

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

Samy B Bacigale^A, Birthe K Paul^B, Fabrice L Muhimuzi^A, Neville Mapenzi^C, Michael Peters^D and Brigitte L Maass^B

^A Université Evangélique en Afrique (U.E.A.), Bukavu, DR Congo

^B International Center for Tropical Agriculture (CIAT), Nairobi, Kenya.

^C Centre de Recherche en Sciences Naturelles (CRSN), Station de Lwiro, Sud-Kivu, DRC

^D International Center for Tropical Agriculture (CIAT), Cali, Colombia

Contact email: bcgsamy@yahoo.fr

Keywords: Feed availability, tropical forages, FEAST method, seasonality, livestock.

Introduction

Animal husbandry in the Sud-Kivu province of the Democratic Republic of the Congo (DRC) is gradually moving towards stall feeding, due to demographic pressure (Battistin *et al.* 2009) and scarcity of collectable forages (DSRP-RDC 2005). Therefore, feed is considered one of the main constraints faced by livestock production, especially in the dry season (Katunga *et al.* 2009; Maass *et al.* 2012). Unaffordable, fluctuating prices and inaccessibility 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 within the African Food Security Initiative, with funding from AusAID, 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 come up with possible solutions in a participatory manner. The first approach used the Feed Assessment Tool (FEAST) of Duncan *et al.* (2012) at four 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, age and gender of farmers; and (2) individual interviews to collect specific quantitative information from 9 households in 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 (Fig. 1). Grazing (mostly by tethering) and collecting green forages from fields and roadsides were the dominant feeding systems (Fig. 1).

Only 37.1% of farmers cultivated forages on small spaces without further extension because of lack of seeds and propagating material; it 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%), though, essentially without improved forage species (Table 1).

PRA respondents proposed that their seasonal feed shortage problem may be overcome by establishing 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 micro climate, and on the edges of fields in contour bands 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 compensate fodder deficiency, while reducing the collecting time (2 hours/day), especially for women and youth who are mostly in charge of this activity.

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

Botanical family	Representation of forage species			
	Kalehe (N)	Kabare (N)	Walungu (N)	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

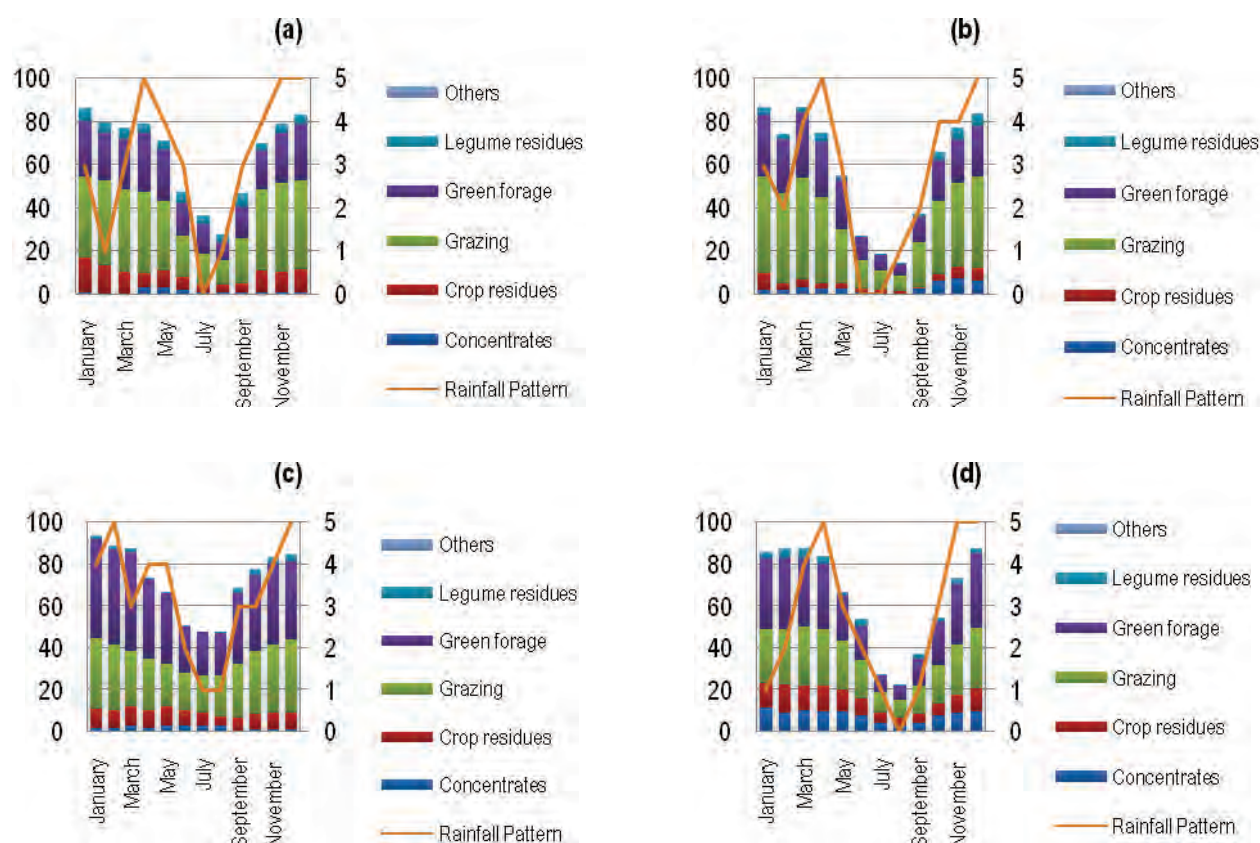


Figure 1. Feed resource availability throughout the year assessed by the FEAST method (Duncan *et al.* 2012) in: (a) Muhongoza – Kalehe territoire (02°04'10.4''S, 28°53'54.6''E, 1585 m a.s.l.); (b) Cirunga – Kabare territoire (02°29'46.4''S, 28°47'26.0''E, 2001 m a.s.l.); (c) Tubimbi – Walunga territoire (02°48'44.2''S, 28°35'28.8''E, 1073 m a.s.l.); and (d) Kamanyola – Walungu territoire (02°44'13.7''S, 29°00'04.2''E, 973 m a.s.l.)

Unavailability of forage seeds or vegetative propagation materials, though, 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, was considered of highest priority for future research.

References

Battistin F, Garip JA, Maletta H (2009) Rapport d'analyse et lignes d'action pour la creation d'emploi et le redressement économique locale au Sud-Kivu (RDC). International Labour Office, ILO International Programme on crisis Response and Reconstruction, Geneva, 186 p. <http://www.ilo.org/public/french/region/afpro/kinshasa/download/kinsahasajillet2009.pdf>. Accessed 05 Apr 2013.

DSRP-RDC (2005) Monographie de la province du Sud-Kivu.

RDC, Ministere du Plan, Kinshasa. http://www.documentminisanterdc.cd/document/doc_124.pdf. Accessed 05 Apr 2013.

Duncan A, York L, Lukuyu B, Samaddar A, Stür W (2012) Feed Assessment Tool (FEAST): A systematic method for assessing local feed resource availability and use with a view to designing intervention strategies aimed at optimizing feed utilization. Questionnaire for Facilitators (Version 5.3); updated: 15 June, 2012. ILRI, Addis Ababa, Ethiopia. <http://www.ilri.org/feast>. Accessed 05 Apr 2013.

Katunga DM, Ngabo T, Bacigale SB, Muhimuzi FL, Maass BL (2011) Testing agro-ecological adaptation and participatory acceptability of ten herbaceous legumes in South Kivu, DR Congo: Tropentag Conference, Development on the margin, October 5-7, 2011, Bonn, Germany. Abstract. http://www.tropentag.de/2011/abstracts/links/Maass_H4BtL3bR.pdf. Accessed 05 Apr 2013.

Maass BL, Katunga-Musale D, Chiuri WL, Gassner A, Peters M (2012) Challenges and opportunities for smallholder livestock production in post-conflict South Kivu, eastern DR Congo. *Tropical Animal Health and Production* **44**, 1221-1232.