

The yield potential of new oilseed rape cultivars in Tasmania

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Tasmanian farmers are seeking new options to extend crop rotations and reduce pest (including weed and disease) problems in crops such as potatoes, peas, poppies and barley. Oilseed rape has a high yield potential under our cooler conditions so we are examining (1) new cultivars and lines from mainland breeders. In Britain, high yield has been shown (2) to depend on growth before flowering, and seed retention during a critical phase of about two weeks after flowering when abortion is likely.

Methods

Table 1 compares the older cultivar Midas with Marnoo and two other Victorian lines, RU1 (early flowering) and RT2 (late) in two seasons one site. Plots were 20 x 1.5m with 4 replications. At final harvest 0.5m samples were taken to estimate yield components. In 1980 crops suffered increasing water stress after early October, but in 1981 were irrigated in late October and November.

Results and Discussion

Table 1. Flowering time, seed yield and components of crops sown at Gretna, Derwent Valley, Tasmania on 24 May, 1980 and 20 May, 1981.

	Days to 50% flowering		Seed yield (t/ha 8% moisture)		Pods/m ² x10 ⁻³		Seeds/pod		Weight/seed mg	
	1980	1981	1980	1981	1980	1981	1980	1981	1980	1981
Midas	130	134	2.48	4.62	6.21	7.27	10.7	16.7	3.80	4.34
RU1	113	123	3.89	5.35	7.20	8.74	16.1	22.0	3.02	3.78
Marnoo	128	133	3.29	5.53	7.69	8.24	16.2	19.7	2.68	3.27
RT2	131	136	3.35	5.75	6.35	7.55	17.7	22.3	2.85	3.67
L.S.D.	.05		0.31	0.42	1.21		2.9		0.31	

The Victorian lines generally grew faster than Midas at low temperatures, reflecting their Japanese parentage. The very early flowering RU1 (Table 1) gave the highest yield in 1980 under increasing water stress. In 1981, with adequate water, the later flowering line RT2 gave one of the highest yields recorded anywhere for this crop. In both years the Victorian lines substantially outyielded Midas because they were able to retain more seeds per pod, as pod numbers were similar. This has been a consistent feature at other sites, even from spring sowing when growth differences between cultivars were minimal. While water stress in 1980 apparently increased seed abortion, even in 1981 seed numbers still did not reach the potential of about 30 per pod (2). Midas partially compensates for poor seed numbers by producing heavier seeds, but for high yields under our conditions breeding and management techniques should be directed at retaining more seeds after flowering, even if these are not filled to the maximum extent under stress conditions.

1. Russell, J. 1980. J. Agric. Tasmania 51: 57-61.

2. Mendham, N.J., Shipway, P.A. and Scott, R.K. 1981. J. Agric. Sci. Camb. 96: 389-416.