AGRONOMY OF SOD-SEEDED WHEAT AND WEED CONTROL

P.M. DOWLING

Agricultural Research & Veterinary Centre, Forest Road, Orange. N.S.W. 2800

Abstract. The sod-seeding of crops has considerable potential in the wetter elevated regions of South East Australia. A major difficulty with this approach however is weed control. Because the degree of initial control is invariably less than that achieved by conventional methods, the reliability of the sod-seeding technique may be largely dependent on post emergent herbicides to compensate for any deficiencies of the knockdown. Under certain conditions however, the activity of post-emergent herbicides may be relatively short-lived. Because of this it is essential that the sown crop itself is able to continue suppression of the weeds. For the sod-seeded crop this aspect is particularly important. Here I briefly describe the response of crop and weeds to changes in row spacing, fertilizer and sowing rates, and cultivar.

On 6 June 1983, a 2^4 factorial with four replicates was sod-seeded to wheat on an area pretreated with 2 l ha^{-1} glyphosate eight days previously. Treatments were: fertilizer (0, 180 kg ha^{-1} starter 12); sowing rate (40, 80 kg ha^{-1}) row spacing (12.5, 25.0 cm); and cultivar (Isis, Banks). Three harvests were taken: 20 Sept.; 17 Oct. 1983; and 20 Jan. 1984. On each occasion, two quadrats (30 by 60 cm) were cut from each plot (2 by 15 m). Only results significant at the five percent level from the final harvest are presented.

The heavier sowing rate increased total wheat DM at the narrow row spacing for Banks (Table 1a), whereas for Isis the increase was only evident at the wider row spacing. Over all treatments, total wheat DM was increased by heavier fertilizer and sowing rate, narrower row spacing and cultivar (Isis > Banks).

Table 1. Effect of cultivar, row space and sowing rate on a) total wheat DM and b) wheat grain yield (t ha^{-1}) at the final harvest.

	a) Isis		Banks		b) Isis		Banks	
Row spacing (cm)	12.5	25.0	12.5	25.0	12.5	25.0	12.5	25.0
Sowing Rate 40	16.4	14.6	10.4	11.3	6.3	5.8	4.8	5.5
(kg ha^{-1}) 80	17.1	19.4	17.0	11.3	6.5	6.5	8.3	5.4
LSD (P<0.05)		2.2				1.6		

The greater grain yield of Banks at the heavier sowing rate and narrow row spacing reflected the total wheat DM trend (Table 1b), however for Isis there was little relationship. Wheat yield responded to increased fertilizer and seeding rates.

Sowing rate of Isis had little effect on weed DM but the heavier sowing rate of Banks decreased weed DM. The Banks plots carried 74% greater weed DM. Weed DM was less at the heavier sowing rate but the difference was more pronounced at the narrow row spacing. Weed DM was less with the heavier fertilizer and sowing rate; and Isis < Banks .

These results suggest that total wheat DM was the most responsive variable to the treatments imposed while grain yield was the least; i.e. greater total wheat DM and reduced weed DM does not necessarily result in greater grain yield. However, the size of the trends detected are sufficient to warrant further study of cultivar and agronomic combinations.