

From grazing to stall-feeding: Livestock feeds assessment in Nyandarua highlands in Central Kenya

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Introduction

- Most rural households in Kenya rely on both crop agriculture and livestock for their nutrition and incomes.
- With increasing population, food demand from the same area of land increases, eventually leading to intensification.
- Complementarity between crops and livestock ensured through integration at the farm level. Crops provide feed to the animals who supply manure and in return improve crop performance
- One of the benefits arising from the system at farm level, is complementarity. Crops and crop residues supply feed to the animals, while livestock in return supply manure that improves crop performance.
- Milk productivity has been relatively low in Kenya; improved cattle and crosses produce about 8 kg/cow/day (Miuia *et al.* 2011).
- Increasing productivity has the co-benefit of reducing greenhouse gas (methane) production per unit of livestock output.
- The 2SCALE project (<http://ifdc.org/2scale/>) led by IFDC aims at improving dairy productivity and market access for dairy farmers in Nyandarua, Kenya.



Objectives

- Assess livestock's contribution to livelihoods;
- Describe current livestock husbandry, especially feeding practices; and
- Identify entry points for productivity enhancing feed interventions.

Methodology

- Study sites were in Oljoro Orok, Nyandarua county, central Kenya, at about 0° latitude, 036°E longitude, and elevations > 2000 m asl.
- The Feed Assessment Tool (FEAST by Duncan *et al.* 2012) was applied to four farmer groups, separately to women and men in each group:
 - Nyamarura, Hillten and Kanguu are part of the project and collectively sell their milk to a private milk processor
 - Kagera served as a control group (C).
- FEAST entails two sections, each with structured questions.
- First, focus group discussions are conducted:
 - It also categorized farmers in attendance based on their land size, i.e. small, medium and large farmers.
- Secondly, detailed individual interviews with selected farmers are performed:
 - Two farmers from each wealth category were randomly selected of both men and women groups.

References

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Results

Table 1. Land size categories as estimated in Focus Group Discussions by women and men from Nyamarura, Hillten, Kanguu and Kagera (Control) farmer groups of Central Kenya (N=110); numbers in brackets denote % of households in the corresponding land size category; telephone farmers were insignificant.

Land category	Gender	Farmer group			
		Nyamarura	Hillten	Kanguu	Kagera (C)
Small	Women	0.25-2.0 (30)	0.125-0.25 (20)	0.5-2.0 (60)	0.125-1.0 (30)
	Men	0.25-5.0 (30)	0.25-1.0 (40)	0.25-2.0 (70)	0.25-2.0 (70)
Medium	Women	3-20 (60)	>0.25-2 (60)	3-4 (30)	2-4 (50)
	Men	6-14 (68)	2-4 (40)	3-7 (20)	3-6 (25)
Large	Women	21-100 (5)	3-20 (19)	5-10 (10)	5-20 (15)
	Men	>15 (1)	5-10 (20)	8-15 (5)	7-15 (5)

Table 2. Mean contribution (%) of different sources to household incomes as estimated by women and men from Nyamarura, Hillten, Kanguu and Kagera farmer groups (N=64).

Income source	Farmer group							
	Nyamarura		Hillten		Kanguu		Kagera (C)	
	Women	Men	Women	Men	Women	Men	Women	Men
Livestock (dairy)	69	45	50	39	49	67	35	39
Livestock (other)	6	-	7	5	15	11	4	11
Crops	24	41	31	54	27	20	53	27
Business	-	10	10	-	4	-	-	22
Remittances	1	1	1	2	5	2	8	1
Other	-	3	-	-	-	-	-	-

Table 3. Mean coverage (ha) of forage types utilized in Nyandarua as estimated by women and men from Nyamarura, Hillten, Kanguu and Kagera farmer groups (N=64).

Fodder type	Farmer group									
	Nyamarura		Hillten		Kanguu		Kagera (C)		Average	
	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men
Maize	0.16	1.08	0.20	0.11	0.01	2.00	-	-	0.09	0.79
Oat	0.08	0.68	0.07	0.08	0.03	0.76	-	0.09	0.04	0.40
Napier grass	0.08	0.11	0.08	0.11	0.17	0.16	0.03	0.16	0.09	0.14
Rhodes grass	-	0.04	-	-	-	0.50	0.03	0.05	<0.01	0.15
Sorghum	-	-	0.006	-	-	0.50	0.01	0.05	<0.01	0.14
Vetch	-	0.28	-	-	-	-	-	-	-	0.07
Lupin	0.08	0.15	-	0.03	-	-	-	-	0.02	0.04
Kikuyu grass	-	-	-	-	-	0.05	-	-	-	0.01
Desmodium	-	0.03	-	-	-	0.01	-	0.01	-	0.01
Lucerne	-	-	0.02	-	0.01	0.03	-	-	<0.01	<0.01
Columbus grass	-	-	-	-	0.01	-	-	-	<0.01	-

Discussion and conclusion

- Substantial use of collected green forage and crop residues (Fig. 1) indicates a departure from dominant grazing to more intensified, zero-grazed systems as farm sizes decrease.
- Increased use of maize as a fodder, is rather new for Kenyan households, where maize is the staple in most diets, but typical for trends in the region (de Groot *et al.* 2013).
- Intensification is likely to continue as population increases (ASDSP 2011), but farm sizes (Table 1) may further decrease in Nyandarua, an area known for livestock grazing.
- Forage demand will most likely increase as livestock, and especially dairy, continue to be a major contributor to household incomes (Table 2).
- Market pull from the processor will almost certainly trigger further impetus for increased milk productivity and subsequent forage cultivation to support production.
- Involvement of both women and men in agricultural activities in the area is concomitant with the importance of agriculture in household nutrition and incomes. However, differences in levels of involvement may explain the wider range of forages and substantially larger areas perceived by men (Table 3).
- Usually, women may be more involved in the actual implementation of livestock activities like milking and feeding, while men may have more opportunities of access to information, but probably not shared in equal measure with the women.
- Fodder availability and rainfall patterns were estimated alike between women and men (Fig. 1). Although fodder availability increased during rains, at no time it was abundantly available, suggesting the animals never expressed their full potential.
- In conclusion, livestock, and especially dairy, is key in the area for household incomes (Table 2), but productivity needs to be increased as more intensified systems emerge. Improving milk marketing by the 2SCALE project is most likely to further enhance the contribution of dairy to household incomes.

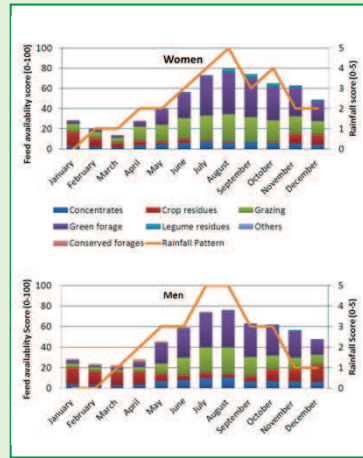


Figure 1. Mean fodder availability estimated across women and men from Nyamarura, Hillten, Kanguu and Kagera farmer groups, Central Kenya (N=64).

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