Lime beefs up steer production

Mick Duncan[1] and Georgina Mitchell[2]
[1]NSW Agriculture, Armidale, NSW; [2]"Alinjarra", Ebor, NSW

Introduction

An on-farm demonstration was established near Ebor on the New South Wales northern tablelands in February 1999 to evaluate the effect of lime on soil, pasture quality, and steer production. A 40-ha paddock was subdivided to produce two similar 20-ha paddocks in terms of topography and aspect. These two paddocks were then soil sampled to subsequently guide fertiliser type and an appropriate lime rate. Pasture consisted of cocksfoot, perennial ryegrass, Kentucky bluegrass, rice-grass (*Microlaena* sp.), white clover, and seasonal annuals.

Methods

The two paddocks were fertilised with the same product and at the same rate each year from February 1999. One paddock (Racecourse) was then topdressed with lime at 2.5 t/ha, while the other (Volcano) did not receive lime. Steers were weighed on to each paddock and weighed off as target market weights were reached. Stocking pressure was adjusted to maintain both paddocks in a similar condition in terms of dry matter throughout the duration of the demonstration.

Annual soil analyses were used to select an appropriate fertiliser product to correct severe phosphorus and moderate sulphur deficiencies.

Pasture samples were taken for quality assessment in May 2001 and January 2002. Severe drought conditions caused a suspension of animal weight recordings from September 2002 until seasonal conditions improved by March 2003. This paper reports steer performance from the commencement of recordings in April 1999 until September 2002. Effects of lime on some soil characteristics are shown.

Results

Lime significantly reduced aluminium from 24% of the cation exchange capacity (CEC) in the 0- to 10-cm profile to 6% but had little if any effect below 10 cm. pH increased from 4.4 to 4.9 in the 0- to 10-cm profile 2 years after lime application with this effect still evident in March 2003. Lime had no effect on pH below 10 cm (Table 1).

Lime had no effect on steer weight gains for at least 12 months after application. During the second year, the limed pasture was able to carry 10% to 15% more stock compared with the non-limed site; and this was reflected in total beef produced. By September 2002, 3.5 years after the initial application, the limed paddock had produced nearly 6,000 kg of beef more than the unlimed site (Figure 1).

Pasture quality analysis samples taken in May 2001 and January 2002 revealed only minor differences in favour of lime for digestibility and energy.

Conclusion

Topdressed lime produced 16% more beef 3.5 years after application onto an improved pasture compared with production from an identical unlimed site. An extra 5,900 kg of beef resulted from a 20-ha paddock, which, if valued at $1.65 per kg, returned an extra $9,855. The lime cost $3,600 ($180 per ha), giving a raw, net profit of $6,255. This outcome will improve even further while the residual value of the lime persists.

Acknowledgments

This project was funded by Acid Soil Action, an initiative of the New South Wales Government and administered through NSW Agriculture. Georgina Mitchell, "Alinjarrah", Ebor, has provided day-to-day management and valued cooperation.

Table 1. Effect of topdressed lime on pH, CEC, and Al 3 years after application at 2.5 t/ha.

Paddock	pH (Ca)	CEC (M.E/100g)	Al (% of CEC)
Racecourse 0 - 10 cm	4.8	10.8	5.7
Racecourse 10 - 20 cm	4.4	7.8	22.7
Volcano 0 - 10 cm	4.4	9.9	24.6
Volcano 10 - 20 cm	4.3	8.9	32.9

Note: Racecourse = + lime, Volcano = nil lime.

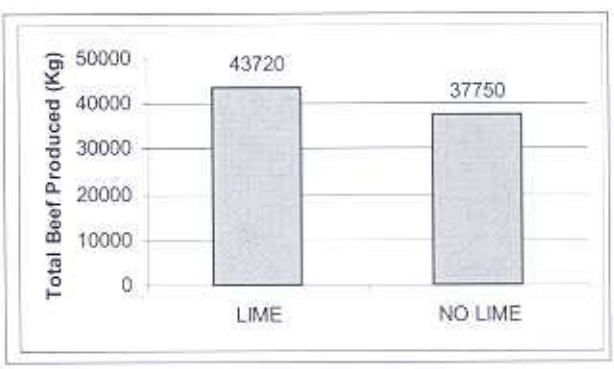

Figure 1. Effect of topdressed lime on steer production 3.5 years after application.