

Preseason management for weed control in direct-drilled crops

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The major limitation to the successful direct-drilling of crops and pastures in a tableland environment is inadequate weed control. Where weed populations are high, use of residual herbicides, and reliance on an agronomic approach (higher sowing and fertilizer rates, narrow row spacing's) are not likely to provide a reliable answer to the problem. There is a need then to ensure that weed populations are as low as possible prior to planting so that in-crop procedures can reliably work if required (1). This experiment aims to look at the effectiveness of spray-topping and grazing in the preceding season on reducing the number of grass seedlings during the cropping phase and resultant grain yield.

Methods

The experiment was located at Orange (881 mm aar) on pasture consisting mainly of *Bromus molliformis*, *B. catharticus*, *V. bromoides* and *L. perenne*. Six pre-season treatments plus a control were imposed. These were: paraquat 0.5(P0.5) and 1.0(P1.0) 1/ha + 0.5 1/ha 2,4-D ester; glyphosate 0.5(30.5) and 1.5(131.5) 1/ha + 0.5 1/ha, 2,4-D ester; intensive grazing and later application of paraquat 1.0(I,p1.0) 1/ha + 0.5 1/ha 2,4-D ester; grazing only (GO); ungrazed (C). The entire area was grazed from 28.8 to 9.9.85 with 300 sheep/ha and spraytopped on 23.9.85 except for the G+P1.0 treatment which was continually grazed until 16.10.85 (ay.400 sheep/ha). This treatment was then spraytopped on 29.11.85. The area was intermittently grazed until 7 weeks before planting. Superimposed over each pre-season treatment were four herbicide treatments applied pre-sow plus a control. There were: treflan 1.0 1/ha(29.5) ? cultivation (13.5); glean 20 g/ha (28.5); yield 2.3 1/ha (28.5). Currency triticales (90 kg/ha) was direct-drilled on 29.5.86 with 150 kg/ha Starter 12 into plots 10 x 2.1m. There were 4 replications. Grain was harvested on 30.1.87.

Results and discussion

Pre-season treatment (herbicides, grazing) imposed during the previous spring resulted in higher grain yields compared to where the pasture was left untreated (Table 1). It was also apparent that a chemical pre-treatment, and in particular the heavy rate of glyphosate, was superior to grazing alone.

Table 1. Effect of pre-season treatment on grain yield of triticales (t/ha).

Pre-season Treatment	Pre-season Treatment						LSD(0.05)	
	P0.5	P1.0	R0.5	R1.5	G+P1.0	GO		C
	6.29	6.29	6.07	7.41	6.28	6.00	2.01	1.39

Mean grain yield on the cultivation plus treflan in-crop treatment was greatest, followed by glean and yield (Table 2). There was no difference between treflan and control. The interaction was not significant though on the high paraquat, and grazed only pre-season treatments, the in-crop treatments were no different to the control.

Table 2. Effect of in-crop treatment on grain yield of triticales (t/ha).

Cult. +	In-crop Treatment				LSD(P 0.05)
	Treflan	Treflan	Yield	Control	
	6.53	5.39	5.79	5.17	0.43

Increased grain yield was associated with a reduction in number of viable grass seed resulting from the pre-season treatments (herbicide and grazing). Grass seedling numbers emerging after sowing the crop were low enough on these treatments to be controlled by the in-crop treatments, and to a lesser extent,

competition from the crop (e.g. control - Table 2). The superiority of the cultivation plus treflan treatment was considered to be a combination of greater availability of nitrogen and greater effectiveness of treflan together with complete absence of 'take-all' compared with the direct-drilled plots.

1. Thorne, C.W. (1985). Proc. 3rd Aust. Agron. Conf. Hobart, p.354.