

Long term lime effect on stocking rate on acid soils in South West Slopes NSW

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A long-term pasture/crop rotation trial, known as MASTER - Managing Acid Soils Through Efficient Rotations, commenced in 1992 at Book Book, 40 km southeast of Wagga Wagga in a 650 mm rainfall zone (See Li *et al.* 2001 for experimental design and site description). Merino wether hoggets were rotationally grazed on annual and perennial pastures using a "put and take" technique to use pastures efficiently. Stocking rates have been manipulated to maintain similar liveweight and body condition on all treatments.

Annual pasture was sown to annual ryegrass (*Lolium rigidum* cv. Wimmera) and subterranean clover (*Trifolium subterraneum* cvv. Junece, Goulburn and Trikkala) and perennial pasture was sown to phalaris (*Phalaris aquatica* cvv. Australian and Höldfast), cocksfoot (*Dactylis glomerata* cv. Currie), lucerne (*Medicago sativa* cv. Aurora) and subterranean clover (cvv. Junece, Goulburn and Trikkala). An initial lime application of 3.7 t/ha was incorporated in the 0-10cm soil layer in 1992 to lift pH_{Ca} from 4.0 to 5.5. A subsequent maintenance lime rate of 2.6 t/ha was top-dressed at the start of phase 1 at 6 yearly intervals to maintain an average pH_{Ca} of 5.5 in the top 10cm over the six year liming cycle (Li *et al.* 2001).

Liming annual and perennial pastures increased stocking rate throughout the year with the highest increase in spring (up to 4 wethers/ha) compared with the unlimed treatments (Fig. 1). Limed perennial pastures carried more animals in summer as expected, compared with limed annual pastures, but not in spring there was no limitation in feed intake to animals during this lush feed period. Averaged across years from 1993 to 2000, there little difference in stocking rate between annual and perennial pastures. However, perennial pastures play an important role in slowing soil acidification and minimising off-site impacts such as dryland salinity (Scott *et al.* 2000). Overall, the limed pastures on average carried 21% more animals (up to 4 dse/ha) than the unlimed pastures. As a result, sheep on the limed treatments produced 22% more liveweight (51 kg/ha/year) and 23% more clean wool (9.4 kg/ha, 19 micron) compared with the unlimed treatments (Li *et al.* unpublished data).

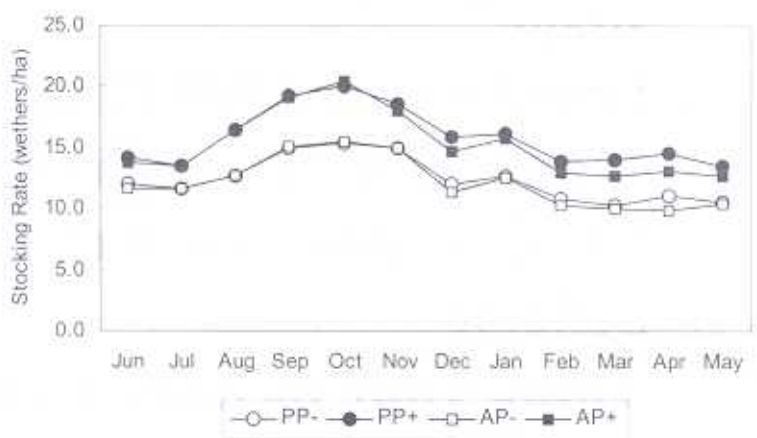


Fig. 1 Monthly stocking rate (wethers/ha) from 1993-2000 (PP- and PP+: unlimed and limed perennial pastures; AP- and AP+: unlimed and limed annual pastures)

Acknowledgments:

The project has been funded by NSW Agriculture with financial support from GRDC (1997-2002), Acid Soil Action (1997-2003), IWS (1991-97), MLA (1994-97) and LWRRDC (1994-97). Our thanks also to Incitec Pty Ltd and Omya Southern Pty Ltd for supplying fertilisers and lime.

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