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Selected grasses and legumes for feeding ruminants in the tropics

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The importance of grasses and legumes as sources of feed for ruminants in the tropics is discussed. Grasses such as Signal grass, Coast Cross 1, Star grass, Bambatsi, Guinea grass, *Chrysopogon*, and the legumes *Desmanthus virgatus*, *Desmodium distortum*, *Macroptilium atropurpureum*, Stylosanthes hamata and *Centrosema macrocarpum* have proved promising in the Caribbean and their potential is discussed.

Keywords: Tropical forages; Grasses; Legumes

Introduction

Ruminants play an important role in supplying meat and milk in the tropics. The success of this depends largely on providing the ruminants with cheap and easily available feed. This may be achieved by utilizing locally grown forages which are high-yielding, of high quality and low in production costs.

Importance of grasses and legumes for ruminants

Among the chief factors which limit animal production are the quantity of green forage on offer and the quantity of legume available over time (Mannetje and Eberson, 1980). Hitherto, in the Caribbean, feed stuffs providing high nutrient quality were imported at high cost from outside the region. In temperate areas, there are traditional forages which provide high feeding quality. In the tropics, associations of improved grasses and legumes were little used until recent years. The quality of forage on offer was generally low and little protein was available to grazing animals, unless supplied as expensive imported concentrates.

Over the past two decades, however, there has been increasing interest in selected tropical pasture species. Reports have shown considerable weight gains per animal from different tropical grass-legume mixtures (Table 1). The newly identified tropical species, and their associations, have demonstrated that tropical pastures can yield levels of dry matter and protein normally associated with temperate pastures (Table 2). With the selected species, it is now possible to aim for levels of animal production comparable to those achieved in more temperate areas of the world.

Some selected grasses and legumes for ruminants

From experience in CARDI, some of the grasses and legumes that have been proven suitable for soils ranging from acid to alkaline and for both wet and drier parts of the Caribbean are described in Tables 3 and 4. Seed and planting material of these species are available from CARDI.

Table 1 Effect of tropical grass-legume associations on liveweight gain (LWG) of ruminants

Species	Mean LWG kg/head/day	References
Green panic	0.290	Paterson and Horrell (1981)
Green panic + Glycine	0.430	
Leucaena	0.760	
Elephant grass	0.580	Teeluck et al (1982)
Leucaena + Elephant grass	0.670	
A. guyanus	0.507	
H. altissima	0.551	Tergas et al (1982)
A. guyanus + Kudzu + Centro	0.715	
A. guyanus + Centro	0.730	

Table 2 Dry matter yield and crude protein content of selected grasses and legumes adapted to the Caribbean (Devers and Keoghan, 1978)

Species	Variety	Dry Matter yield kg/ha	Crude Protein %
L. leucocephala	Cunningham	1955	23.4
D. distortum	CIAT 335	1575	16.4
M. atropurpureum	Siratro	375	14.7
S. hamata	Local Verano	1000 660	17.9 20.1
B. decumbens	Basilisk	1470	5.8
C. dactylon	Coast Cross 1	1880	7.2
C. plectostachyus	Star	2770	8.8
P. coloratum	Bambatsi	3720	9.8
P. maximum	Likoni	4260	6.3

Table 3 Some selected legumes for ruminant production in the Caribbean

Legume	Description
Centrosema macrocarpum	Extremely vigorous and productive viny type with a high resistance to diseases. Adapted to acid, infertile soil, drought tolerant.
Desmanthus virgatus	Very productive and persistent shrubby type, suitable for both wet and dry areas. Adapted to soils ranging from moderately acid to alkaline.
Desmodium distortum	Adaptable to acid, infertile soils, good browse legume, drought resistant.
Macroptilium atropurpureum	Excellent viny type, high yielding, suitable for wet and dry areas, widely adapted to soils ranging from moderately acid to alkaline.
Stylosanthes hamata	Drought resistant erect, short-lived perennial which produces large quantities of seed. Well accepted by small ruminants and tolerant of heavy stocking rates. There are many different varieties. "Verano" is well adapted to acid soils, while local varieties do well on alkaline areas.
Leucaena leucocephala	High-yielding, small tree, drought resistant, growing on soils ranging from mildly acidic to highly alkaline.

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Table 4 Some selected grasses for ruminant production in the Caribbean

Grass	Description
Brachiaria decumbens	Versatile, drought resistant, high-yielding, acid-adapted, seed producing. Forms a thick sward which resists weed invasion, but is not very compatible with legumes.
Cynodon dactylon cv Coast Cross 1	High-quality, good yield, drought resistant, adapted to mildly acid to alkaline soils. Grows well with legumes. Vegetatively propagated.
Cynodon plectostachyus	High quality, drought resistant, high-yielding, excellent regrowth, adapted to mildly acid to alkaline soils. Vegetatively propagated.
Panicum coloratum cv Bambatsi	Drought resistant, high-yielding, prefers neutral soils and will tolerate heavy, cracking clays. Produces seed.
Panicum maximum	Excellent feed for dry season, there are several varieties which, between them are adapted to a range of soils from highly acid to alkaline. Produces seed.
Chrysopogon spp.	Drought resistant, high yielding, grows well on mildly acid to alkaline soils, produces seed.