

***Desmanthus*: a new forage legume to improve wool growth in tropical Australia**

J.H. de A. Rangel and C.A.M. Gomide

Embrapa Tabuleiros Costeiros, Av. Beira Mar, 3250, Praia Treze de Julho, 49025-040, Aracaju, Se., Brazil,

Email: Rangel@cpac.embrapa.br

Keywords: *Desmanthus*, animal nutrition, clean wool production, heavy clay soils

Introduction In tropical Australia, very short and erratic wet seasons are the critical factors in determining forage growth and animal production (Wheeler & Freer, 1986). Grasses are highly susceptible to low rainfall and animal production in such conditions become strictly seasonal. Improvements in meat and wool production by the introduction of stylo species (*Stylosanthes* sp.) into natural grasslands have been intensively reported (Gillard & Winter, 1984). However, there are currently no suitable introduced legumes for the c.28 million ha of Mitchell grass (*Astrebla* spp.) plains in heavy clay soils of western North Queensland, grazed predominately by wool-producing Merino sheep (Phelps, 1999). Members of the genus *Desmanthus* appear to offer the possibility for filling this role (Gardiner *et al.*, 2004). This work aimed to evaluate the potential of four *Desmanthus* accessions, in comparison with Verano stylo (*Stylosanthes hamata* cv. Verano), as alternative supplements for diets of Mitchell grass hay fed to Merino wethers in western North Queensland.

Material and methods Thirty-six Merino wethers (average liveweight 33.96 kg \pm 1.82), were individually housed in metabolism cages and daily fed with 600 g/head/day of Mitchell grass (*Astrebla* spp.) hay alone or supplemented with 200 g/day of one of five legume hays (6 wethers per treatment). The hays were made from four *Desmanthus* accessions and from Verano stylo. The effects on intake and wool growth were measured.

Results Supplementary diets in general increased significantly nitrogen intake, metabolisable energy intake, clean wool production and wool yield (clean wool/grease wool * 100) (Table 1).

Table 1 Fibre content, digestibility, intake, and wool yield parameters in response to supplementation with legume hays

Supplement	Diets: Mitchell grass hay plus indicated supplement					
	Nil	Verano	<i>D.leptophyllus</i> CPI 38351	<i>D. virgatus</i> CPI 92803	<i>D. virgatus</i> CPI 78382	<i>D. virgatus</i> CPI 79653
Neutral detergent fibre %	55.3 a	55.0 a	51.2 ab	48.7 b	52.8 ab	51.6 ab
Acid detergent fibre %	52.7 a	50.3 a	45.0 b	43.4 b	48.2 ab	43.8 b
DM digestibility %	42.5 bc	46.5 a	43.8 abc	39.8 c	42.2 bc	44.9 ab
OM digestibility %	49.0 a	51.4 a	48.4 ab	45.3 b	48.6 ab	48.3 ab
Total Nitrogen intake (g/day)	7.6 d	9.4 bc	10.2 b	8.7 c	10.2 b	12.4 a
ME intake	110 c	139 ab	131 b	117 c	126 bc	144 a
Clean wool (mg/cm ² /day)	0.42 d	0.56 ab	0.55 abc	0.62 a	0.20 bcd	0.45 cd
Wool yield (%)	59.2 c	67.9 b	67.9 b	77.4 a	67.5 b	64.6 bc
Fibre diameter (microns)	18.9 a	20.4 a	19.8 a	19.1 a	19.8 a	20.5 a

Means followed by the same lower case letters in rows are not significantly different by Turkey (p < 0.05)

Conclusions These results, associated with evidence of the agronomic adaptation of *Desmanthus* genotypes (Gardiner *et al.* 2004) to the black clay soils of the Mitchell grass plains of northern Queensland, show the high potential of the legumes to improve wool growth in that region.

References

- Gardiner, C.P., L. Bielig, A. Schlink, R. Coventry & M. Waycott (2004). *Desmanthus* – a new pasture legume for the dry tropics. *Fourth International Crop Science Congress*, Brisbane, (in press).
- Gillard, P. & W.H. Winter (1984). Animal production from *Stylosanthes* based pastures. In: H. M. Stace & L.A. Edye (eds.) *The Biology and Agronomy of Stylosanthes*, 405-432.
- Phelps, D. (1999). Mitchell grass: Long-term wool production and grazing pressure. DPI Note, File No: SW0025, July 1999. [Http://www.dpi.qld.gov.au/sheep/4993.html](http://www.dpi.qld.gov.au/sheep/4993.html).
- Wheeler, J.L. & M. Freer (1986). Pasture and forage: The feed base for pastoral industries. In: G. Alexander & O.B. Williams (eds.) *The Pastoral Industries of Australia*, 5th Edition, Sydney University Press, Sydney, 165-182.