# Characterization of Livestock Production Systems and Potential for Enhancing Productivity through Improved Feeding in Kibanjwa Village, Uganda

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## Methodology

The feed assessment tool (FEAST) was used to characterize the feed-related aspects of the livestock system in Kibanjwa village, Budaka parish, Kitoba sub-county, Hoima district. It is located about 14 km northwest of Hoima town along the Hoima-Kaiso road.

The assessment was carried out through a focus group discussion (FGD) with 13 farmers (four female, nine male) and then a total of 18 farmers were selected at random from the list of all pig farmers and interviewed individually. The exercise was carried out from January to February 2015. The following are the findings of the assessment for further planning and action.

## Results and discussions

### Farming system

The farming system in Kibanjwa village is typically subsistence mixed cropping and livestock. Farmland holdings are broadly grouped into small (<0.4 ha), medium (0.4-0.8 ha) and large (>0.8 ha). More than 80% of the households have small farm holdings (Figure 1). The average household size is about eight members who live in the home permanently.

Land ownership in Kibanjwa is divided into two categories:

- **Family land:** people live on their parents' land and the parents share their land among the children. Under this ownership people own small pieces of land, typically 0.4-1 ha.
- **Bought land:** some farmers have bought land from others and have established their homesteads and farms without land titles.

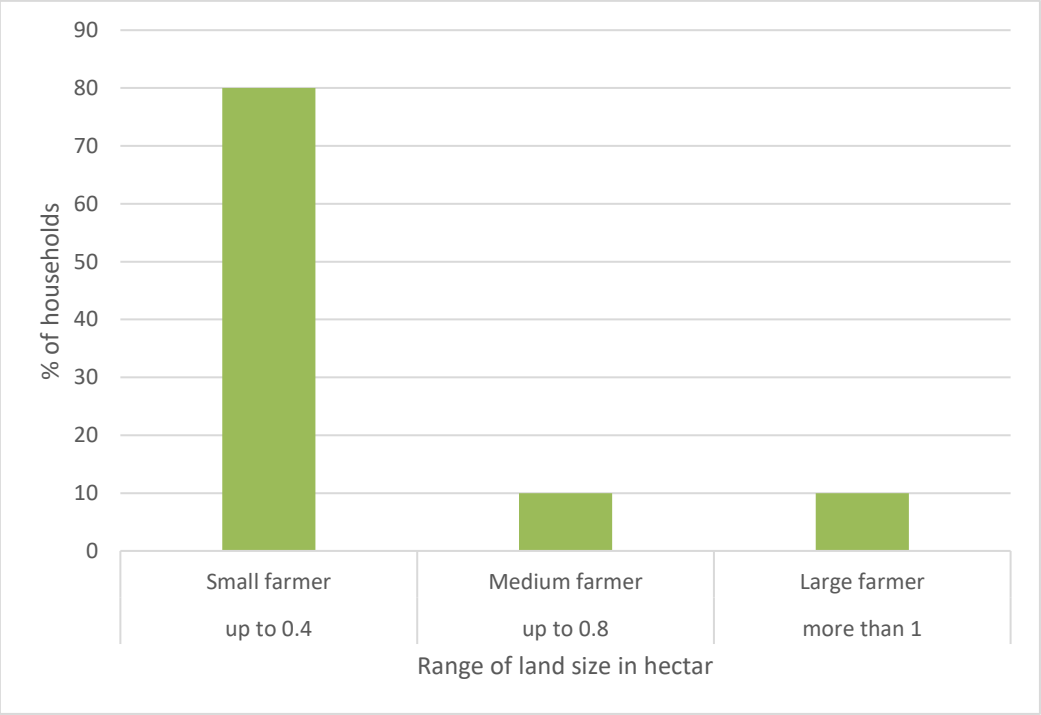


Figure 1: Percentage of households in different farm sizes in Kibanjwa village

### Irrigation and crops grown

### Food and cash crops

About 80% of households can access irrigation, used for cabbage, tomato and passion fruit. The major crops grown in the village include cassava, groundnut and rice (Figure 2). Other crops include common bean, sweet potato, maize, finger millet, cowpea, pigeonpea, green pepper and banana. Groundnut, common bean, rice and maize are cash crops grown for sale. The largest areas of land are allocated for cassava (0.11 ha), groundnut (0.09 ha) and rice (0.08 ha). Groundnut and sweet potato are the most common food crops grown. Cassava is sold in raw form (sack or heaps), as a field crop before harvesting, or as a dry product either sliced or as cassava flour. It is highly regarded as a food security crop and its yield per hectare is double that of sweet potato.

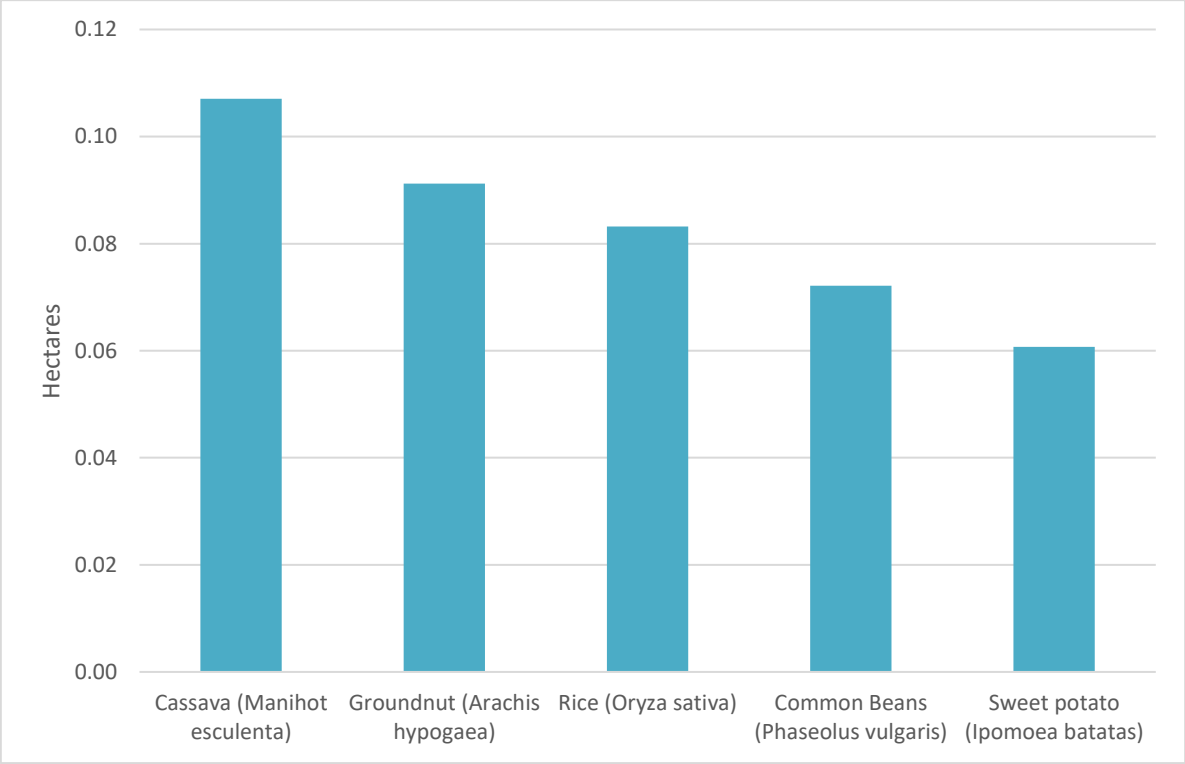


Figure 2: Major crops grown in Kibanjwa village

### Fodder crops

The area is dominated by naturally occurring pasture and livestock entirely depend on it for grazing. Concentrates are given as a supplement during dry seasons when forage is scarce.

### Livestock production systems

Households raise a variety of livestock including cattle, pigs and goats, for various purposes (Figure 3). Cattle are kept mainly for milk for the household, milk as a source of cash income or for sale as live animals. Both local and improved dairy cows are kept, with the majority raising improved breeds. About 80% of farmers in the village keep an average of two pigs per household. Ninety-five

percent of the farmers in Kibanjwa keep poultry, with an average of 20 birds per household under village conditions. Eggs are sold to meet immediate household needs.

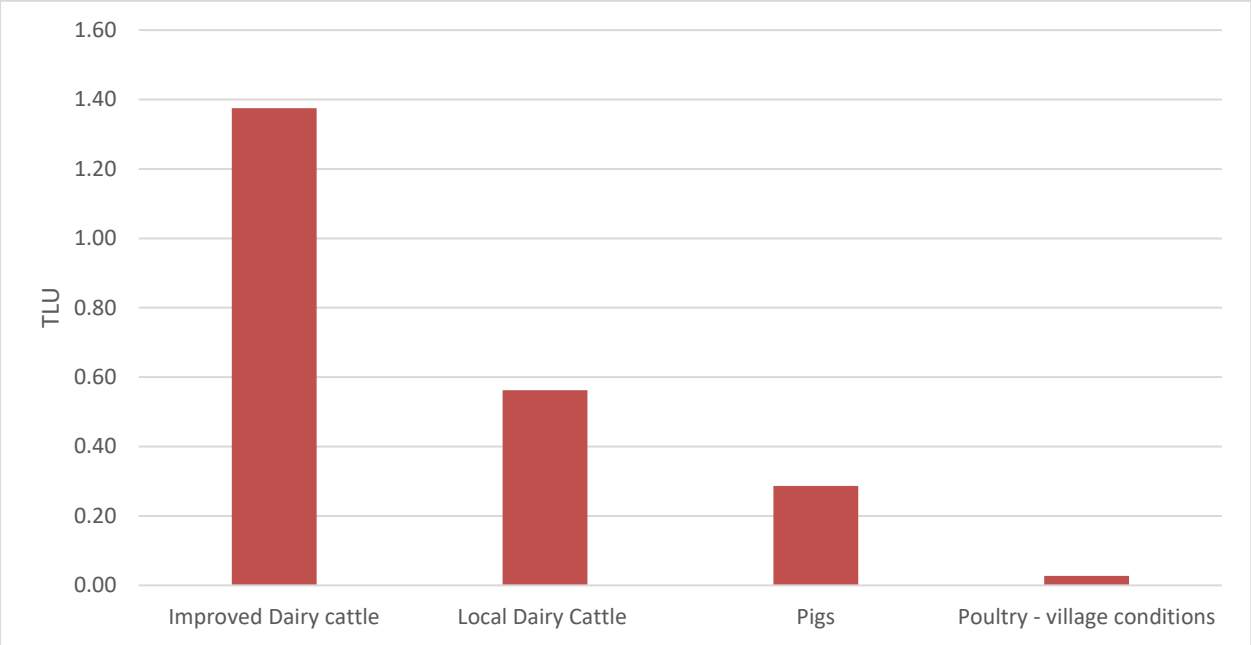


Figure 3: Average livestock holdings in Kibanjwa village (TLU/household)

## Cropping seasons

Kibanjwa village experiences two cropping seasons and two dry spells in the year (Table 1). The longest rainy season is from July to November and the short rains are between March and May. Planting of crops is usually done during the rainy season and harvesting takes place during the dry season. The longest dry spell occurs in December-February. The second dry season only lasts one month (June). Water is not a constraint in the area as 80% of farmers can access water from shallow wells and spring wells. Small scale irrigation is practiced using watering jugs and watering cans. Irrigated crops include tomato, cabbage and passion fruit.

Table 1. Cropping seasons in Kibanjwa village

| Season | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|
| First rainy season (Eitoigo) | | | | | | | | | | | |
| Second rainy season (Ekyanda) | | | | | | | | | | | |
| Dry spells | | | | | | | | | | | |

## Major income sources

Most households earn their living from small businesses, agriculture, livestock and remittances from friends and relatives (Figure 4). Businesses, including retail shops, bars, selling pancakes and roasting

pork, contribute about 37% of household income. Agriculture contributes about 25% while livestock and livestock products make a contribution of approximately 20% to household income. Off-farm labour (13%) and remittances from friends and relatives (4%) contribute the remainder. Sale of livestock occurs when quick money is required by households, especially to pay school fees or for preparing of gardens.

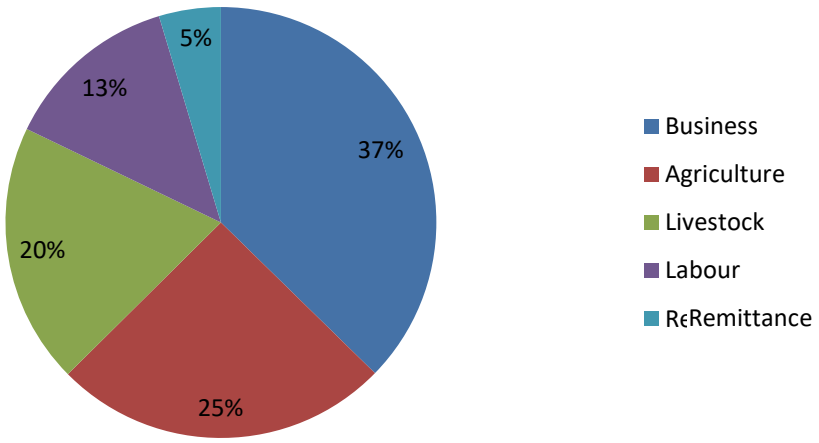


Figure 4: Contribution of various livelihood activities to household income

Labour is generally available all the time but is most required in February when gardens are being prepared for planting, which involves land clearing, tilling, planting and weeding. Approximately UGX 540,000 (USD 147) is paid per hectare of land and no daily wages are paid. No seasonal differences in the cost of labour were apparent. These labour costs are not affordable by the majority of households in Kibanjwa village.

### Feed availability

A variety of feedstuff is available, including concentrates, crop residues, kitchen waste, jack fruit and grazing. 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. Availability of feeds varies depending on the season, with plenty of feeds during the rainy seasons and scarcity during the dry season. Concentrates and kitchen leftovers are fed to livestock during the dry season. Rice bran is usually readily available during November to February, with reductions observed in March to October. The fluctuation is due to harvests done from November to January and selling of seeds from November to March. Traders who buy and store maize and rice bran inflate the cost. Green forage is always available in the rainy seasons and reduced in dry seasons.

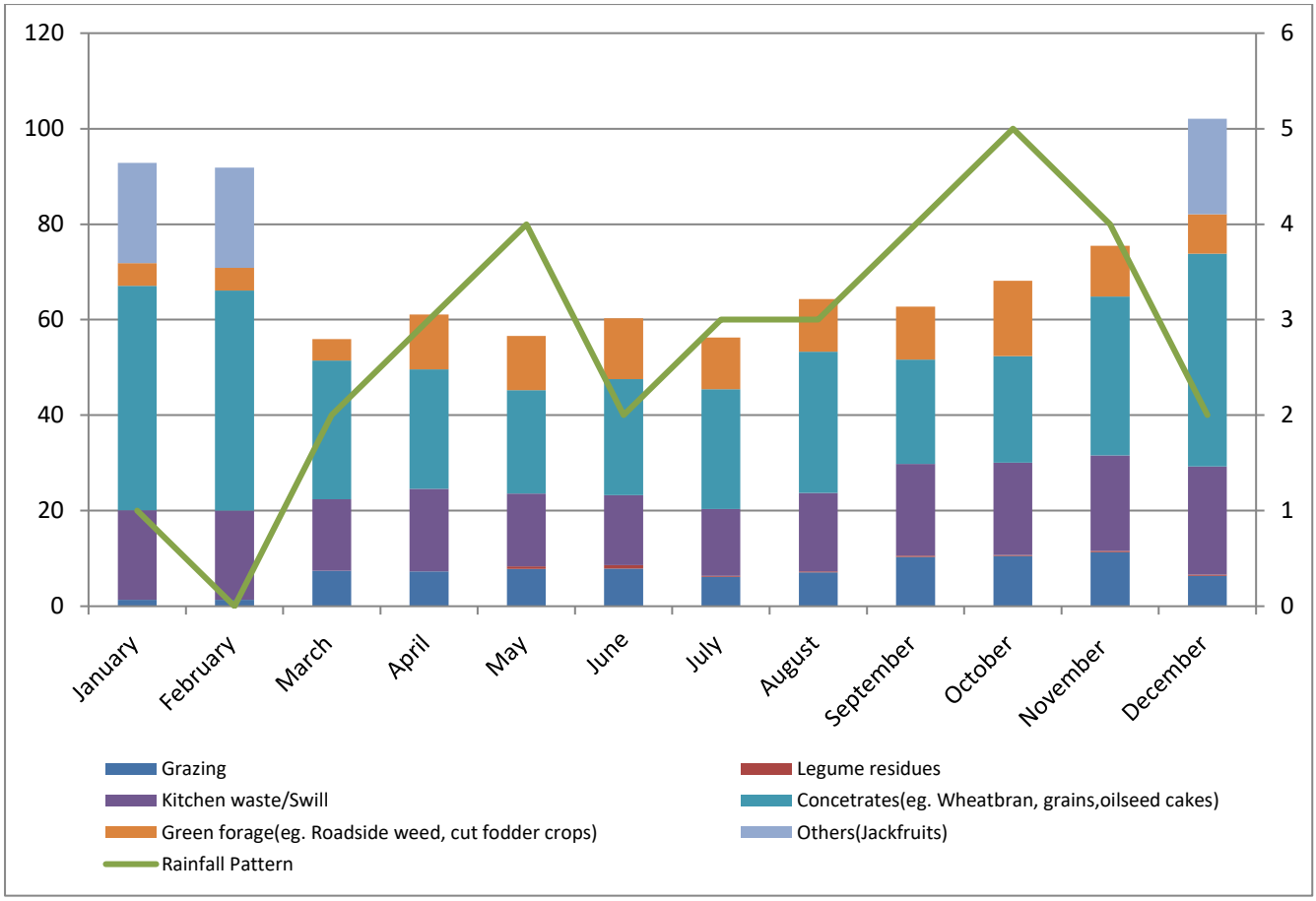


Figure 5: Availability of feed resources (lefthand scale) and rainfall (righthand scale) during the year in Kibanjwa village

## Purchased feeds

Pig farmers in the area buy rice bran, maize bran and fish meal (Figure 6). The most purchased feeds are rice bran (78%) and maize bran (19%). Rice bran is the most purchased feed because of its low price and availability and forms the biggest part of the animals' diet (especially during the dry season). When stocks are depleted, farmers resort to buying from the feed stockists or processing plants within or outside the village.

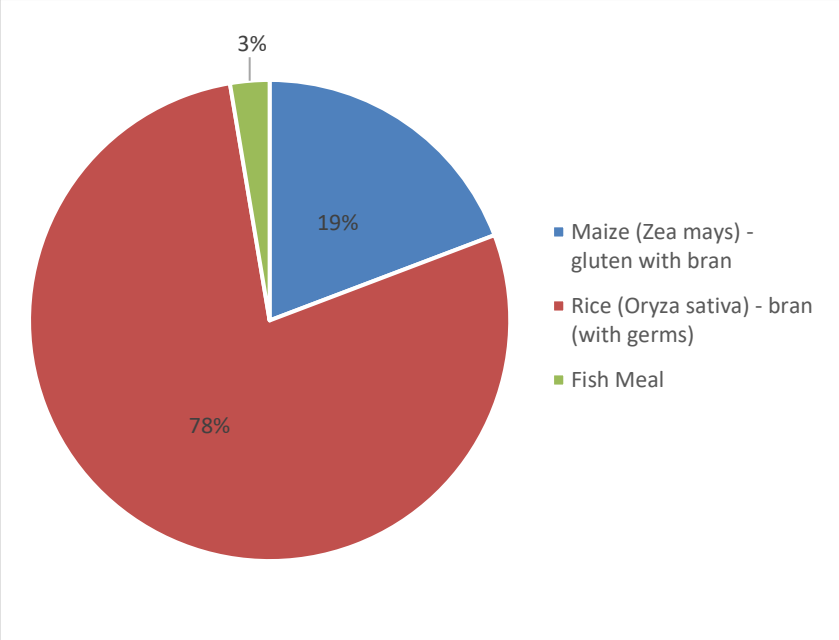


Figure 6: Feeds purchased by pig farmers over a 12-month period in Kibanjwa village

**Dietary composition**

The diet of livestock in the village is composed of a variety of feeds which include grazing, cultivated fodder, purchased feeds including maize bran, rice bran, fishmeal, and crop residues. The largest dry matter (DM) contribution comes from grazing (44%), followed by purchased feeds (37%). Crop residues contributed the least DM (Figure 7).

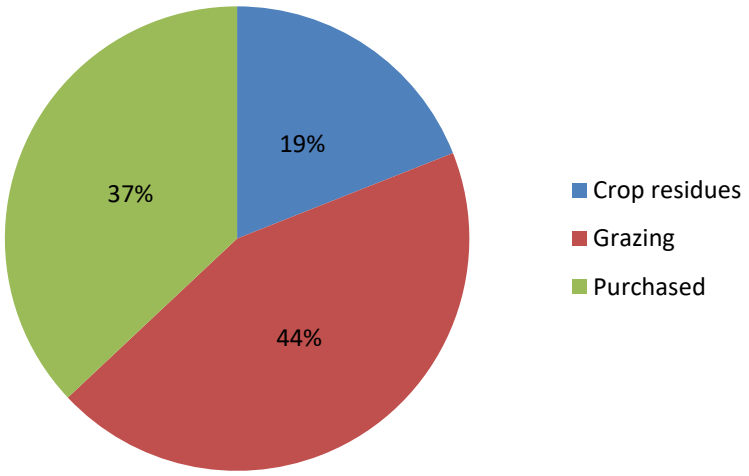


Figure 7: Contribution of feeds to dietary dry matter of pig feeds in Kibanjwa village

In terms of metabolisable energy content (Figure 8), the largest contribution to the pig diet is derived from purchased feeds (44%) and grazing (40%).

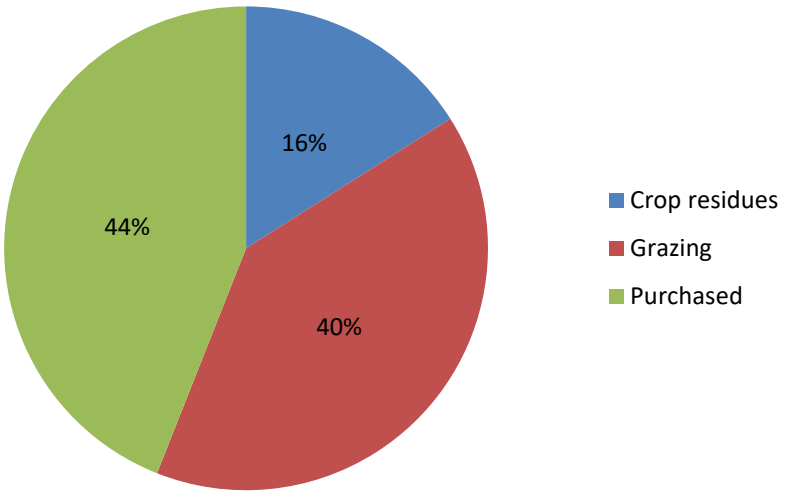


Figure 8: Contribution of feeds to dietary metabolisable energy of pig diet in Kibanjwa village

The above feed types also vary in terms of their contribution to crude protein (CP) supply (Figure 9). Purchased feeds provided the largest CP supply (56%), followed by grazing and crop residues.

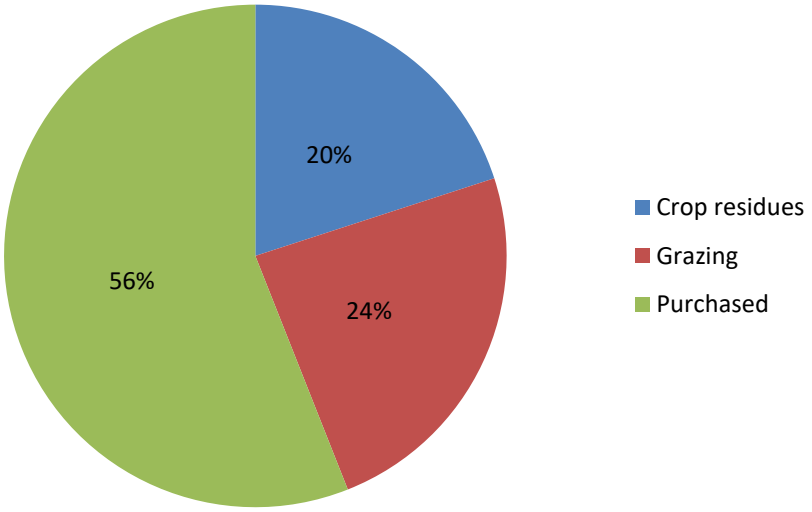


Figure 9: Contribution of feeds to crude protein of pig diet in Kibanjwa village

## Key challenges and suggested interventions

The FGD included a detailed analysis of the challenges that the smallholder pig farmers face in Kibanjwa village. According to the farmers, the three major constraints to pig production are lack of feeds, attributed to the high cost of purchasing feeds, followed by meagre capital and poor veterinary services (Table 2).

Table 2. Challenges and suggested interventions in Kibanjwa village

| Rank | Challenge | Suggested intervention |
|---|---|---|
| 1 | Lack of feed | Establishing gardens of sweet potato, maize and fodder crops to supplement concentrates |
| 2 | Lack of capital | Begin saving and work with credit organizations to get investment capital |
| 3 | Lack of veterinary services | Farmers forming groups and call private service providers and pay them as a group |
| 4 | Theft | Working with police, keeping dogs and other security organizations can help solve the problem of thieves |
| 5 | Poor housing | - Farmers form groups and either contribute labour or finances to different households to construct modern housing structures for pigs<br>- Training the farmers on how to construct modern pig houses |

To overcome the challenge of feeds there is a need to grow crops like rice and maize that provide animal feeds. Supporting local feed formulations using locally available feed stocks will solve the quality problem. There is also a need to grow fodder crops like lablab so that pig farmers do not depend on expensive concentrates. To avoid wastage of feeds it is necessary to preserve forage. Furthermore, it is essential to encourage farmers to start saving and work with credit organizations so they can invest in pig production. Farmers should liaise with their local governments to access service providers within their local community.

Farmers need to be trained on how to construct pig houses using locally available materials like timber and poles. Farmers should also form groups and contribute either finance or labour to fellow group members to construct good shelters for pigs.

## Conclusions

The farming in Kibanjwa village is a subsistence mixed cropping and livestock system. More than 80% of households have small farm holdings of less than 0.4 ha. Households in the village depend more on small businesses than any other income activity, as the village has access to good transport. About 80% of households can access irrigation for cabbage, tomato and passion fruit. The major crops grown in the village include cassava, groundnut and rice. About 80% of farmers in the village keep an average of two pigs per household. Smallholder pig farmers are challenged by insufficient farm-produced feeds and high market costs of concentrates. There is a need to promote the growing of fodder crops specifically for livestock and to preserve excess feeds. Farmers should be encouraged to start saving and work with credit organizations in order to invest in pig production. Farmers should liaise with their local governments to access service providers within their local community.