and rainfall during the year in Woromite

### Livestock dietary composition

In terms of total dry matter intake, grazing, collected natural pasture and purchased feeds contribute the largest proportions. Purchased feed contributes the highest intake of metabolisable energy and crude protein, followed by collected fodder (Figure 6). Maize bran, maize residue and fish meal are the most important ingredients of purchased feed (Figure 7).



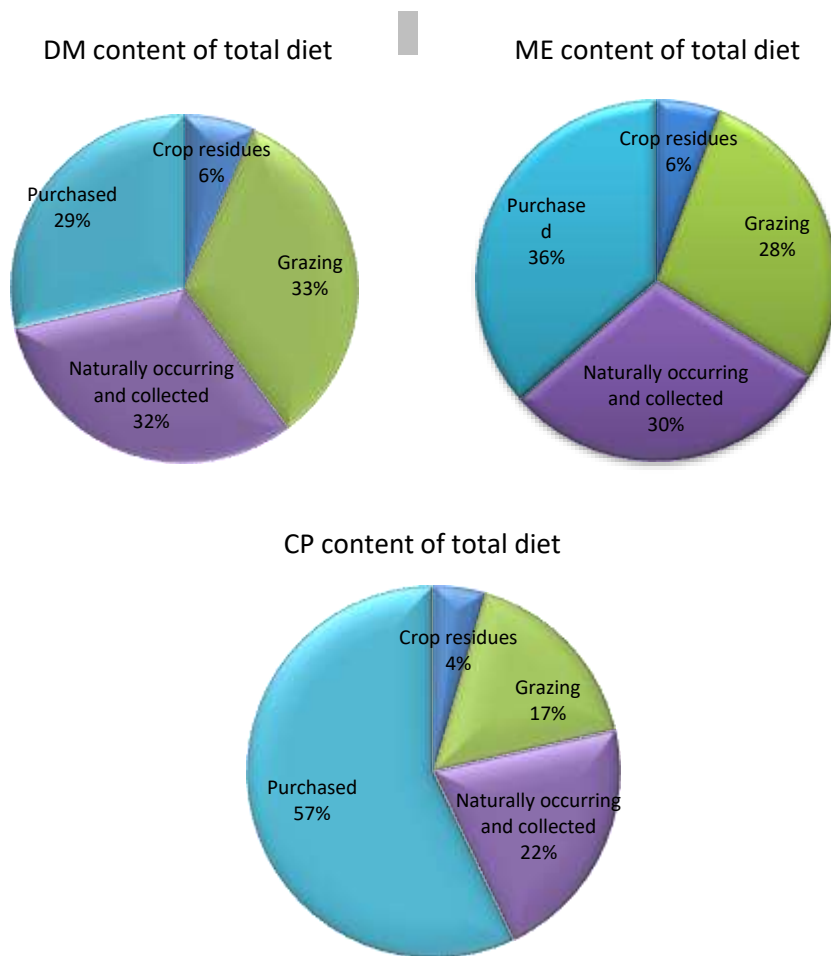


Figure 6: Contribution of different feeds to the total diet of pigs in Woromite Village. Dry matter (DM), metabolisable energy (ME) and crude protein (CP)

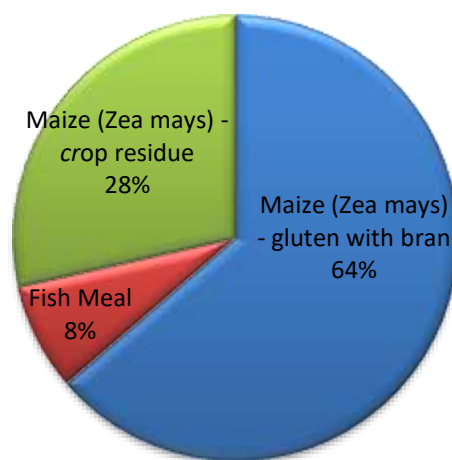


Figure 7: Quantities of feed purchased over the last 12 months in Woromite village

## Key challenges and suggested interventions

The constraints that the farmers identified in livestock production, as well as potential solutions, are summarized in Table 3 below. The constraint associated with animal feeds was ranked third. It was not surprising that farmers did not recognize feed as a big constraint because they practice a free-range system of management throughout the dry season, a period when there would be scarcity of feeds. Diseases, therefore, represented the highest-priority problem, given the free-range system of pig rearing.

Table 3. Ranking of challenges and suggested interventions in Woromite village

Rank	Challenges	Suggested interventions
1	High prevalence of African swine fever	• Train farmers on biosecurity measures against the spread of African swine fever
2	Inadequate market information and lack of farmer capacity to negotiate a better price for their pigs	• Orientate pig farmers toward working in groups for collective marketing
3	Inadequate feeds	• Train farmers to make use of the available feed resources
4	Inadequate knowledge of pig husbandry and management	• Train farmers on pig husbandry and management practices
5	Poor pig breeds and breeding services	• Train farmers on pig quality parameters

Farmers mentioned that disease outbreaks, especially of African swine fever, are very devastating to pig production. This calls for the training of farmers on general pig husbandry practices and biosecurity measure against the spread of this disease.

The constraints associated with poor quality and inadequate feedstuff during periods of the year should be handled through training farmers to make use of locally-available feed resources. Training should also tackle issues associated with feed formulation to come up with a balanced diet for various pig categories, and with feed preservation and storage.

Farmers should be orientated toward collective marketing through the formation of pig farmer groups and associations to strengthen their bargaining power.

## Conclusions

Farmers identified animal diseases as the first constraint to livestock production. Given the fact that a large proportion of households in Woromite derive their livelihoods from livestock production (after agriculture), the problems identified by farmers should be prioritized and addressed adequately. Pig farmers should be trained on how to deal with African swine fever by adopting a pragmatic approach of disease control and prevention. They should be made aware that housing of pigs plays a big role in controlling disease outbreaks. As for feeds, farmers should be trained on the identification of locally-available feed resources and how to mix such feedstuffs to come up with balanced animal diets that are economical but able to meet the dietary needs of the animals. Training on group dynamics and collective bargaining should be integrated into the farmer training to address the challenges of marketing.