Dry season feeding systems for smallholder dairy cattle in Central-America

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1 Problem

- Small-scale mixed crop-livestock farmers in Central-American hillsides face severe dry season feed shortage and low feed quality.

Dry season feed shortage constrains animal production

2 Objective

- Participatory research and development of alternative and environmentally sound dry season feeding options.

3 Research components

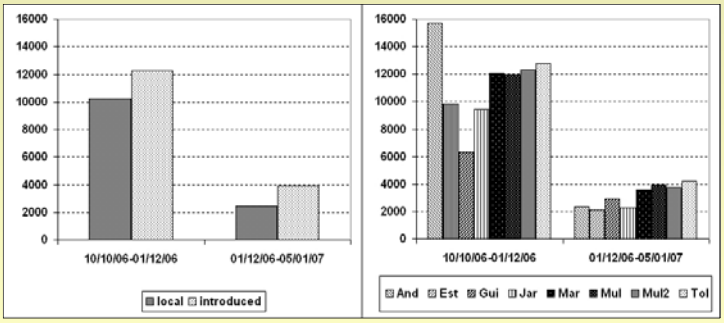
Location: Estelí, Nicaragua

1. Seasonal variations in biomass availability and feeding value of four local and four recently introduced grasses.
2. Grazing cycles with dairy cows in both rainy and dry seasons with local (i.e. *Hyparrhenia rufa* "Jaragua") and introduced (i.e. *Brachiaria* hybrids "Mulato" and "Mulato II", *Brachiaria brizantha* "Toledo") pastures. Parameters: biomass availability; milk production and quality.
3. Herbaceous legumes *Lablab purpureus* and *Vigna unguiculata* improving maize and sorghum fallows in mixed crop-livestock systems. Effect on milk production and quality.

Drought adapted *Brachiaria* and improved crop residues

4 Results

1. Introduced species showed higher biomass availability and *in-vitro* dry matter digestibility than the local ones ($p<0.001$), NDF and ADF contents were lower ($p<0.05$).



And: *Andropogon gayanus*; Est: *Cynodon* spp.; Gui: *Panicum maximum*; Jar: *Hyparrhenia rufa*; Mar: *Brachiaria brizantha* CIAT 6780; Mul: *Brachiaria* hybrid CIAT 36061; Mul2: *Brachiaria* hybrid CIAT 36087; Tol: *Brachiaria brizantha* CIAT 26110 "Toledo"

Biomass availability (kg DM/ha) of local and introduced pastures (left: total; right: per species) during two periods in the dry season of 2006/2007

2. *Brachiaria* hybrid "Mulato II" and *Brachiaria brizantha* "Toledo" produced more biomass during the dry season than the other grasses, milk production was higher in the rainy season. Grazing of "Jaragua" and "Mulato" resulted in higher fat contents (6.8% and 6.3% respectively) than the other two pastures ($p<0.05$).

	Biomass availability after 40 days of regrowth (tonnes DM/ha)	Milk production (liters/cow/day)	
	dry season	rainy season	dry season
***Hyparrhenia rufa* ("Jaragua")**	1.8	3.5	2.8
***Brachiaria* hybrid "Mulato"**	2.2	3.5	2.9
***Brachiaria* hybrid Mulato II**	2.4	4.3	2.8
***Brachiaria brizantha* "Toledo"**	3.3	3.8	2.9

3. Improved crop residues with *Lablab purpureus* augmented daily milk production by 0.6 liters ($p<0.05$). No effect on milk quality was found.

5 Conclusions

- *Brachiaria brizantha* "Toledo" and the *Brachiaria* hybrid Mulato II adapt well to the dry season and increase milk production.
- Improved crop residues i.e. (annual) legumes intercropped with cereals increase milk yields.
- Relative small differences in milk production between treatments are probably due to the limited genetic potential of the animals used in this kind of on-farm trials.

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