

2001/V08



Producer Research Support

Evaluating NIRS

Southern Australia Beef KIT



The project

The Southern Australia Beef KIT group designed a project to assess the predictive reliability of faecal Near Infra Red Spectroscopy (NIRS) calibration equations developed for Northern Australia, when applied to cattle grazing temperate pastures in Southern Australia.

Objectives

1. Determine nutritional profiles (crude protein and digestibility levels) of pastures in Southern Australia using monthly pasture samples to simulate forage selected by grazing cattle;
2. Apply the faecal NIRS calibration equations developed for Northern Australia to estimate crude protein and digestibility of the diet of cattle grazing a similar pasture in Southern Australia;
3. Make an assessment of the reliability of these equations for application in Southern Australia; and
4. Relate live weight change in cattle to estimates of dietary crude protein and digestibility of available pastures and identify optimal timing for supplementary feeding to ensure that growth rates meets targets.

What was done

The premise of the project involved nine group members collecting pasture samples for analysis by CSIRO Townsville monthly (twice a month when 'haying off').

A total of 14 pasture and dung samples were received and processed by CSIRO from six different KIT group participants.

What happened?

Table 1. Crude Protein and Digestibility Analysis, summarises the results of dietary crude protein (CP) and digestibility estimates from dung against the predictions of the NIRS faecal calibration equations.

Comparison of NIRS faecal analysis with pasture analysis showed an encouraging correlation for digestibility, but poor correlation for dietary protein.

Robust data collection and analysis protocols would need to be developed and followed in order for any further benefit to be derived from this project.

Key points

- Poor correlation was found between dietary crude protein levels and NIRS faecal analysis.
- Correlation between dietary digestibility estimated from dung and that measured from forage is much higher. The greatest variation between dietary digestibility determined from dung and forage was ten percent.
- Further research is needed to substantiate these correlations.

Contact details

Chris Scheid
Resource Consulting Services -
Southern Australia, PO Box 1251,
NARACOORTE SA 5271
Tel (08) 8762 3455

2001/V08



Producer Research Support

MLA Producer Research Support offers support funding of up to \$15,000 over three years for groups of producers keen to be active in on-farm research and demonstration trials.

These activities include:

- Producer Initiated Research and Development
- More Beef from Pastures demonstration trials
- Prime Time Wean More Lambs demonstration trials
- Sustainable and productive grazing grants.

Contact Stephen Feighan - MLA Project Manager, Producer Delivery and Adoption. Tel (02) 9463 9245 or sfeighan@mla.com.au

MLA also recommends EDGENetwork

EDGENetwork offers practical field-based workshops to improve productivity and profitability for the long-term.

Workshops cover breeding, nutrition, grazing management, marketing and selling.

Call MLA on 1800 993 343 or www.edgenetwork.com.au

Meat and Livestock Australia

Level 1, 165 Walker Street
North Sydney NSW 2060

Tel (02) 9463 9333

Fax (02) 9463 9393

Free Phone 1800 023 100 (Australia only)

www.mla.com.au

Evaluating NIRS

August 2005 / PIRD OUTCOMES

Table 1. Crude Protein and Digestibility Analysis

	Dietary CP (%) Est from dung	Dietary CP (%) Forage NIRS	Digest'y (%) Est from dung	Digest'y (%) Forage NIRS
Hodges 11/01	12.8 14.6	17.9 11.8	63 65	68 60
Hunt 11/01	13.1	15.6	64	66
Hunt 12/01	9.4	13.2 (grass) 19.4 (clover)	56	60 61
Baulch 12/01	9.3 8.9	7.7 7.2	56 55	60 60
Hetherington 3/02	6.4	6.5	49	54
Hanson 3/02	8.2	4.8	55	50
Menzel 5/02	9.1	8.7	54	56
Hetherington 5/02	6.7	6.6	45	47
Hanson 5/02	9.4	17.3	67	65
Hunt 5/02	8.8	9.3	59	56
Hunt 5/02	8.8	9.3	59	56
Hanson 5/02	9.4	17.3	67	65
Menzel 5/02	7.6	8.7	57	57
Hunt 8/02	16.6	21.6	74	67

Initial data scanning shows some correlation between faecal estimation of dietary crude protein and forage crude protein where crude protein percentages are less than eight. Above crude protein percentages of eight, correlations are less reliable. Crude protein estimates from dung appear to be lower than estimated from forage.

Correlation between dietary digestibility estimated from dung and that measured from forage is much higher. The greatest variation between dietary digestibility determined from dung and forage was ten percent.

Discussion

Group members viewed this project as pure research, and because the benefits and on farm application of its outcomes were not immediately obvious, lost interest in the project.

Very few group members (only six, three of whom were part of the original project submission) provided samples, and those who did, did not provide regular samples for analysis.

This resulted in a very low data sample, which was not subjected to rigorous statistical analysis. Robust data collection and analysis protocols would need to be developed and followed in order for any further benefit to be derived from this project.

The project was concluded because of lack of producer involvement and lack of confidence that any useful information would be gained.