No-till wheat feasibility in southern Queensland

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Crop residues need to be retained on the surface to provide ground cover for erosion control. Herbicides maximise crop residue retention by replacing tillage operations. Studies have been conducted for three years over five sites in the Southern Queensland wheat region to determine whether wheat can be grown without tillage. Site details and management have been described elsewhere (1).

Common reasons given for low wheat yields from reduced tillage have been poor emergence and early growth (2). Hence, in assessing feasibility of growing wheat no-till, not only grain yield but also 28-day emergence and early seedling weight were measured. Twenty-eight day emergence and seedling weight were measured to reflect the seedbed and grain yield was measured to reflect the total tillage system environment.

Results for the years 1980 (the first year in which seedling data were collected) and 1981 are presented below:

Treatment	Emergence (No. of plants $10m^{-1}$)			Weight (g. 100 seedlings^{-1})			Yield (kg ha^{-1})		
	1980	1981	Mean	1980	1981	Mean	1980	1981	Mean
Conventional	165	285	255	13.27	19.47	16.37	1473	2890	2182
No-Till	191	271	231	16.82	14.20	15.51	2050	2924	2487

In the below-average rainfall year 1980, no-till fallow gave an apparent advantage in emergence, seedling vigour and yield over conventional. Except for yield, this advantage was not sustained in the more normal 1981 year.

Although all no-till sites showed reduced seedling vigour compared to conventional sites in 1981, there was no significant relationship between seedling vigour and yield ($r^2 = 0.0012$, $n = 18$).

This preliminary assessment suggests that no-till wheat is feasible in Southern Queensland, with likely advantages in a drier year.

1. Herron, N.D., Hayes, D.A. and Ward, L.D. 1981. Proc. of the Sixth Australian Weeds Conference. 1:102.

2. Reeves, T.G. and Ellington, A. 1974. Aust. J. Exp. Agric. 14:237-40.