

A comparison of seedbed preparation methods for wheat production

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Increased adoption by farmers of techniques of reduced cultivation for crop production has occurred in the southern wheatbelt since 1976 (1). Their adoption, however, has been tempered by concern that comparable yields could not be achieved by the change.

Methods

At Riverina College, Wagga Wagga, a long-term experiment was started in 1976 in which direct drilling was compared with reduced cultivation (one cultivation before spraying and sowing) and with conventional cultivation (at least three workings before sowing). Herbicides, other than those specifically for direct drilling purposes, where needed, were applied to all treatments.

Owing to dry conditions the areas were not sown in 1976. Plots were approximately 0.25 ha in size and there were three replications in a randomised block design. All plots were sown with an unmodified combine.

Results and Discussion

Wheat yields for the experiment are given in Table 1 and weed populations before any post-emergent spraying are given in Table 2.

Table 1. Grain yields of wheat (t ha⁻¹) as affected by seedbed preparation method.

Year	1977	1978	1979	1980	Average
Conventional	1.50	2.89	2.72	1.78	2.22
Reduced	1.50	2.87	2.78	1.86	2.25
Direct	1.48	3.26	3.28	2.12	2.53

A grain yield advantage has been obtained from direct drilling since the second crop (1978), a result which conflicts with similar work elsewhere (2). This yield benefit is considered to be due largely to the choice of site, particularly with respect to weed status and subsequently to weed control management. This experimental site was largely free of weed problems at the start of the trial, weed populations (mainly fumitory, *Fumaria* sp. and annual ryegrass, *Lolium rigidum*) having increased under conventional cultivation to a greater extent than under the other treatments (Table 2).

Table 2. Weed populations under different methods of seedbed preparation before the application of post-emergent herbicides.

	Weed Population (plants m ⁻²)			
	1977	1979	1980	Average
Conventional	988	209	76	424
Reduced	356	54	64	158
Direct	19	32	56	36

* 1980 weed populations lower owing to pre-sowing application of Yield^(R) to all plots.

Where the site for direct drilling has particular weed problems which are not controlled at an early stage, it is likely that such a yield advantage would not be achieved.

1. Scarsbrick, B. 1980. Bulk Wheat, 14:35-6.

2. McNeill, A.A. and Aveyard, J.M. 1978. Journal of Soil Conservation Service of NSW, 34:207-9.