

Feed Assessment of Chieng Luong and Chieng Chung communes, Mai Son

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Introduction

The Feed Assessment Tool (G-FEAST) was applied to characterize the feed-related aspects of the livestock production systems in the communes of Chieng Luong and Chieng Chung, Mai Son District, Son La Province, Viet Nam. The assessment was carried out through Focus Group Discussions (FGDs) and individual questionnaires. In each commune we held four FGDs (women and men) and approximately 24 individual interviews (six per Focus Group). The discussions and interviews took place from 3 to 6 October 2019, and were facilitated by staff members of the District Agricultural Service Center who had been trained during a four-day workshop prior to the FGDs and individual interviews.

The focus groups represented three altitude categories, distributed as follows:

Lowland (<900 m): Chieng Luong (2 FGDs)

Midland (900-1100 m): Chieng Luong, Chieng Chung (4 FGDs)

Highland (> 1100 m): Chieng Chung (2 FGDs)

Where relevant, the results will be presented per altitude category, per commune or both.

Farming system

In both communes the farming system is primarily based on food crops, cash crops, livestock and (fruit) trees. Average farm size is around 2 ha with most of the land being used for crops (Figure 1). A typical household size is 6 people.

Cash crops (sugarcane, coffee, fruit trees) occupy most of the farm area, followed by forage crops (maize, cut-and-carry grass) at low and medium and food crops (rice, cassava) at higher altitude (Figure 3). Farms do not include individually owned pastures. Farmers grow cut-and-carry grasses and some have small patches of improved grasses like Guinea grass (*Megathyrsus maximus*).

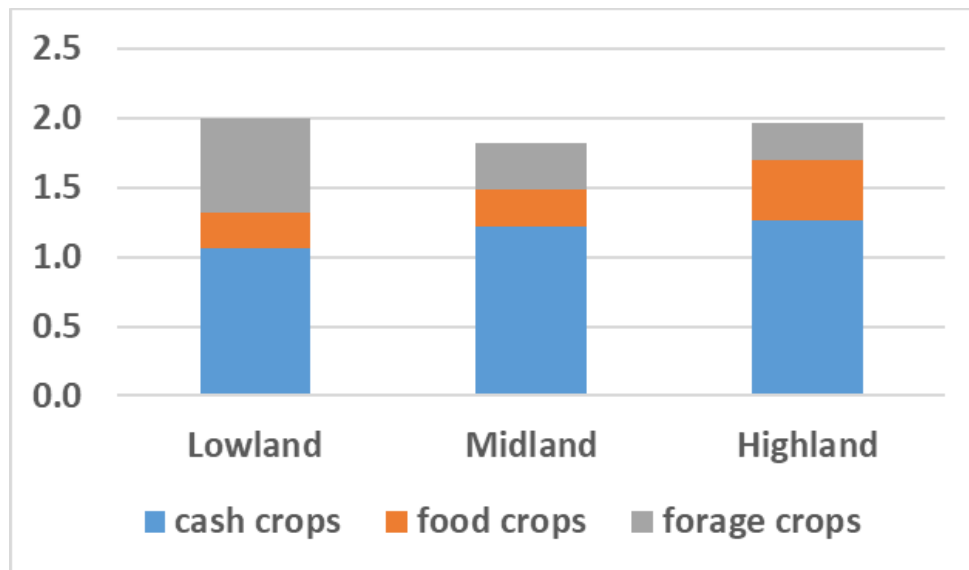


Figure 1: Average areas of crop categories, Lowland, Midland, Highland (ha)

Figure 2 shows that the Highland category includes more “average” and less “large” farms in comparison with the Lowland and Midland categories.

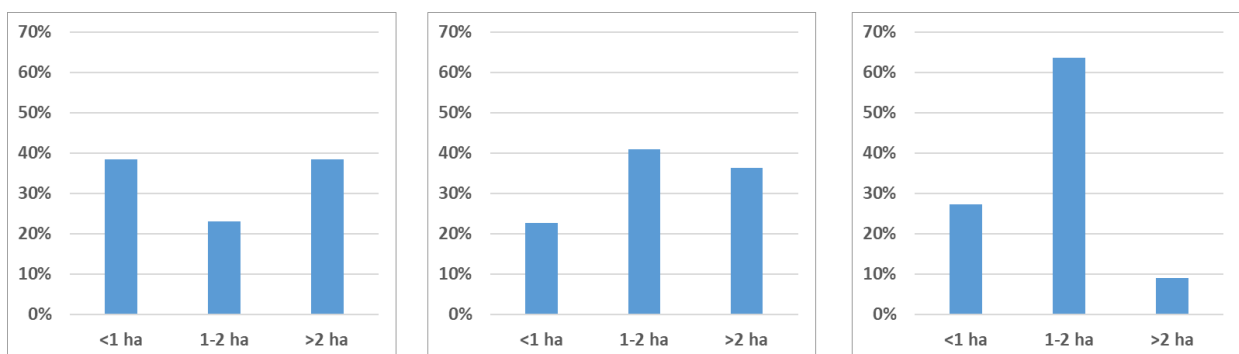
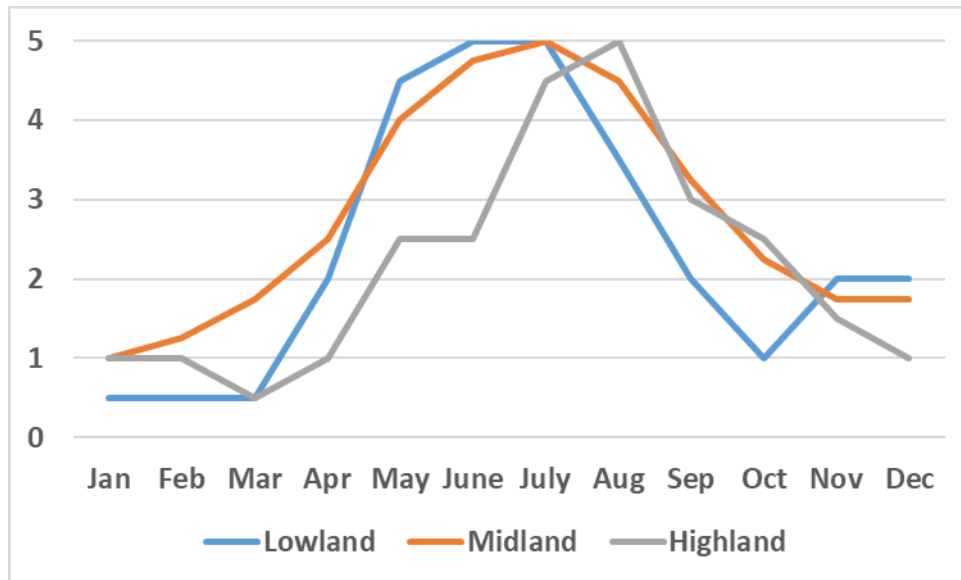


Figure 2: Distribution of farm sizes, Lowland, Midland, Highland

Rainfall and seasons

Rainfall patterns are quite similar at the different altitudes, with highest precipitation between May and September, and a cold dry season (“Winter”) from December to February, and a somewhat later onset of the rainy season in the higher areas (Figure 3).



	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
Lowland	dry	dry	dry	rainy	rainy	rainy	rainy	rainy	rainy	dry	dry	dry
Midland	dry	dry	rainy	rainy	rainy	rainy	rainy	rainy	rainy	rainy	dry	dry
Highland	dry	dry	dry	rainy	rainy	rainy	rainy	rainy	rainy	rainy	dry	dry

dry season ("winter")
 rainy season ("spring-summer")
 dry season ("autumn")

Figure 3: Rainfall (scale 0-5) and seasons

Crops

Households grow a variety of food crops (rice (*Oryza sativa*, cassava (*Manihot esculenta*), bananas (*Musa spp.*)), cash crops (sugarcane (*Saccharum officinarum*), coffee (*Coffea Arabica*) and fruit trees, like mango) and forage crops (maize (*Zea mais*) and Napier grass (*Pennisetum purpureum*)). The average areas of main crops is shown in Figures 4 and 5.

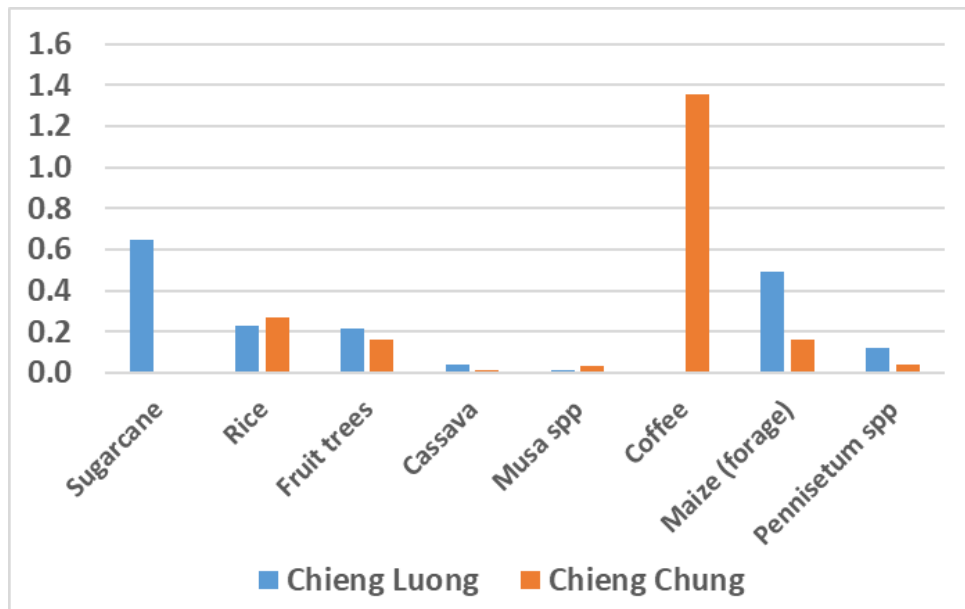


Figure 4: Average crop areas in Chieng Luong and Chieng Chung

Sugarcane, fruit trees (mango, citrus, passion fruit) and maize (forage) are more present at low and medium altitude, whereas coffee is more prevalent at medium and especially higher altitudes. Rice is quite evenly distributed.

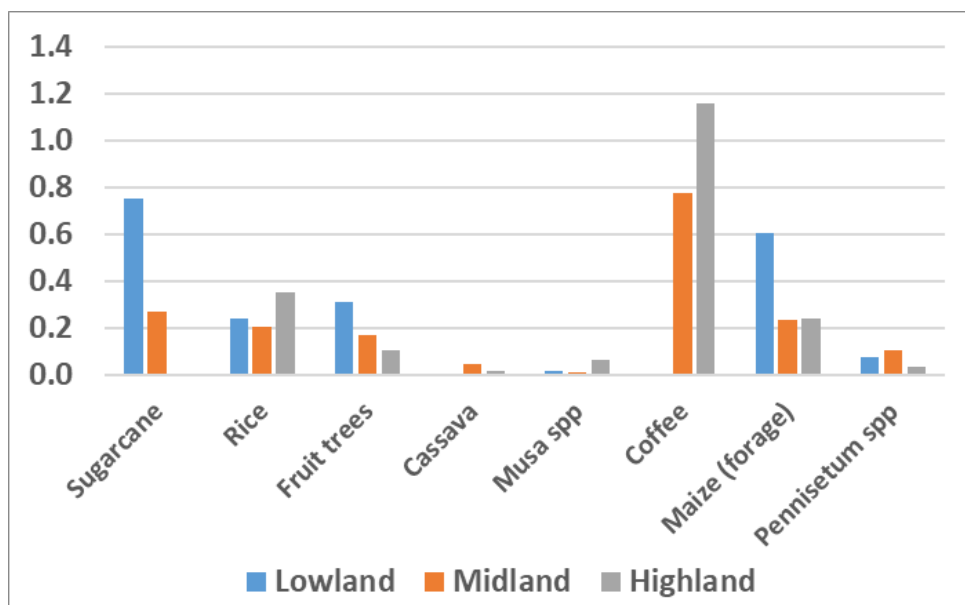


Figure 5: Average crop areas, Lowland, Midland, Highland

Livestock

Most households keep a variety of livestock species including pigs, cattle, buffaloes, goats and poultry. Pigs are raised and fattened for cash income; as are cattle and buffaloes that provide also power. Dairy production is absent. Manure is collected and used as a fertilizer, mainly on vegetables and fruit trees. Local and improved chickens and ducks are kept to meet meat, egg and cash needs.

Households at lower altitude keep more pigs and buffaloes, cattle are more prevalent at higher altitude, because of the presence of (communal) grazing areas (Figure 6).

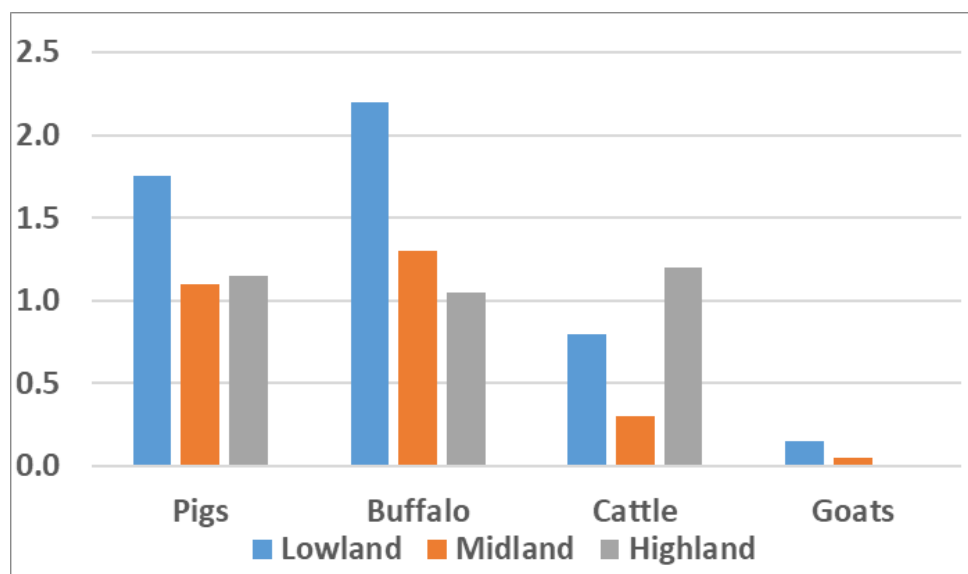


Figure 6: Average livestock holdings per household (TLUs), for different altitude categories

Pigs are confined and fed in sheds throughout day and night. Buffaloes, cattle and goats are sometimes grazed (especially at higher altitudes), but also most of the time kept and partly fed in sheds.

Veterinary services are partly provided by the government represented at commune and village level (e.g., free vaccines like FMD) and partly by independent paravets and providers of drugs. Artificial insemination services are partly provided by the government (for cattle) and partly private (cattle, pigs).

Feed sources

The common feed sources include:

- crop residues: rice straw, sugarcane tops, banana leaves, cassava leaves, sweet potato leaves
- forages: maize, cut-and-carry grass (*Pennisetum* spp)
- concentrates: rice bran, maize (flour), commercial mixes (mainly for pigs)
- grazing: "natural grasses" from collective pastures
- collected green feed (include grasses and legumes)

Farmers produce usually silage based on maize, banana and cassava leaves, which is fed to most livestock species (including pigs) and mainly during the cold dry season (Dec-Feb), for details see Table 1.

Table 1: Feed basket per species and per season (based on FGDs)

	Winter (Dec-Feb) %	Spring (Mar-June) %	Summer/Autumn (July-Nov) %
Pigs			
Rice bran	15	10	10
Maize (flour)	15	20	20
Silage (maize stems/leaves, cassava stems, banana stems)	50	25	25
Concentrates	10	10	10
Leaves (sweet potato, etc)	10	35	35
Cattle/Buffalo			
Rice bran	10	5	0
Rice straw	25	10	0
Maize stems/leaves	15	20	35
Grazing	0	20	20
Silage	30	5	5
Banana stems	5	5	5
Cut-and-carry grass	5	35	35
Goats			
Maize stems/leaves	20	20	20
Grazing	0	40	40
Silage	60	0	0
Banana stems	0	0	0
Cut-and-carry grass	10	30	30
Leaves (sweet potato, etc)	10	10	10

The contribution of the different feed components in terms of Dry Matter and Crude Protein at the different altitude categories is shown in Figures 7a and 7b.

In terms of Dry Matter, crop residues make up the most important part at low altitude. Whereas forages are as important as crop residues at medium altitude, at higher altitude they are the most important component. Grazing, although increasing with altitude, never provides more than 30% of the total feed.

Forage crops are the most important provider of protein, ranging from over 30% (low altitude) to almost 60% (high altitude).

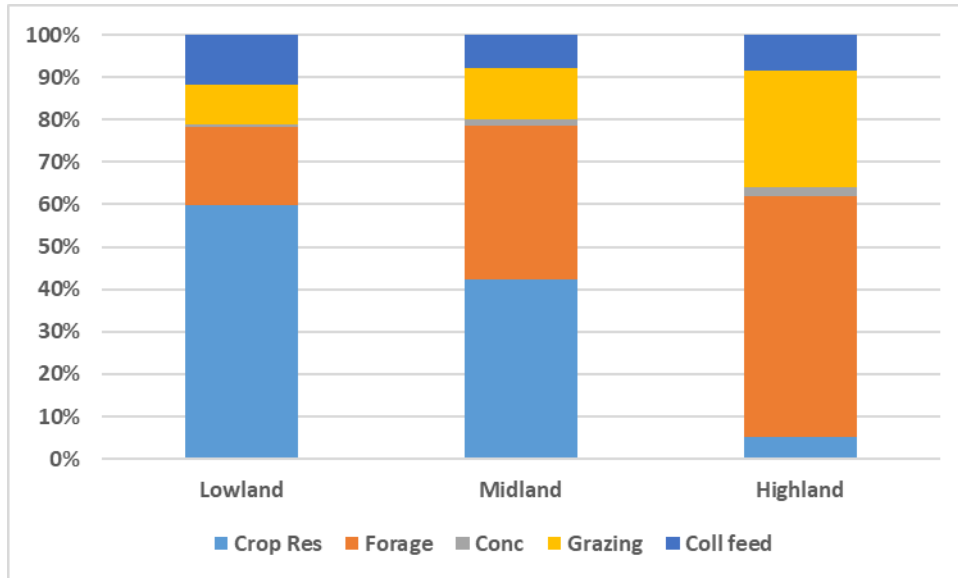


Figure 7a: Contribution of feed components to the total ration (Dry Matter)

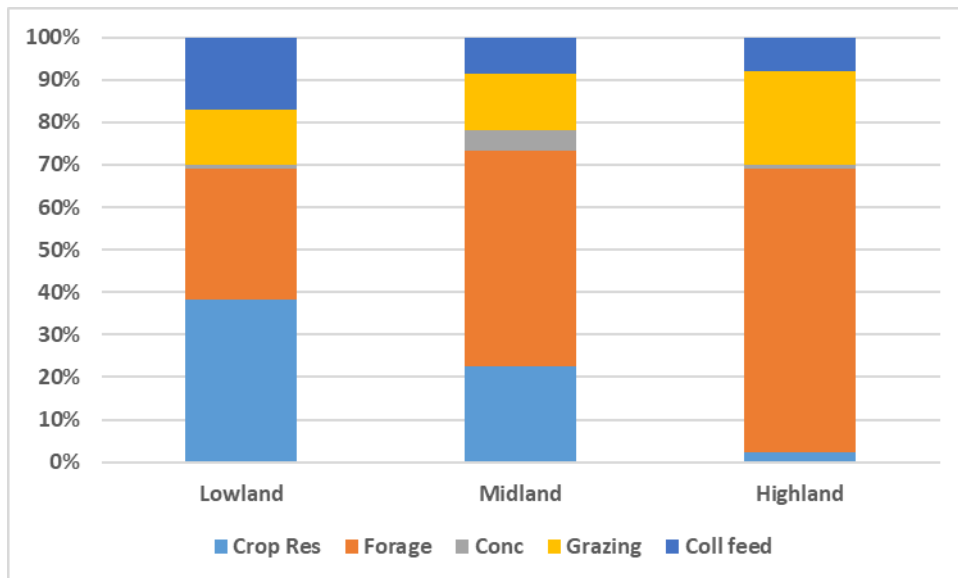


Figure 7b: Contribution of feed components to the total ration (Crude Protein)

Seasonal availability varies with rainfall, without important changes in the proportions of the different feed components for the different altitude categories (Figure 8).

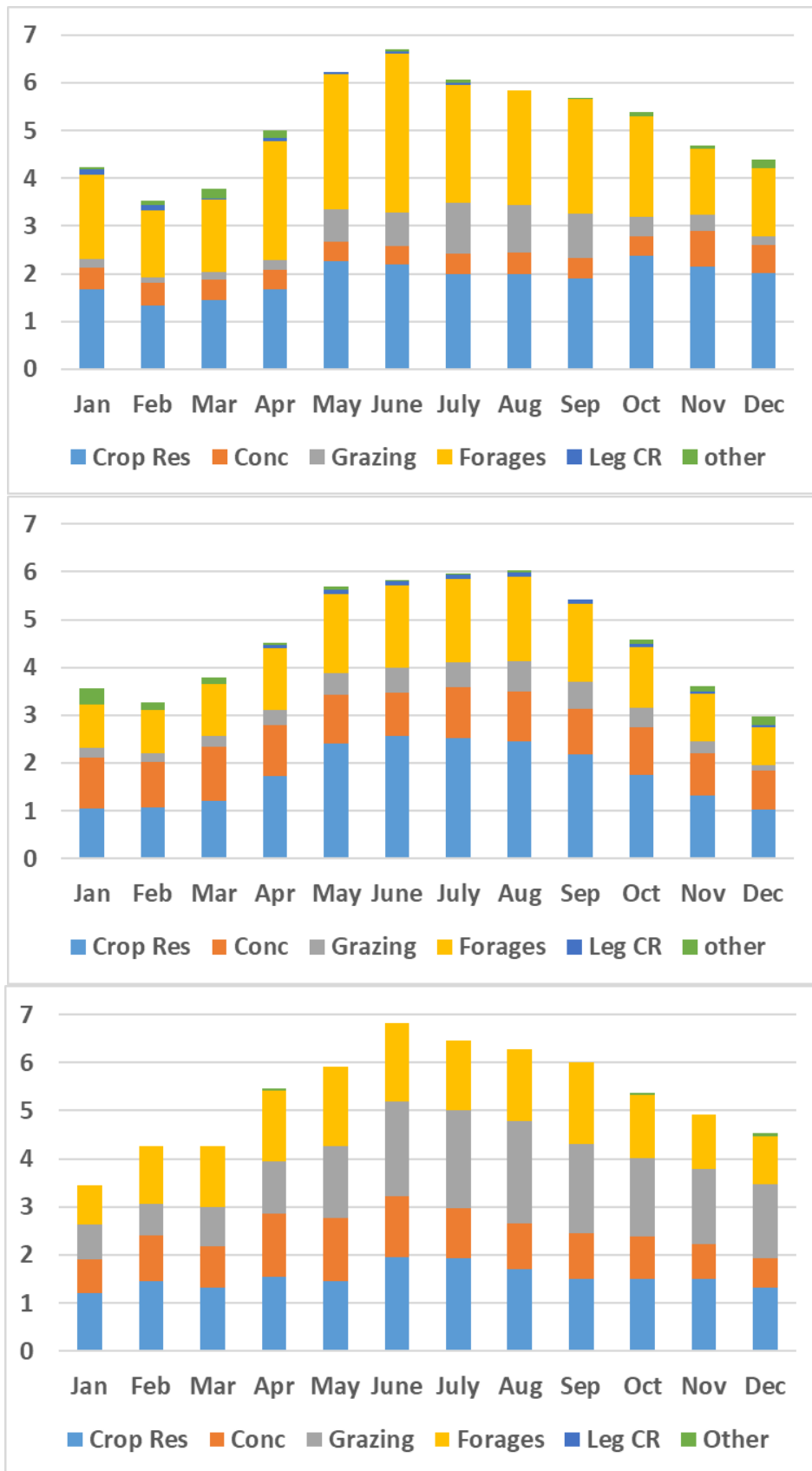


Figure 8: Relative availability of feed components throughout the year, Lowland, Midland, Highland

Major income sources

(Cash) crops are the primary contributor to household income, for both women and men. On average, livestock (pig raising, fattening cattle, poultry) provides 27% of women's income, from 30% at low altitude to 10-20% in the other regions. For men, livestock provides 15% of income, from 20% at low altitude to 10% in the higher regions (Figure 9).

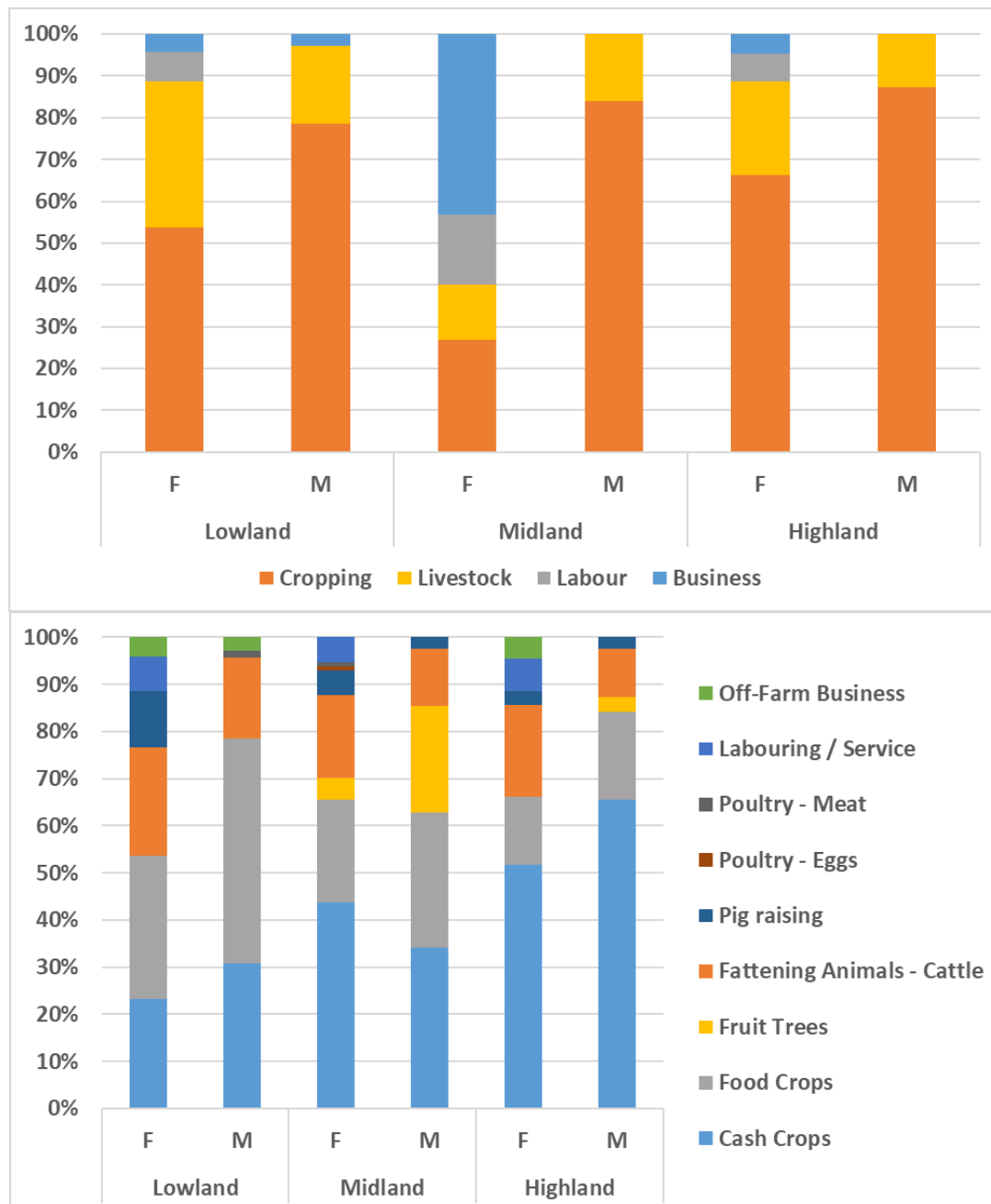


Figure 9: Contributors to household income, Lowland, Midland, Highland, per category and per activity

Problems, issues and opportunities

According to the farmers, the main livestock production constraint is animal genetic characteristics and access to capital. Although there is a relatively strong presence credit providers, many farmers are not able to get credit because they do not have official land title or proof of income needed as a guarantee.

Although not listed as the major problem feed availability (especially high quality “protein” feed) is mentioned, especially during the cold dry season. A summary of problems and farmer proposed solutions are shown in Table 2.

Table 2: Problems, issues and proposed farmer solutions

Problem (in order of importance)	Main problem	Proposed farmer solutions
1	Animal genetics	<ul style="list-style-type: none"> • crosses with improved breeds (AI)
2	“Capital” (access to credit)	<ul style="list-style-type: none"> • provision of land rights, proof of income
3	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"> •
4	Animal feed <ul style="list-style-type: none"> - Low protein content (Pennisetum spp) - No access no better quality grass. 	<ul style="list-style-type: none"> • Some cassava as animal feed (roots for cows), leaves also for mulch. • More/better silage, together with Napier •
5	Climate (low temperatures in “winter”)	<ul style="list-style-type: none"> •
6	Market access (infrastructure)	<ul style="list-style-type: none"> •

Conclusions

General

- Livestock is the second most important activity after crops, providing between 10 and 30% of household income. Main activities are pig raising/fattening, and raising of cattle, buffaloes and some cases some goats. Most households have poultry (chickens and ducks) that provide generally petty cash for small expenses. Pigs, cattle and buffaloes are sold much less frequently (typically once, twice per year). Since livestock is more important for women than for men in terms of income (mainly from pigs and poultry), interventions should be specifically aimed at women.
- Although intended as a G-FEAST, gender aspects have not come out very clearly. This is due to: (1) communication/language issues, (2) the lack of gender experience and expertise of the staff involved and (3) the fact that all participating women were part of male-headed households.

Feed

- Feed constraints are mainly related to quality (protein). Forages are mainly maize, cut-and-carry grasses like *Pennisetum* spp., some *Megathyrsus maximus*.
- In the absence of individually owned pastures, grazing takes mainly place on communal lands. There is therefore not much scope for improved germplasm options for grazing (little space, communal lands). However, there might be opportunities for improved cut-and-carry grasses (with higher protein content), like *Brachiaria* hybrid "Cobra".
- Potential for legumes (intercropped with maize, fruit trees), including shrubs / trees is high. They can add value to crop residues (main feed component) with low protein content (rice straw, maize residues, sugarcane tops) and forage grasses.
- High quality annual legumes with relative low fiber content like cowpea (*Vigna unguiculata*) and lablab (*Lablab purpureus*) can easily be intercropped with cereals (maize) or grown on residual moisture (rice). They can be used to feed both ruminants and pigs, the latter for instance in the form of silage.