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Botanical composition of a phalaris-dominant pasture 5 years after the introduction of intensive rotational grazing

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Key words : phalaris , botanical composition , grazing management

Introduction Phalaris (*Phalaris aquatica*) is a significant grass component of many sown permanent pastures in the high rainfall zone of southern Australia (>600mm annual average rainfall) , including the lower south east of South Australia . Its ability to persist through the summer-dry , its high growth rate and the observation that it grows well on the shallow , heavy clay/loam soils of high pH (8.0-8.5) that appear to be less well suited to most other perennial grass species often promoted for the region , all help explain its widespread use in the area . Although it has been widely adopted , there has been relatively little work undertaken on the effects of rotational grazing on this species . Virgona *et al.* (2000) is the most recent example that studied the effects of differing grazing management , concluding that rotational grazing can be used to increase or maintain phalaris in summer-dry environments . This paper reports a 5 year study of the effects on botanical composition of changing the grazing management of a phalaris-dominant pasture from many years of set stocking with sheep and cattle to intensive rotational grazing predominantly with cattle .

Materials and methods In 2002 Struan Research Centre converted 190ha of phalaris-dominant pasture , divided into 10 paddocks , into an intensive rotational grazing set up using TechnoGrazing™ principals and fencing hardware . This resulted in 48 paddocks of 4 ha each that can be further subdivided into 60 individual cells of 0.67ha each using temporary electric fencing . The area that was converted had been sown to phalaris , strawberry clover (*Trifolium fragiferum*) and annual ryegrass (*Lolium rigidum*) between 1969 and 1984 . The botanical composition in six of the new paddocks was estimated at least seasonally by a single observer using the BOTANAL technique (Tothill *et al.* , 1992) . Plant species were assessed as phalaris , clover , weeds or other grasses . Composition was generally not assessed in the summer-dry period due to the lack of dry matter at that time of year . Data are presented as averages of the six paddocks and have been analysed using a general linear model in SAS v9.1.3 (SAS Institute Inc , Cary , NC , USA) .

Results and discussion The percentage (dry matter basis) of phalaris and weeds in the sward has not altered in the 5 years since the grazing management of the paddocks was changed in 2002 from set stocking to intense rotational grazing , indicating the stability of the phalaris component of the sward (Table 1) . In contrast , the clover component of the sward was significantly greater in autumn 2002 (P=0.004) and 2006 (P=0.001) than in autumn 2007 while the other grasses component was significantly greater in autumn 2007 than in autumn 2002 (P=0.006) and 2006 (P=0.001) .

Table 1 Botanical composition (% of dry matter) in paddocks soon after being re-fenced into a TechnoGrazing™ configuration in 2002 and in the corresponding seasons in 2006 and 2007 .

	Phalaris			Clover			Weeds			Other grasses		
	2002	2006	2007	2002	2006	2007	2002	2006	2007	2002	2006	2007
Autumn	40	47	37.6	22.7	21.1	4.6	10.4	3.2	4.6	26.9	28.7	53.2
Winter	39.9	39.6	35.5	14.4	8.7	3.6	6.5	7.2	9.1	40.2	44.5	51.7
Spring	37.8	34.6	35.1	10.3	7.7	4.9	1.8	5.4	9.6	50.2	52.3	50.3

Conclusions These findings support those of Virgona *et al.* (2000) that rotational grazing maintains the phalaris component of a pasture but provides no support to the proposal that intensive rotational grazing results in phalaris dominating the sward . The implication of this finding is that the work reported here involved a high intensity rotational grazing system , with defoliation in spring as often as every 25-30 days . Given that spring is when reproductive development occurs , it is significant that there has been no effect on the density of the phalaris component of the sward over the 5 years of study . In contrast , it appears that the significant effects on the clover and other grasses components may be more influenced by seasonal conditions than grazing , since 2006 was the driest year on record for the Struan Research Centre region , which is likely to have resulted in the impact on clover regeneration noticed in 2007 .

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