

AGRONOMIC AND NUTRITIONAL ASPECTS OF DESMANTHUS VIRGATUS

C.P. Gardiner and J.H. de A. Rangel  
Department of Botany & Tropical Agriculture  
James Cook University, Townsville, Australia.

Introduction

The legume genus of *Desmanthus* is new to domestication. The genus is native to the Americas where tropical through to temperate species may be found.

In Australia, and elsewhere, *Desmanthus virgatus* and some other *Desmanthus* species are under evaluation as potential forage legumes. In tropical and subtropical Australia they are being tested as a possible backup for the very successful *Stylosanthes* species and also as an option for the vast clay soil savanna areas where to date very few forage legumes have been successfully introduced.

Materials and Methods

Experiments conducted at James Cook University, Townsville, and the nearby CSIRO research station "Lansdown" examined agronomic and nutritional aspects of a number of *Desmanthus* accessions with particular reference to CPI 79653, 38351, 92803, and 78382. A selection of other herbaceous legume species including *Stylosanthes* was also studied.

Feeding values of the four *Desmanthus* accessions was determined by

- (a) in sacco techniques to estimate Dry Matter Disappearance (DMD) of leaf, stem, pods and seeds and
- (b) the Kjeldahl - N procedure to determine Nitrogen levels of same.

Results and Discussion

Given Townsville's sub-humid climate and the sites duplex soils the *Stylosanthes* cultivars Verano and Seca were very successful in terms of dry matter production, persistence, seedling recruitment and dry season palatability. Among the *Desmanthus* accessions CPI 38351 persisted as well as the *Stylosanthes*, had good seedling recruitment (some accessions such as CPI 78382 had poor recruitment - see accompanying paper by Rangel and Gardiner), was palatable at all times of the year, had good seed production and regrowth following cutting. CPI 92803 also had good regrowth. In addition to the above, CPI 38351 had a low crown and a soboliferous stem habit making it tolerant of low cutting/grazing. In general the *Desmanthus* accessions vary in growth habit from erect/decumbent types such as CPI 38351 to prostrate and multi fine stemmed forms such as CPI 79653. The erect/decumbent types exhibit polymorphic characteristics as reported by Burt (1993).

Table 1. Mean in sacco 48 and 96 hour digestibilities (% DMD) of Desmanthus.

CPI	Leaf	Stem	Pod	Ground Seed	Whole Seed
	48H 96H	48H 96H	48H 96H	48H 96H	48H
79653	50.0 57.6	40.2 46.4	43.6 44.8	- -	16.7
38351	50.9 76.8	33.4 42.3	31.3 35.8	67.9 78.1	18.9
92803	70.3 75.9	27.3 40.4	41.2 48.2	68.8 76.6	15.3
78382	64.9 76.6	34.9 42.1	45.5 48.3	70.0 72.8	1.7

Table 2. Mean (%) Nitrogen content of Desmanthus

CPI	Leaf	Stem	Pod	Ground Seeds
79653	4.0	2.1	3.1	5.1
38351	3.3	1.1	2.1	4.3
92803	2.3	1.7	2.0	4.2
78382	3.5	1.2	1.5	4.7

The nutritional characteristics of the four accessions (Table 1 and 2) indicate that these Desmanthus accessions offer a valuable feed resource for livestock in all seasons with leaves and seeds having high DMD and Nitrogen levels and stems and pods having relatively good values.

#### References

- Burt R.L. (1993) Desmanthus: A Tropical and Subtropical Forage Legume. Part 1. General review. Herbage Abstracts 63, 10 401-413.
- Gardiner C.P. (1992) An Evaluation of Herbaceous Tropical Pasture Legumes with Particular Reference to Desmanthus virgatus. (MSc Thesis James Cook University, Townsville, Queensland, Australia).