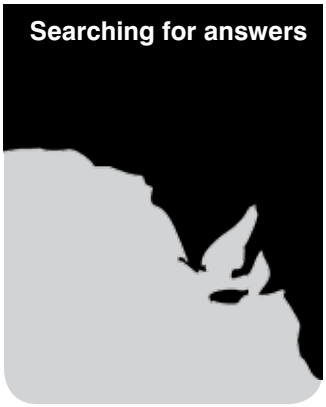
Matching Nutritional Value of Native Grasses to Livestock Requirements



Michael Wurst, Jodie Reseigh and Daniel Schuppan
Rural Solutions SA

Key messages

- **Native perennial grasses are a significant component of some pastures and work is being done on ways of improving productivity, persistence and utilising out of season rainfall.**
- **Nutritional testing of native grasses showed moderate to high protein, high fibre and moderate energy.**
- **The class of livestock for grazing a paddock should be selected according to their nutrient requirements and the feed on offer.**

Why do the trial?

Minimal research has been conducted on the production and quality of native grasses for livestock production, while increasing vegetative surface cover, particularly in low rainfall agricultural areas of South Australia. Numerous questions have been asked by landholders and extension staff about the nutritional value and mineral content of native pastures and the persistence and productivity of native grass species compared to introduced species such as lucerne. This project aims to answer these questions through a series of plot trials, native grass nutritional analyses and grower case studies.

How was it done?

More than 20 samples of perennial native grasses were sampled four times over the past twelve months (2009/10) with a range of winter active (C3) species and summer active (C4) species tested. Further testing is currently being undertaken.

What happened?

Nutritional analysis results presented in Table 1.

What does this mean?

- These results present some of the first data on nutrition of native grasses in the low rainfall zones of South Australia. Previously information was restricted to the mid-high rainfall zones of the mid North and eastern Australia.
- As a guide a 60 kg dry ewe requires a maintenance diet with a minimum energy content of 7.8 MJ/kg DM and a minimum protein percentage of 8%. There is considerable variation in nutritional quality between different native grass species and the time of season; most native grass pastures will support dry stock.
- The C3 native grasses have the highest feed quality, while actively growing in winter.
- In comparison the C4 native grasses have their highest feed quality when actively growing in late spring or summer.
- Generally all native grasses tested were high in fibre which restricts livestock feed intake.
- Lush green growth exceeds protein requirements for stock growth.
- Native grasses will produce green feed from rainfall events outside of the growing season, providing higher quality feed than dry pastures and stubbles.
- Native pastures are generally made up of a range of grasses, legumes and other plants.
- Under set stocking grazing livestock tend to selectively graze plants with a higher nutritional value to maintain a balanced diet.
- The class of livestock for grazing a paddock should be selected according to their nutrient requirements and the feed on offer.
- Feed tests will be undertaken in different seasons, aiding in the understanding of nutrient values of native grasses over time.

Acknowledgements

Project funding provided by Australian Government through Caring for Our Country: Best practice management grazing systems for native grass pastures in the low rainfall cereal zone, Project No. SA NY MR05, and Department of Water, Land and Biodiversity Conservation.

Feed test figures (summer) reproduced with permission from Foster et al. (2009) An Introduction to the Nutritional Composition of Australian Native Grasses: Forage and Seed.

Upper North Farming Systems landholders for their innovation and interest.

Table 1 Feed test results for common native grasses of the low rainfall areas of South Australia

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)
C_3 Grasses									
White top	Summer	100:0	46.2	50.7	49.8	7.1	7.5	69.5	Maintenance feed in summer and winter. High fibre content will restrict intake. Weaners should be supplemented with grain to maintain growth rates of 100 gm/day.
(Austrodanthonia caespitosa)	Winter	50:50	62.4	51.0	50.0	7.2	10.6	65.0	
Desert spear-grass	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.
(Austrostipa eremophila)	Winter	100:0	28.3	72.0	67.8	10.8	33.3	47.8	
Tall spear-grass	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 and finishing stock in winter. Energy and protein well above requirement.
(Austrostipa nodosa)	Winter	100:0	38.3	69.1	73.5	11.0	21.8	55.2	
C_4 Grasses									
Brush wire grass	Summer	100:0	51.0	52.4	51.2	7.4	10.0	67.5	Maintenance feed only.
(Aristida behriana)	Winter	20:80	60.1	49.1	48.4	6.8	8.6	65.2	
Windmill grass	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.
(Chloris truncata)	Winter								
Black-heads	Summer	100:0	34.6	49.7	48.9	6.9	12.5	72.6	High in fibre. Dry sheep maintenance feed only.
(Enneapogan nigricans)	Winter	60:40	47.0	49.4	48.7	6.9	9.7	63.9	
Umbrella-grass, Curly Windmill	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.
grass *(Enteropagan acicularis)*	Winter	0:100	87.4	48.4	47.8	6.7	6.4	69.5	
Kangaroo grass	Summer	100:0	35.5	61.3	58.7	8.9	13.5	63.1	Good summer and winter feed for dry stock or weaners.
(Themeda triandra)	Winter	95:5	40.1	57.2	55.3	8.2	12.1	61.8	