



Upper North Farming Systems Native Grass Nutrition Factsheet 1

INTRODUCTION

This fact sheet summarises feed test information for 12 common native grasses growing in the Upper North of South Australia, as well as defining different types of grasses, common feed terms used in this fact sheet and in feed test results.

TYPES OF GRASSES

C₃ Grasses

Also known as winter active grasses e.g. Wallaby Grasses (*Austrodanthonia* species) and Spear Grasses (*Austrostipa* species). These grasses photosynthesise using a biochemical system that fixes carbon in molecules containing three atoms, or C₃ pathway.

C₄ Grasses

Also known as summer active grasses e.g. Windmill Grass (*Chloris truncata*) and Kangaroo Grass (*Themeda triandra*). These grasses photosynthesise using a biochemical system that fixes carbon in molecules containing four atoms, or C₄ pathway.



Wallaby Grass, White top (*Austrodanthonia caespitosa*)

OTHER INFORMATION

Test season

Native grasses were tested twice (with two exceptions) in summer 2008-09 and winter 2009.

Green: Dry Ratio

The Green: Dry Ratio gives an indication of the amount of green verse the amount of dry grass in the sample tested. However grasses will have a mix of both green and dry feed on offer.



FEED TERMS

The following is a list of the meanings of the terms used in this fact sheet. You will find this list helpful for understanding nutrition and analysis of feed test results.

Dry Matter (DM)

The total amount of feed remaining after water has been removed. It may vary from less than 10% for lush pasture to 90% for dry straw or grains. All analysis is expressed on a dry matter basis, as the water content can vary considerably, and the dry matter contains the nutrients animals require (protein, energy, fibre, minerals and vitamins).

Digestible Dry Matter (DMD)

An estimate of the percentage of dry matter digested by animals **including** minerals in the feed. As minerals have no energy value, this figure tends to overestimate the energy content of feed stuffs - especially if feed is mineral rich.

FEED TEST RESULTS

Plant Samples	Test season	Green: Dry Ratio	Dry Matter %	Digestibility % (DMD)	Digestibility % (DOMD)	Energy (ME) MJ/kg DM	Crude Protein %	NDF %	General comments (based on data in table)
C₃ Grasses									
White top (<i>Austrodanthonia caespitosa</i>)	Summer	100:0	46.2	50.7	49.8	7.1	7.5	69.5	Maintenance feed in both summer and winter.
	Winter	50:50	62.4	51.0	50.0	7.2	10.6	65.0	
Elegant spear-grass (<i>Austrostipa elegantissima</i>)	Summer	100:0	51.1	35.7	37.1	4.5	11.1	74.3	Energy required to be supplemented in summer. Winter feed suitable for lactating animals and weaners.
	Winter	100:0	27.4	61.4	58.8	8.9	24.1	60.0	
Desert spear-grass (<i>Austrostipa eremophila</i>)	Summer	100:0	48.0	53.1	53.1	7.5	14.3	64.1	Summer maintenance feed, dry stock may require energy supplement. Good for lactating animals in winter.
	Winter	100:0	28.3	72.0	67.8	10.8	33.3	47.8	
Tall spear-grass (<i>Austrostipa nodosa</i>)	Summer	100:0	42.7	48.0	47.5	6.6	10.6	72.8	Summer maintenance feed, dry stock may require energy supplement. Good for lactating animals in winter.
	Winter	100:0	38.3	69.1	73.5	11.0	21.8	55.2	
C₄ Grasses									
Brush Wire Grass (<i>Aristida behriana</i>)	Summer	100:0	51.0	52.4	51.2	7.4	10.0	67.5	Maintenance feed only.
	Winter	20:80	60.1	49.1	48.4	6.8	8.6	65.2	
Red-leg Grass (<i>Bothriochloa macra</i>)	Summer	100:0	34.7	61.9	59.3	9.0	8.9	53.6	Good summer maintenance feed. Poor winter quality, maintenance only, dry stock may require energy and protein supplements.
	Winter	0:100	53.2	42.6	42.9	5.7	4.6	66.6	



White top
(*Austrodanthonia caespitosa*)



Desert spear-grass
(*Austrostipa eremophila*)



Tall spear-grass
(*Austrostipa nodosa*)



Red-leg Grass
(*Bothriochloa macra*)



Elegant spear-grass
(*Austrostipa elegantissima*)



Brush Wire Grass
(*Aristida behriana*)

FEED TEST RESULTS CONTINUED

Plant Samples	Test season	Green: Dry Ratio	Dry Matter %	Digestibility % (DMD)	Digestibility % (DOMD)	Energy (ME) MJ/kg DM	Crude Protein %	NDF %	General comments (based on data in table)
C₄ Grasses continued									
Windmill Grass (<i>Chloris truncata</i>)	Summer	100:0	37.1	53.1	51.8	7.5	11.0	62.2	Good for dry stock. Weaners may need some energy supplements. No Winter sample analysed.
	Winter								
Lemon-scented Grass (<i>Cymbopogon ambiguus</i>)	Summer	100:0	37.1	52.7	51.4	7.4	9.7	66.2	Poor palatability, rarely eaten by livestock, reasons unknown. No Winter sample analysed.
	Winter								
Silky Blue Grass (<i>Dichanthium sericeum</i>)	Summer	100:0	31.8	51.0	50.1	7.2	10.4	66.1	Good for dry stock and weaners. Suitable for lactating animals in winter.
	Winter	95:5	26.1	65.4	62.2	9.6	17.3	53.1	
Black-heads (<i>Enneapogon nigricans</i>)	Summer	100:0	34.6	49.7	48.9	6.9	12.5	72.6	High in fibre. Dry sheep maintenance feed only.
	Winter	60:40	47.0	49.4	48.7	6.9	9.7	63.9	
Umbrella-grass, Curly Windmill Grass (<i>Enteropogon acicularis</i>)	Summer	100:0	29.8	58.5	56.4	8.5	19.0	65.6	Good summer feed for dry stock or weaners. Winter maintenance feed, supplements required.
	Winter	0:100	87.4	48.4	47.8	6.7	6.4	69.5	
Kangaroo Grass (<i>Themeda triandra</i>)	Summer	100:0	35.5	61.3	58.7	8.9	13.5	63.1	Good summer feed for dry stock or weaners. Suitable for lactating animals in winter.
	Winter	95:5	40.1	57.2	55.3	8.2	12.1	61.8	



Lemon-scented Grass
(*Cymbopogon ambiguus*)



Black-heads
(*Enneapogon nigricans*)



Kangaroo Grass
(*Themeda triandra*)



Silky Blue Grass
(*Dichanthium sericeum*)



Windmill Grass
(*Chloris truncata*)



Umbrella-grass, Curly Windmill Grass
(*Enteropogon acicularis*)

SUMMARY OF SHEEP AND CATTLE NUTRIENT REQUIREMENTS

	Energy (ME) (MJ/kg DM)	Crude Protein (%)	Neutral Detergent Fibre (%)
Ewe / wether - maintenance	8	8 %	30-55 %
Ewe - late pregnancy	10	14 %	30-43 %
Ewe - lactating	11	15 %	30%
Weaner lamb	11	16 %	30-35 %
Dry cow – maintenance	8	8 %	30-60 %
Cow – lactating	10.5	15 %	30-35 %
Weaner Steer	11	16 %	30-40 %

FEED TERMS (CONT. FROM PAGE 1)

Digestible Organic Dry Matter (DOMD)

An estimate of the percentage of dry matter digested by animals **excluding** minerals. This only takes into account the energy in the organic matter in the feed stuff. This is now used (from September 2005) to calculate ME.

Metabolisable Energy (ME)

The feed energy actually used by the animal, calculated from digestible organic matter percentage, and expressed as megajoules per kilogram of dry matter (MJ/kg DM).

Crude Protein (CP)

The amount of true protein (composed of amino acids) plus non-protein nitrogen, expressed as a percentage of dry matter.

Neutral Detergent Fibre (NDF)

The percentage of total cell wall material or plant structure in a feed. This includes lignin (not digestible), cellulose (partly digestible) and hemicellulose (digestible). NDF is the most useful measure of fibre content currently available. Usually, the lower the NDF, the more an animal will eat.

GENERAL FEED TEST COMMENTS

Generally all native grasses tested were very high in fibre which restricts livestock feed intake. Refer to nutrient requirement table.

Native pastures are generally made up of a range of grasses, legumes and other plants. Livestock tend to selectively graze the higher value plants in order to get a balanced diet. Select the class of livestock for grazing a paddock according to their nutrient requirements and the feed on offer.

Feed tests will be continued to be undertaken which will aid in the understanding of nutrient values of native grasses over time.

FURTHER INFORMATION

Feed tests

Foster, P.R., Reseigh, J. and Myers, R. J. (2009). An Introduction to the Nutritional Composition of Australian Native Grasses: Forage and Seed. Adelaide, Rural Solutions SA.

Plant identification

Jessop, J., Dashorst, G. R. M. and James, F. M. (2006). Grasses of South Australia. Kent Town, Wakefield Press.

Mid North Grasslands Working Group (2007). Grasses, Gums and Groundcovers. Clare, South Australia, Mid North Grasslands Working Group.

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