

Effects of grazing management on productivity of pure legume pastures grown under irrigation in Northern Victoria

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Traditional mixed perennial ryegrass/white clover and volunteer paspalum pastures have several inadequacies (1). Legumes have been shown to be productive under cutting and are known to have advantages over grasses for animal production. However, there is little information on the effects of grazing frequency and intensity on the productivity of pure legumes.

Methods

This experiment commenced in September 1987 with swards of white clover (cv. Haifa), red clover (cv. Redquin), lucerne (cv. Validor) and mixed perennial ryegrass/white clover sown at Kyabram Research Institute. Grazing frequency was selected for each species on the basis of amount of pasture present and/or flowering, with grazing intensity selected as an amount of pasture present after grazing (see Table 1). All treatments are being grazed by dairy cattle. Pasture present was measured by pasture meter, with frequent calibration.

Results and discussion

Treatment No.	Species	Pasture present		t DM/ha removed		
		Pre grazing t DM/ha	Post grazing t DM/ha	Sep 87 -May 88	May 88 -Nov 88	Nov 88 -Feb 89
T1	White clover	3	2	9.4	5.0	5.3
T2		3	1	10.2	5.0	5.6
T3		4	2	9.2	3.6	4.7
T4		4	1	8.4	3.4	4.8
T5	Ryegrass/white	3.5	2	7.5	5.5	3.9
T6	Red clover	3	2	9.2	5.4	2.9
T7		3	1	9.5	5.9	2.5
T8	flowering		2	12.2	4.5	6.3
T9	flowering		1	12.5	4.7	6.2
T10	Lucerne	flowering	2	6.9	5.9	7.7
	L.s.d. (P=0.05)			1.1	0.5	1.0

Results show the quantity of pure white clover removed to be at least equivalent to that of the traditional ryegrass/white clover mixture in the first 18 months of this experiment. Infrequent/severe grazing of pure white clover (T4), yielded less than the other grazing treatments imposed on white clover. This reflects the lower density of stolon tips in T4. Intensive studies of the effect of stolon tip density and residual leaf area on the rate of regrowth of white clover are in progress.

Productivity of red clover has been reduced by grazing before flowering, with plant density reduced by 80% after 18 months, compared with a 30% reduction when grazed at flowering.

1. Mason, W.K., Kelly, K.B., S.J. and Stockdale, C.R. (1937). Proc. 4th Aust. Agron. Conf. pgs 100-117.