

Grazing management:

Perennial partnership required for productive pastures

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The maintenance of productive pastures is a difficult objective for graziers, made doubly so by the variable climate of much of Australia. Research on the Northern Tablelands of NSW between 1994 and 1997 found that maintenance of both a productive legume (white clover) and a fertilizer-responsive deep-rooted perennial grass (phalaris) were important contributors to more stable and profitable production. This paper attempts to summarise the key features of this partnership.

Methods

A series of paddocks, all sown in 1966 to phalaris (*Phalaris aquatica* cv. Australian) and white clover (*Trifolium repens* cv. Huia) and well fertilised since, were subjected to different intensities of grazing in the 1980s leading to very different botanical compositions. In two paddocks which had been grazed continuously at high stocking rates, the phalaris had largely been lost due to over grazing (these paddocks were termed 'degraded') whilst four other paddocks which had been intermittently grazed were dominated by phalaris. Two of these paddocks were re-sown with white clover in 1994 to investigate the importance of re-introducing the legume (the 'phalaris/white clover' treatment), and the third treatment was the phalaris-dominant pasture without re-sowing the clover (the 'phalaris' treatment). All paddocks were then grazed with weaner sheep to measure the effects of the three treatments.

Intensive measurements were made of the status and changes in soil, pasture and animal parameters.

Results and discussion

A summary of some key findings is presented in Table 1. Compared with the other treatments, the phalaris/white clover treatment used more water, had lower nitrate at depth, and yet produced more nitrogen which in turn produced greater vigour in the companion grass. This more stable botanical composition had less weeds and produced more wool and meat, resulting in a more productive and profitable system with few measured negative impacts. Graziers must ensure that they maintain the presence of both a productive legume and a nutrient responsive grass in order to keep their grazing enterprise profitable. The productive legume assisted in maintaining the grass component.

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Table 1. Summary of some key measures of degraded, phalaris and phalaris/white clover pastures grazed with weaner sheep from 1994 to 1997 (means of 2 replicates).

Attribute	Units	Degraded	Phalaris	Phalaris/ white clover
Water extracted in 4 week drought in autumn	mm	28.0	38.0	51.0
Mineral N (40-69 cm) at Feb 97	µg N/g soil	1.6	3.1	1.4
Stocking rate	weaners/ha	9.9	14.0	14.8
Liveweight gain	kg/ha/yr	54.5	140.0	222.0
Wool produced	kg/ha/yr	29.7	47.6	68.1
Gross return (\$1/kg LW and \$6/kg wool)	\$/ha/yr	\$232.70	\$425.60	\$630.50