

Lime influences pasture quality on the Northern Tablelands of NSW

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The benefit of lime to raise pH has been widely reported, however, the effect of lime on pasture production and pasture quality (digestibility and crude protein) is not well documented or understood. Data from a number of Acid Soil Action (ASA) funded community projects on the Northern Tablelands of NSW have suggested better animal performance on limed paddocks. This paper describes an experiment established in conjunction with these ASA community projects to determine if there is a link between animal performance and pasture quality after lime application.

Methods

The experimental site and treatment details are described in Harris and Duncan (2001). Data for treatments 1 to 4 (Control and lime at 1.75, 2.5 and 3.75 t/ha) are also presented in this paper.

The dry matter production (kg/ha) and botanical composition of pasture on offer during the period October 1999 to September 2000 were determined using Botanal assessment (Tothill *et al.* 1978). Samples of herbage material were taken monthly from each plot during the period November 1999 to May 2000 for determination of *in vitro* digestibility and crude protein.

Results and Discussion

The only effect of lime on herbage mass was between the control and lime incorporated treatments.

Lovegrass (*Eragrostis curvula*) was the dominant pasture species in all treatments except where incorporation increased broadleaf weeds as a result of soil disturbance. Lime had no significant effect on lovegrass dry matter in any treatment, but lovegrass proportion of the sward increased across all treatments.

The contribution of white clover to sward composition varied with treatment. The only treatment to have significantly more white clover than the control treatment was L1.75, which continued for the first five months of the experiment.

Pasture response to lime can be very seasonal and the time of response can be just as important as the overall annual response. Although not statistically significant, dry matter yield of the lime treatments (excluding incorporated treatments) appeared to be higher in autumn (March and April) when feed shortages often occur. Extra pasture at this time would be welcome to improve animal production.

The effect of lime on pasture quality (digestibility and crude protein) for the period November 1999 to May 2000 is presented in Table 1.

The L1.75 treatment produced consistently higher digestibility and crude protein than the control treatment. The high clover content (although it was only for five months) in this treatment compared to the other treatments may explain the higher digestibility and crude protein. This low lime rate, relative to higher traditional rates (2.5 t/ha) is worth consideration on acid, granite derived soils, where overliming and potential adverse effects on plant nutrients may occur.

As this experiment has been going for less than two years, data are preliminary. Pasture production and quality measurements will be continued for another two years in conjunction with ASA to provide more information on the effect of lime on pasture production, pasture quality and possible linkages to animal performance on the Northern Tablelands.

Table 1. The effect of lime on a) digestibility and b) crude protein of a degraded lovegrass pasture on a granite soil at Tenterfield from November 1999 to May 2000.

	November	December	January	February	March	April	May
a) Digestibility							
Control	62.75	52.72	52.39	47.93	48.75	32.44	42.15
L1.75	59.14	55.92	57.21	54.53	51.77	36.31	49.59
L2.5	61.42	55.33	55.42	48.43	50.28	36.02	44.67
L3.75	60.22	50.84	54.35	46.08	51.45	32.45	40.05
l.s.d. = 2.628							
b) Crude Protein							
Control	12.07	10.61	11.02	8.60	11.21	10.14	10.58
L1.75	11.97	12.01	14.60	9.80	12.19	12.01	12.19
L2.5	12.43	13.04	13.31	9.08	12.24	10.67	9.94
L3.75	10.32	9.27	11.35	8.07	11.40	9.52	8.39
l.s.d. = 0.832							

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