

Long-term lime effect on pasture and sheep performance:

2. Sheep responses.

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Introduction

MASTER (Managing Acid Soils Through Efficient Rotations) is a long-term experiment that commenced in 1992 (Li *et al.* 2001). In autumn 2004 at the commencement of the third 6-year cycle, both perennial and annual pastures were re-established with original mixtures. This paper reports the long-term lime effect on the sheep performance after 14 years.

Materials and methods

Merino hoggets (15–18 month old) were used as test animals and rotationally grazed on the site. A 'put and take method' was used to mimic the feed demand of a ewe-lamb system. Stocking rates were adjusted according to pasture availability and sheep conditions at the start of each rotation cycle. The aim was to keep individual sheep in similar body condition on both limed and unlimed treatments without prejudicing pasture growth and persistence. The liveweight was taken from June to November 2005.

Results and discussion

During the pasture growing season in 2005, the limed treatments carried 20% more stock than unlimed treatments on both perennial and annual pastures (Figure 1a). Perennial pastures carried more stock than annual pastures on both limed and unlimed treatments (Figure 1a).

Averaged across treatments, sheep gained 17 kg/ha from June to November 2005. The individual sheep performance was similar between treatments. In terms of liveweight gain on a per hectare basis, sheep on the limed treatments produced more liveweight gain than those on the unlimed treatments (Figure 2b). In addition, sheep on the perennial pastures gained more weight than on annual pastures on both limed and unlimed treatments (Figure 2b). The significant liveweight gains on the limed treatments were due to increased pasture yield and improved pasture quality, which is consistent to the results for the first two cycles from 1992–2003 on the MASTER site (Li and Conyers 2006a, b).

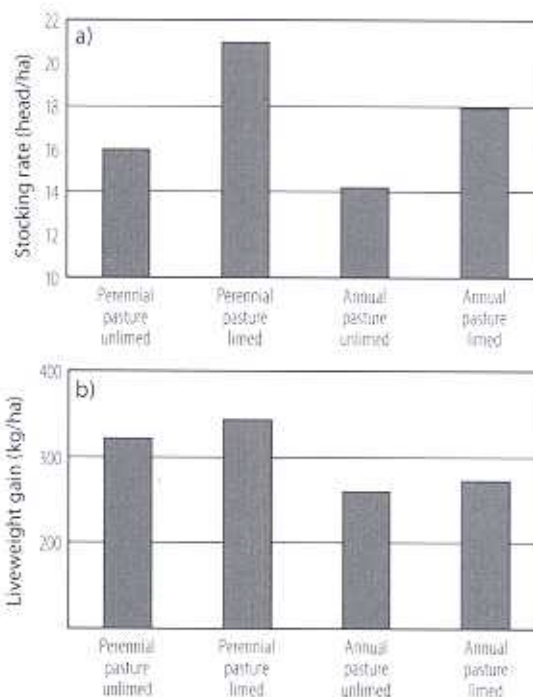


Figure 1 a) Average stocking rate in winter and spring, b) Average liveweight gain over four months,

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