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Research

Key messages

- In 2006, grass-free medic pastures provided a balanced pasture suitable for growing out weaners, therefore no benefits to stock performance were measured as a result of leaving grasses in medic pasture or feeding hay when grasses were removed.
- Vitamin A, D and E treatment did not increase growth rates of sheep grazing on medic pastures in 2006.
- Merino lambs grew very well at 260 g/day.
- More work is needed on the nutrition of stock grazing medic pastures, as 2006 was a poor trial year.

Why do the trial?

Most farmers remove grasses from their pastures with a selective herbicide to improve yield in the following crops. While this practice is a definite benefit to the business, many farmers have commented that the grass-free medic pastures lead to poor performance in their livestock. Farmers have also reported health problems such as red-gut and ammonia toxicity, which can occur on high protein diets such as lush legume pastures. In 2003, one farmer near Cleve lost 35 crossbred lambs due to red-gut.

Legume pastures undergo a flush of growth just prior to flowering, where nitrate concentrations increase and energy (ME) levels fall, increasing the risk of red-gut and ammonia toxicity. These lush pastures also lack fibre.

Vitamin A deficiency can occur on lush pastures with high nitrates.

Vitamin D is obtained from the sun and only becomes a problem if phosphorus and calcium are unbalanced in the diet. It is recommended that hay be offered to stock on legume pastures that are high in phosphorus and calcium. Hay also gives the stock fibre, which helps the gut function.

Vitamin E deficiency is likely to occur in stock that have been fed on grain and hay for extended periods of time,

with no access to green feed. Stock requirements for Vitamin E increase with high nitrates in the diet.

The trial aimed to assess the production benefits of balanced nutrition by offering hay or grasses to stock grazing medic pastures and determine the value of vitamin A, D and E supplements.

How was it done?

- A self-regenerating medic-based pasture was fenced into three 13 ha paddocks, and two of these were sprayed with Targa in late May.
- 120 merino wether lambs (June–July 2005 drop), purchased locally on 22 May at weights between 34 and 40 kg, were drenched, vaccinated, weighed, drafted and tagged into three randomly selected feed treatment groups.
- Half the sheep in each group were given a Vitamin A, D and E injection and all the sheep were put in trial paddocks on 4 July. A second dose of A, D and E was given on 18 August.
- The three feed treatments were grassy medic, grass-free medic only, and grass-free medic with hay. Each of these treatments had half the sheep treated with vitamin A, D and E.
- Sheep were weighed on 30 June, 28 July, 18 August and 8 September.
- Sheep were run for a period of 66 days at a stocking rate of approximately 5 DSE/ha until paddock feed ran out.

What happened?

Medic pastures produced a good deal of early bulk (late May), providing ample paddock feed in July when the trial started. Further pasture growth was restricted by lower than average growing season rainfall and frosts. Pasture growth in spring was poor.

The paddock had been cropped for several years previously, so while an attempt was made to leave one paddock grassy the percentage of grasses present was very small.

Searching for answers



Location

MAC

Rainfall

Av. annual: 325 mm

Av. GSR: 242 mm

2006 total: 236 mm

2006 GSR: 111 mm

Yield

Potential: 4.1 t/ha or

1.2 DM t/ha (pasture)

Paddock history

2005: Wyalkatchem wheat

2004: Yitpi wheat

2003: pasture (spray topped)

Soil type

Red sandy loam

The performance of stock on each feed treatment was measured by weight gain. Table 1 shows there was no weight gain difference between the treatments. The vitamin A, D and E treatment was not beneficial to weight gain on any of the feed treatments. The sheep had very good growth rates at an average of 260 g/day. Stock growth rates of 240 g/day are exceptionally good for Merino lambs on paddock feed. Hay is low in energy and high in fibre, so offering it to stock did not have any benefit to the nutritional value of the feed and it would have been a more costly option.

The FeedTest analysis of the pasture (Table 2) shows that leaving grasses in the pasture did not improve the nutritive quality of the medic pasture. Both pastures provided adequate protein and fibre to stock, and only lacked a little on energy. Stock performed well on this pasture as it almost met the recommended nutritional requirements.

What does this mean?

Grass-free medic is usually higher in protein and has less energy, which makes it an unbalanced stock feed. However, the medic pasture in 2006 provided good feed, suitable for growing out weaner lambs. There was no benefit to livestock growth rates from leaving grasses in the pasture or by supplementing the pasture with hay. The vitamin A, D and E treatment was of no benefit to stock on medic pastures in 2006. Benefits from the treatment will only be seen if there is a deficiency through poorly balanced nutrition. The risk of livestock health issues such as red-gut and ammonia toxicity may be greater in years with different seasonal conditions, such as a wet spring. To generate any outcomes from this work, the trial will need to be repeated in a better year with many more sheep to account for growth rate variations.

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Targa is a registered product of Du Pont, and FeedTest is registered to DPI Victoria.

Table 1 Weight gains and growth rates of wether lambs at Minnipa, 2006.

	Grassy medic	Grass free medic	Grass free medic plus hay
Weight gain (kg/head) no Vitamin A, D and E	15.8	16.9	18.0
Weight gain (kg/head) with Vitamin A, D and E	15.8	16.1	15.1
Growth rate (g/day)	240	260	270

Table 2 FeedTest analysis of pasture (per kg DM) at Minnipa, 1 August 2006.

	Medic (grass free)	Grassy medic	Recommended	
			Maintenance ³	Production ⁴
Crude protein (%)	26	26	8	16
Fibre (NDF ¹ %)	38	40	10	20
Digestibility (%)	66	67	45	70
ME ² (MJ)	9.7	9.9	7.4	11
Pasture-available DM (t/ha)	0.87	0.70		

¹NDF — neutral detergent fibre

²ME — metabolisable energy

³Refer to 'Feeding and managing sheep in dry times', ration for maintenance

⁴Example ration for finishing

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