## Growth of subterranean clover with lime and fertilizer molybdenum

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In North East Victoria, subterranean clover often fails to establish after cropping and grow and persist satisfactorily. These problem paddocks usually have soils with low total exchangeable cations (<4 meq./100 g soil) and often very low soil pH's (<5.0 in 1:5 H20). Investigations to restore subterranean clover productivity commenced in 1981 and initial findings were reported at the previous Agronomy Conference (1). Further results are presented in this and two other papers.

## Methods

Five rates of lime were applied and surface incorporated (O-100 mm) at 6 sites across North East Victoria in September 1980 (Lilliput) or early April 1981. At the break in May 1981, inoculated subterranean clover seed (cv. Woogenellup was drilled with superphosphate at 5 sites. and with 7 fertilizer treatments, including molybdenum and super-lime, at the Lilliput site. The fertilizers were reapplied as top-dressings in April 1982 and 1983. Lime plots at one site (Rutherglen) were split for molybdenum in April 1982.

## **Results and Discussion**

Clover growth was improved by lime at the more acid sites (Table 1). At the Lilliput and Rutherglen sites, consistent improvements to lime were measured in all 3 seasons.

## Table 1 Effect of lime at 2.5 t/ha on clover growth (% increase)

Site	₽H <sub>w</sub>	pH lime	A1 ppm	Mn ppm	1981		1982	1983	
					W	S	W	AW	S
Bundalong	5.8	6.4	<10	70	7	20	1.4.7		46
Devenish	5.5	6.1	17	76	162	-10			-18
Lilliput	5.2	6.2	38	68	222	442	122	14	
Lurg	4.9	5.3	197	28			223	101	91
Rutherglen	5.1	5.7	56	111	9	32 <sup>2</sup>	102	92	2
Springhurst	5.4	6.3		¥.6		18		4	

A = autumn, W = winter, S = spring; . = not measured; <sup>1</sup> = mixed sward;

2 = significant (P<0.1) response</pre>

Over all 6 sites over the 3 seasons, the pH of the 2.5 t/ha lime plots was raised by a mean 0.64 units. Soil exchangeable aluminium virtually disappeared from these lime plots and soil manganese concentrations were reduced by 38%. Manganese concentrations in clover herbage were also reduced by 38% from an overall mean of 402 ppm.

Transient colour differences due to fertilizer molybdenum were observed at Lilliput and Rutherglen in clover herbage during two periods of rapid plant growth; early spring 1981, and autumn 1983. Corresponding increases in clover growth were also observed. Overall, fertilizer molybdenum improved clover growth at both sites, irrespective of the lime treatments, indicating extremely low levels of molybdenum in these soils.

Super-lime fertilizer supplying 12 kg P and 67 kg Ca/ha improved clover growth in the establishment year only, and then only at the 2 lowest lime rates (0 and 0.5 t/ha).

1. Hirth, J.H., Coventry, D.H. and Reeves, T.C. (1982). Proc. 2nd Aust. Agron. Conf., Wagga Wagga. p 263.