Broadcasting versus drilling of wheat at five seed rates

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Cereal farmers continue to face increasing costs and lower prices. Cheap ways of establishing crops need to be found. Broadcasting of wheat was compared to drilling to assess a low-cost method of sowing.

Method

Small plot trials were sown at two sites in S.A., in 1986. The trial at Arthurton on the Yorke Peninsula was on a fertile clay soil in an area of good rainfall (497 mm). The other, at Wanbi (Northern Mallee), was on a sandy soil with a low rainfall (279 mm).

The seed was graded and treated with a fungicide (Baytan @ 150 g/100kg). It was broadcast from a small air seeder, with the seed hoses laid horizontally, then harrowed. The drilled plots were also harrowed. The soil had been cultivated and was sown three days after the last rain. Rain fell again on the next day at both sites. Weeds were controlled early in the season, but light seed rates suffered competition by weeds from September onwards. The plot size was 1.44 m x 8.4 m and the variety sown was Aroona. Emergence counts, anthesis dry weight, final plant and head counts, yield, thousand grain weight and percent screenings were all measured.

Results

Despite the good sowing conditions, emergence was poor. The percentage of plants emerging declined as the seed rate increased and was worse for broadcast than for drilled plots. These accounts for the superior yield of the drilled treatment at all seed rates (see Table 1).

Table 1: The yield (t/ha) of wheat, drilled and broadcast at five seed rates

Site	Sowing Method	Seeds/m^2 (kg/ha)				
		20(7)	60(20)	100(33)	180(60)	300(110)
Arthurton	Broadcast	1.60	1.99	2.36	2.60	3.02
	Drilled	2.07	2.79	2.89	3.27	3.45
Wanbi	Broadcast	0.63	0.93	1.11	1.22	1.38
	Drilled	1.00	1.28	1.45	1.48	1.66

L.S.D P = 0.05 Main plots are sowing methods
Arthurton 0.23 within main plots
0.26 between main plots
Wanbi 0.23 within main plots
0.34 between main plots

Plots with similar final plant counts had similar yields irrespective of sowing treatment. This suggests that the reduction of yield with broadcasting is mainly due to poorer emergence. Factors contributing to this are mice, birds and poor soil-seed contact at sowing. If broadcasting is to produce yields similar to drilling, a higher seed rate is needed.

Broadcasting is cheap and very quick. These advantages need to be weighed against the lower yield obtained when compared to drilling. Further investigation is required into ways of increasing the emergence rate.