

## Cattle production potential in small, improved, mixed farms in Burundi

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Traditional mixed highland farms in Burundi show actually decreases in both foodcrops and livestock production, which are mainly due to decreasing soil fertility and overgrazing. A proposed technological way to obtain sustainable development of small subsistence farms is to better integrate vegetable and animal productions, for instance by realizing alternate and associated food and forage crops in the part of the farm which is usually devoted to forage.

Objective of this study is to evaluate cattle production potential of those small subsistence, however technologically improved, mixed farms in Burundi highlands.

Located on hilly landscape, 60 subsistence, technologically improved, mixed farms (mean : 0.86 ha) were monitored from 1985 to 1993. Those farmers grow foodcrops (beans, maize, sorgho, potato and banana) for their family nutrition (no cash crops) and manage cattle, mainly Sahiwal crossbred. Throughout the year, those cattle graze everyday natural grass :

*Eragrostis olivacea* K. Schum on communal grazing areas. Overnight, they are housed indoors on each farm. During the wet season, they are fed forage produced by anti-erosive hedges (0.067 ha) composed by 85 % *Setaria sp* and 15 % *Calliandra calothyrsus*. During the dry season, they are fed crop residues (bean haulms from 0.315 ha, sorgho stovers from 0.08 ha) and forage from alternate and associated food and forage fields (0.26 ha) composed by 2/3 *Tripsacum laxum* and 1/3 *Calliandra calothyrsus*. Each farmer manage at least one cow (330 kg ; 1,400 kg total milk production ; 548 d calving interval for 175 recorded lactations) and its calf (24 kg at birth) which is weaned at 120 d (60 kg) and sold at 365 d (125 kg ; some female calves may be kept for replacement).

Annual mean total feedstuffs production on each farm allows to cover requirements of one dairy cow and its calf (with an excess of 4.6 % UFL, 6.6 % DM, 22.7 % PDI) in addition to possible communal grazing production.

Feedstuffs	Nutritive value/kg DM <sup>1</sup>			Area ha	DM Yield kg/ha/year	kgDM	Annual yield		
	UFL	gPDIN	gPDIE				UFL	gPDIN	gPDIE
<i>Setaria sp</i> <sup>2</sup>	0.67	72	82	0.057	17281	984	659	70859	80701
<i>Calliandra calothyrsus</i> <sup>2</sup>	0.42	147	113	0.010	3753	38	16	5544	4262
Bean haulms	0.88	83	97	0.315	669	211	185	17491	20441
Sorgho stovers	0.59	38	49	0.080	8800	704	415	26752	34496
<i>Calliandra calothyrsus</i>	0.42	147	113	0.087	1608	139	59	20486	15748
<i>Tripsacum laxum</i>	0.61	51	68	0.173	9114	1580	964	80568	107424
Total yield						3656	2298	221700	263071
Requirements <sup>3</sup>						3428	2198	180738	
Difference						227	101	40962	

<sup>1</sup> Data from Pozy *et al* (1995, in present Symposium), except sorgho stovers (no available data) which were considered to be similar to maize stovers (INRA, 1978, Alimentation des ruminants, ed INRA, Versailles, p 544). <sup>2</sup> From anti-erosive hedges. <sup>3</sup> Annual total requirements of one cow and its calf (INRA, 1978, p 285, 346-355 (for UFL and PDI) ; Rivière, 1991, Alimentation des ruminants domestiques en milieu tropical, ed IEMVT, Maisons-Alfort, p 120 (for DM)).