

Better Oilseeds trial: Canola variety x row spacing x plant population trial (2009)

Trial location: Old Junee, NSW

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Key Messages

- Widening row spacing reduced established plants per square metre for a given seeding rate, consistent with observations in 2008 and 2007
- In 2009 the low plant population (28/m²) yielded best, but at a low yield of 0.53 t/ha

Background and aims

In the medium rainfall zone of central and southern NSW there is increasing interest in manipulating row spacing and plant population for canola. This is being driven by a number of factors including stubble retention and moisture conservation, the option of inter-row sowing, the desire to sow into high stubble loads and increasing adoption of more vigorous hybrids over open-pollinated varieties. Low plant population and/or wider row spacing is being considered as a strategy to reduce the risk of poor yields in dry seasons. Lower sowing rates (resulting in lower plant density) are also seen as a cost saving with more expensive hybrid seed.

The Better Oilseeds project trial, funded by GRDC and AOF aimed to better understand the interactions between row spacing and plant population in open-pollinated and hybrids by conducting a replicated trial at Junee over three years 2007-2009. This report only includes data from the 2009 trial. Results from the 2008 trial are published in the 2009 version of the booklet titled *Over the Bar with Better Canola Agronomy*.

Site details

Paddock history: lucerne

Sowing date: 5 May 2009

Plot size: 5 m x 10 m

Pre-and post sowing, pre-flowering herbicide and insecticide:

Date	Crop Stage	Product	Rate (per ha)
5 May 2009	Incorporated by sowing	Roundup PowerMax [®]	1.25 L
		trifluralin 480 g/L	1.7 L
5 May 2009	Post-sowing, pre-emergence	metalochlor 720 g/L	350 mL
		bifenthrin	100 mL
7 July 2009	Post-emergence (TT Canola only)	atrazine + clethodim + Hasten [®] + Liase [®]	2.2 kg + 500 mL + 0.5% + 1%
7 July 2009	Post-emergence (Clearfield Canola only)	Intervix [®] + clethodim + Hasten [®]	600 mL + 500 mL + 0.5%

Soil pH_{CaCl2} 5.7

Nutrition/fertiliser: 75 kg/ha Granulock 15 with the seed and 75 kg/ha Granulock 15 applied below the seed at sowing.

Growing season rainfall: 1 May-31 October (178 mm)

Harvest: 13 November 2009

Method

The trial was sown on 5 May 2009 into a moist seedbed. Seed was treated with flutriafol and imidacloprid.

Trial design was a factorial of 9 treatments x 2 varieties x 3 replicates. The trial was blocked for herbicide tolerance for simplicity of herbicide application and to avoid drift, and blocked for row spacing.

Two representative varieties of the appropriate maturity were used; Bravo TT and the Clearfield hybrid 45Y77. Sowing rates were calculated based on seed weights, germination percentage and target plant population, ranging from 1.59 – 4.74 kg/ha for Bravo TT and 2.49 – 7.47 kg/ha for 45Y77. Sowing rates assume 60% establishment of viable seeds sown. Measurements and data were collected as per the trial protocol.

Results & discussion

Establishment

Establishment percentages were better than anticipated in 2009, resulting in plant populations higher than the targets of 20, 40 and 60 plants/m² (Table 1).

Table 1: Average establishment for three plant population targets and three row spacing's at Old Junee in 2009.

	Achieved plant population (/m ²)
Target plant population (/m²)	
20	28
40	53
60	75
Row spacing (cm)	
18	60
22	51
30	46

The trend of reduced establishment with wider row spacing was similar to that observed in 2008 and 2007 (Figure 1).

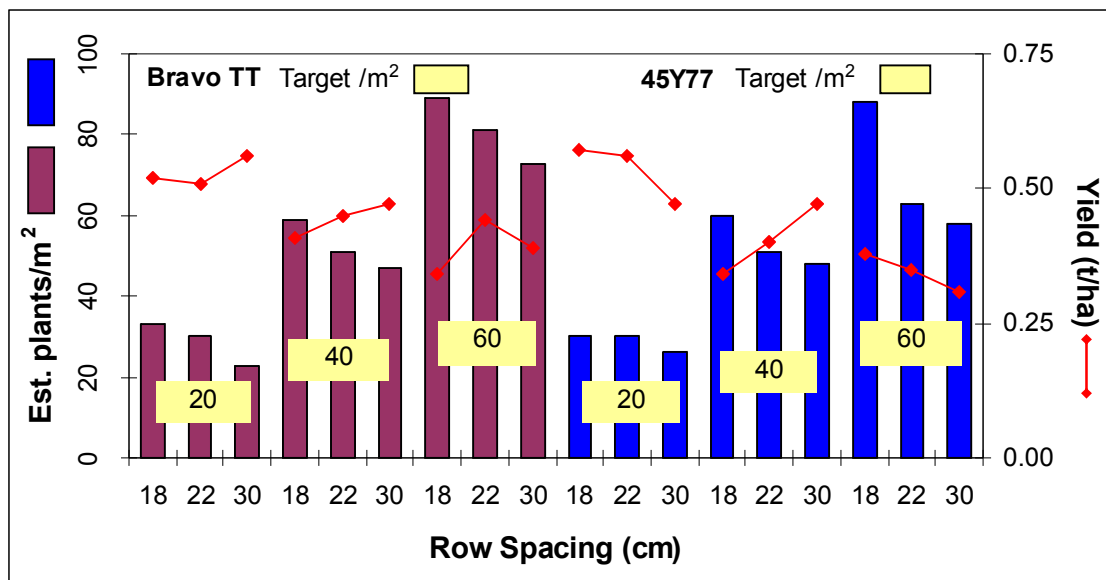


Fig.1: Effect of row spacing and target plant population on plant establishment and yield at Old Junee *Better Canola* site in 2009.

Yield and oil

The site mean yield of 0.44 t/ha in 2009 was a result of yet another poor spring with rainfall well below average. The low plant population (28/m²: target was 20/m²) yielded the highest at 0.53 t/ha (site mean yield of 0.44 t/ha). There was no significant difference in yield between 18, 22 and 33 cm row spacing. Oil contents were again disappointing and a reflection of a very dry spring. Overall the oil contents were 8 percentage oil points below the standard of 42%. There was no effect of plant population or row spacing on oil content.

Table 2: The effect of target plant population and row spacing on yield and oil content at Old Junee in 2009.

	Treatment	Yield (t/ha)	Oil content (%)
Target plant population (/m²)	20	0.53	33.6
	40	0.42	33.5
	60	0.37	33.6
	Lsd (0.05)	0.06	
Row spacing (cm)			
	18	0.43	33.6
	22	0.45	33.5
	30	0.44	33.6
	Lsd (0.05)	NSD	

@ 6% moisture content

Lsd – least significant difference

NSD – no significant difference

Conclusion

The Better Canola trial unfortunately did not strike a good year conducive to yields of 2.0-3.0 t/ha where important differences may have been apparent. In this quest a final trial with the same treatments, but with a different variety and hybrid, is being conducted at a higher rainfall site at Cootamundra in 2010.

Acknowledgments

Peter Hamblin, AgriTech Crop Research Pty Ltd, Young
Bernard & Adrian Hart, Hart Bros. Seeds Pty Ltd, Old Junee