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Characterizing feeds and feed availability in Sud-Kivu province, DR Congo

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Introduction

Animal husbandry in the Sud-Kivu province of the Democratic Republic of the Congo is gradually moving towards stall feeding, due to demographic pressure (Battistin et al. 2009) and scarcity of collectable forages (DSRP-RDC 2005). Therefore, lack of available feed is considered one of the main constraints faced by livestock production, especially in the dry season (Katunga et al. 2011; Maass et al. 2012). Unaffordable, fluctuating prices and scarcity of feed concentrates and the lack of improved forages adapted to marginal conditions, making them non-competitive with food crops, further exacerbate the livestock feeding situation. This study aimed to assess specific constraints and opportunities in the current feeding systems, as well as feed availability in this area.

Methods

Two main approaches have been followed to assess whether feed is one of the main limiting factors in livestock production and to arrive at possible solutions in a participatory manner. The first approach used the Feed Assessment Tool (FEAST) of Duncan et al. (2012) at 4 sites representing the agro-ecological conditions of Sud-Kivu. This tool consisted of 2 parts: (1) a Participatory Rural Appraisal (PRA) with 21−34 farmers per site, including all wealth categories, ages and gender of farmers; and (2) individual interviews to collect specific quantitative information from 9 households at each site.

The second approach involved 2 key informants per site, who showed the forage species usually fed to their animals. Morphological descriptions were conducted on these plants and their biotopes, before herbarium specimens were taken for identification.

Results

At all 4 sites, feed availability was strongly linked to rainfall pattern, with a great shortage during the dry season from May to September (Figure 1). Grazing (mostly by tethering) and collecting green forages from fields and roadsides were the dominant feeding systems. Only 37.1% of farmers cultivated forages on small areas, without further expansion because of lack of seeds and propagating material; cultivated forage contributed only 5.7% to the diet of animals.

Farmers gathered a wide variety of plants for feeding; overall, 93 different forage species belonging to 19 botanical families were identified. The most dominant families were Poaceae (41.8%) and Asteraceae (26.0%), essentially without improved forage species (Table 1).

PRA respondents proposed that their seasonal feed shortage problem may be overcome by identifying and adopting improved forages with high biomass yield and tolerance to drought stress. They also suggested that such forages could be planted on roadsides near the homestead, in banana plantations because of their microclimate, and on the edges of fields as contour bunds for additional erosion control. Planting adapted forages on sloping land, areas with low value for crop cultivation and otherwise degraded plots would substantially help to reduce fodder deficiency plus the collecting time (2 h/d), especially for women and youth who mostly carry out this activity.

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Table 1. Forage species by botanical families collected by farmers in Sud-Kivu.

Botanical family	Representation of forage species			
	Kalehe (No.)	Kabare (No.)	Walungu (No.)	General mean (%)
Poaceae	15	19	27	41.8
Asteraceae	8	11	19	26.0
Fabaceae	3	1	6	6.6
Convolvulaceae	1	2	2	3.4
Cyperaceae	3	1	0	2.7
Amaranthaceae	0	1	3	2.7
Musaceae	1	1	2	2.7
Others	6	5	9	14.1
Total	37	41	68	100.0

Unavailability of forage seeds or vegetative propagation materials was identified as a bottleneck to improving the feeding situation.

Conclusion

The identification of socio-ecological niches to increase fodder production, without compromising food crops, in the small farming areas operated by farmers of Sud-Kivu, who are traditionally agro-pastoralists, is considered of highest priority for future research.

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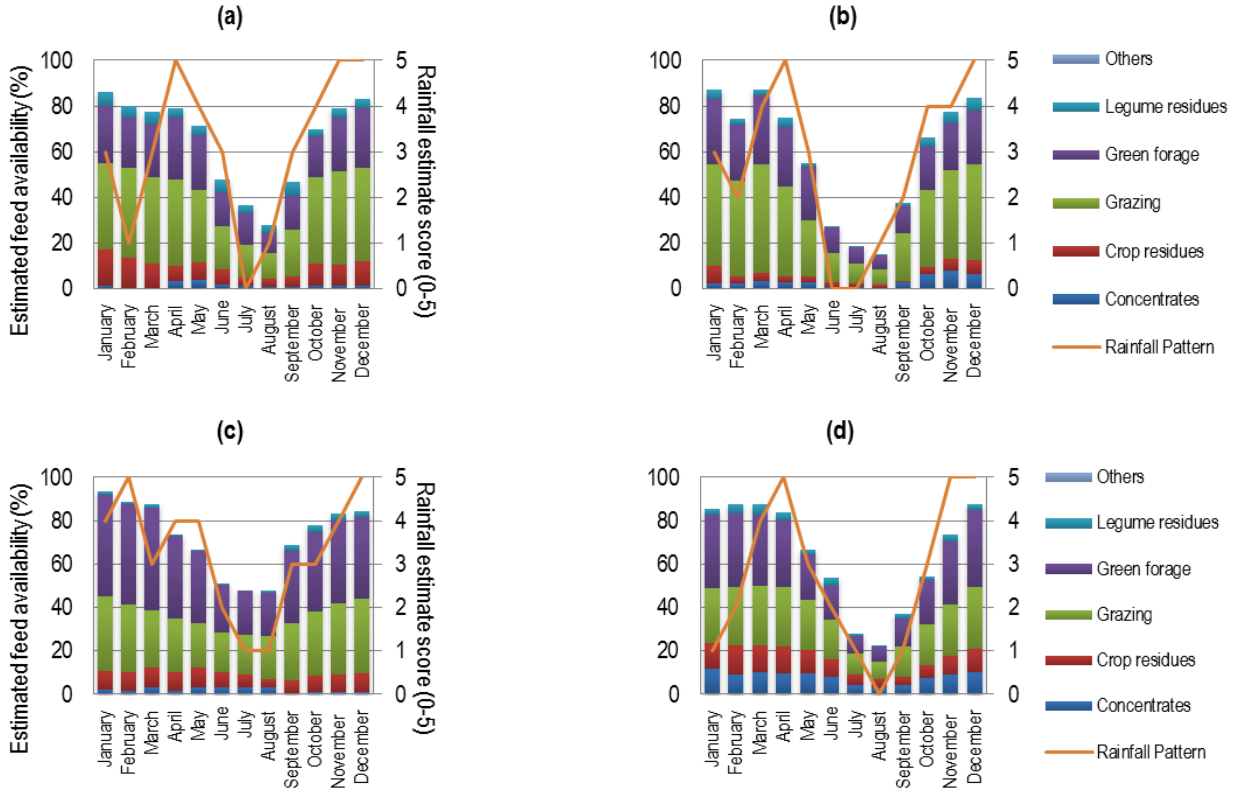

Figure 1. Feed resource availability throughout the year assessed by the FEAST method (Duncan et al. 2012) in: (a) Muhongoza – Kalehe territoire (02°04' S, 28°53' E; 1,585 m asl); (b) Cirunga – Kabare territoire (02°29' S, 28°47' E; 2,001 m asl); (c) Tubimbi – Walungu territoire (02°48 S, 28°35' E; 1,073 m asl); and (d) Kamanyola – Walungu territoire (02°44' S, 29°00' E; 973 m asl).

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