

Crop establishment improvement from narrow spear points in South Australia

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Seed drill points and shares used for seeding in South Australia are commonly pressed steel sweep shares or chisel type points. The generic named cast spear point is narrow, causing minimal soil disturbance. This spear point design gives a low risk of smearing in the seed bed, excellent seed placement and seed to soil contact, and is potentially a good alternative narrow seeding point.

Methods

Ten experiments were sown at four different sites across the mid-north of South Australia between 1990 to 1992. All were completely randomised block designs or factorial split plot designs. A number of different seed drill designs were tested, incorporating various tyne, point and covering device configurations. Soil types were mostly well structured red-brown earths, with two sites being poorly structured, surface sealing, red-brown earths. Average annual rainfall ranged from 425 to 440mm. The wheat variety Machete was used in all experiments. Six experiments in 1990-91 were all single row, sown with a specially constructed tool bar and cone distributor using a known number of seeds. Recordings were made of plant emergence and rate of early plant growth at the early tillering stage. These experiments were carried through to early tillering only. Four experiments sown in 1992 were sown with a multi 8-row experimental seeder enabling yield results to be recorded in addition to emergence and plant growth at early tillering.

Results and discussion

The spear point has shown an average significant improvement of 11% in emergence and 29% in total early plant growth per plot compared to a lucerne chisel point at all sites (Table 1). The spear point has performed as well as the wider combine and airseeder type points. The spear point significantly improved yields by 12.5% compared with the lucerne chisel point at one of the four sites in 1992. Other sites were not significantly different. Average yield results in 1992 indicate a slight yield advantage from the use of spear points compared with lucerne chisel points. There was no significant difference between performance of spear points compared with combine and airseeder type points. The spear seeding point has also shown significant improvement in crop establishment and plant growth on lighter sand soils compared with other narrow point types (1).

Table 1. Spear point performance on a range of red-brown earth soils 1990-1992

	Emergence ^a %	Dry matter (g/plant) ^{a,b}	Total dry matter (kg/ha) ^{a,b}	1992 grain yield(t/ha) ^c
Spear point	59.5	0.46	503	4.61
Lucerne chisel point	53.8	0.38	389	4.47
100-125mm combine share	58.5	0.43	462	4.54
200mm airseeder share ^d	58.7	0.43	465	

^a Average of 10 experiments at 4 sites 1990-92 ^c Average of 4 experiments at 4 sites 1992

^b Sampled at early tillering crop stage ^d Average of 8 experiments at 3 sites 1990-92

1. Rainbow, R.W., Slattery, M.G. and Norris, C.P. 1992. Proc. Conf. Eng. in Agric. 1992. Albury. I.E. Aust. NCP 92/1 1: 13-20.

