

Pre-season management of pasture and its influence on annual grass regeneration

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Annual grasses are becoming increasingly dominant in NSW tableland pastures and are associated with declining pasture productivity. Annual grass incidence can be reduced in the short term by 'spray-topping' but unreliability has plagued its effectiveness commercially. This paper reports on a comparison of pasture management treatments applied in spring 1986 to reduce seed-set of annual grasses.

Methods

Five pre-season management treatments (Table 1) were imposed on old pasture dominated by annual grasses. Grazing was imposed three times over summer, each 3 days duration (530 sheep/ha) on the grazed treatment. 'Spray-topping' treatments were applied on 26 Nov. Wheat cv. Quarrion was direct-drilled on 1-2 April 1987, three weeks after applying glyphosate (2 L/ha). Potential seedling numbers were estimated from soil cores, 7.5 cm dia. - 12 per plot (sampled 41 days before sowing). Cores were watered regularly and germinating seedlings recorded. Actual seedling numbers emerging within the crop were estimated from twelve quadrats per main plot (14 x 8m), each 60 x 30 cm, sampled 76 days after sowing.

Results and discussion

All imposed treatments reduced grass seedlings/m² compared to the control. Paraquat appeared to be more effective than glyphosate (0.5 L/ha) especially for potential seedlings/m², a result probably explained by the timing of herbicide application being close to optimal for paraquat and too late for glyphosate. This explanation is also compatible with 279 seedlings/m² regenerating on the multiple glyphosate treatment where nil would be expected. Grazing was as effective as herbicide for controlling regeneration, but at the stocking rates used, would only have commercial application for paddocks < 20 ha. Grazing reduced seedling numbers by 99% and was the best treatment, but with 137 seedlings/m², it is clear that annual grass control will only be for the short term, and that numbers will quickly increase by the next season (1). Actual seedling numbers emerging within the crop were lower by 15-40%. Control over the longer term will require additional control measures.

Table 1. Mean effect of pre-season management treatments applied in spring 1986 on potential and actual seedlings/m² of topped grasses in autumn- winter 1987. Square root transformation was used for analysis.

Topped grass seedlings/m ²	Pre-season treatment				
	Herbicide (L/ha)			Grazed	Control
Paraquat	Glyphosate				
	1.0	0.5	2.0 ^A		
Potential	B259 ^C	1544 ^b	279 ^C	137 ^C	16641 ^a
Actual	104 ^{bc}	231 ^b	61 ^C	32 ^C	3528 ^a

^AThree applications over summer to ensure weed-free conditions.

^BValues followed by the same letters within each seedling category are not significantly different (P<0.05).

1. Dowling, P.M. (1988). Aust. J. Agric. Res. 39 783-92.