

NSW CANOLA AGRONOMY UPDATE 2011

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Key words

canola, plant population, row spacing, establishment, seed treatments, farmer-retained seed

Take home messages

- There were no differences in yield for plant populations of 20, 40 and 60 plants/m² and row spacing's of 18, 22 and 30 cm at yield levels of around 3 t/ha at Cootamundra
- There were no differences in yield for row spacing's of 18, 24 and 36 cm at yield levels up to 3.8 t/ha at Wagga Wagga
- Disease risk of blackleg and sclerotinia will be higher in 2011
- Weather damaged seed should not be considered for sowing in 2011

Introduction

The 2010 season was atypical and will never be repeated again as no two seasons are the same. Some centres such as Hillston (816 mm) and Wagga Wagga (1019 mm) recorded their highest annual rainfall on record, with growing season rainfall of 450-600 mm not uncommon across southern NSW. The very wet year provided an opportunity to test canola under an extreme of rainfall and some valuable lessons can be taken out of the 2010 season including differences in variety characteristics and response to the season, sowing times, plant populations, the value of seed and fertiliser treatments for blackleg, and the increased potential for more disease in 2011. Despite all these challenges canola was a success story in 2010 for the majority of growers. There were also questions raised about the pros and cons of windrowing versus direct heading and the impact of wet weather on seed quality for crushing.

There remains high interest in establishment rates and hence seed rates for various rainfall zones. This interest is being driven as much by the cost of hybrid seed than any other factor. Also it is accepted that farmer-retained seed of open-pollinated varieties has been significant over the past few years, but has the spring/early summer rain affected the germination percentage and vigour of this seed?

This paper will discuss some key issues for 2011 but will not cover all the possible questions. It will discuss establishment, present results of agronomy trials, highlight the increased disease risk, comment on quality of farmer-retained seed for sowing and briefly discuss variety choice.

Factors to consider in crop establishment

There are a number of factors to consider when determining the most suitable sowing rate or seeds sown per m² or per ha. Firstly there is the difference in seed size both between and within hybrids and open-pollinated varieties. Secondly, hybrids tend to have a higher establishment percentage, generally in the order of 15-20%, but this is not always the case, especially with triazine tolerant hybrids. Thirdly, seedbed conditions and the seeder can impact on establishment rates. Sowing early into a seedbed that is drying out more quickly because of warmer temperatures (late April) could result in a lower establishment than

sowing a little later (early May) when temperatures are lower and seedbed moisture is staying around the seed for longer. The phrase “sow early, sow light” may not hold as well for canola as it does for wheat. However, a plant stand of 20-40 evenly established plants/m² appears adequate for early sowings in the medium-high rainfall zones with the qualification that there is a higher risk of establishment losses with canola compared to wheat for example.

Agronomy trial results for 2010

The results from two trial sites (Cootamundra and Wagga Wagga) are presented. The seed companies also undertook a number of agronomy trials in 2010, so those results should also be used when making decisions for the 2011 canola crop. Results for the Cootamundra site are presented in Tables 1 and 2, and in Figure 1.

In summary the results from this trial are as follows:

- 46Y78 out-yielded ATR-Marlin, as expected
- No significant difference in yield between row spacing's of 18, 22, and 30 cm and plant population targets of 20, 40 and 60 plants/m²
- ATR-Marlin low seed quality reduced establishment rates but 11 plants/m² still yielded very well in the above average rainfall season
- The trend for reduced establishment with wider row spacing for a given sowing rate supports observations made over the previous three seasons.

Table 1. Effect of achieved plant population and row spacing on yield of ATR-Marlin (O-P TT) at Cootamundra *Better Canola* site in 2010 (sown 6 May).

	Treatment	Actual achieved plant pop. (/m ²)	Yield (t/ha)
Target plant pop./m ²	20	11	2.72
	40	23	2.98
	60	37	2.99
	lsd (p=0.05)	4.55	NSD
Row Spacing (cm)	18	25	2.91
	22	24	2.93
	30	21	2.83
	lsd (p=0.05)	NSD	NSD

lsd. – least significant difference

NSD – no significant difference

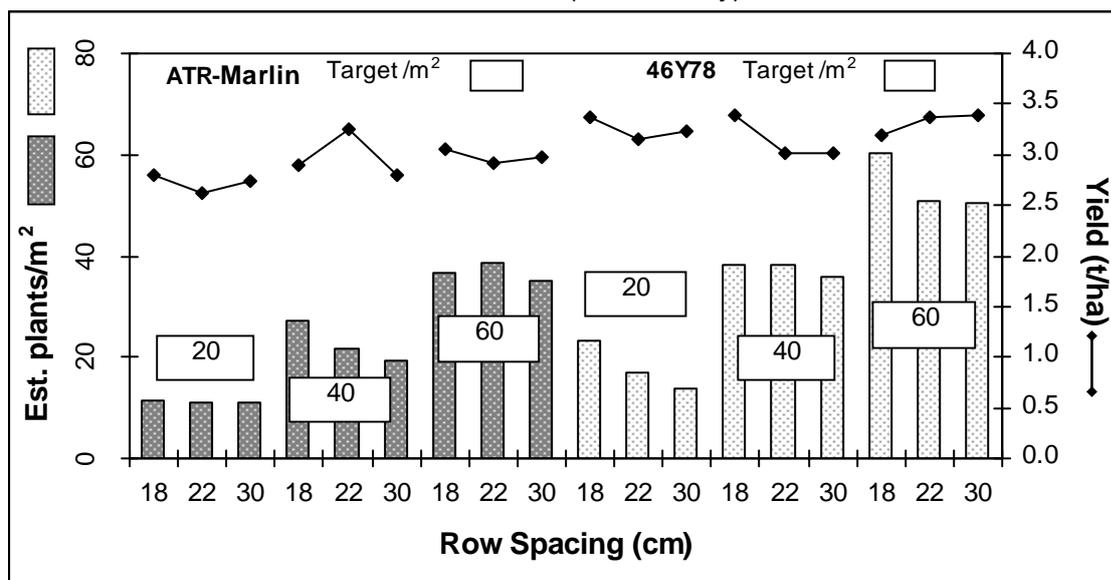
Table 2. Effect of achieved plant population and row spacing on yield of 46Y78 (hybrid) at Cootamundra *Better Canola* site in 2010 (sown 6 May).

	Treatment	Actual achieved plant pop. (/m ²)	Yield (t/ha)
Target plant pop./m ²	20	18	3.25
	40	37	3.14
	60	54	3.32
	lsd (p=0.05)	4.55	NSD
Row Spacing (cm)	18	41	3.32
	22	35	3.18
	30	33	3.21
	lsd (p=0.05)	NSD	NSD

lsd. – least significant difference

NSD – no significant difference

Figure 1. Effect of row spacing and target plant population on plant establishment and yield at Cootamundra *Better Canola* site in 2010 (sown 6 May).



A further trial conducted within the VSAP project at Wagga Wagga produced similar results for the factor of row spacing (Table 3.). There was no significant difference in yield between 18, 24 and 36 cm row spacing.

Table 3. Establishment and grain yield of canola variety by row spacing at Wagga Wagga in 2010 (sown 11 May).

		Row Space (mm)			
		180	240	360	Mean
	Established	Grain Yield (kg/ha)			
	Plant Count/m ²	Grain Yield (kg/ha)			
Variety					
45Y82	49	3703	3674	3756	3711
AV-Garnet	30	3841	3411	3292	3515
CB Jardee HT	45	3264	2917	3182	3121
Hyola 50	46	3572	4247	3539	3786
Tarcoola	37	3050	2859	3041	2983
Tawriffic TT	36	2187	3176	2524	2629
Mean	40	3269	3381	3222	3291
lsd	10	lsd			
		Genotype			387
		Row space			ns
		Genotype*Row space			1096

Source: VSAP project – Peter Martin and Karl Moore

Yields at both the Cootamundra and Wagga Wagga sites, in a high rainfall and high yield potential year, confirms that canola is less sensitive than wheat to wider row spacing and demonstrates canola's capacity to compensate. However, one word of caution with these results, both trials were sown into nil or low stubble loads, so results in medium density stubbles (3-4 t/ha) may well be different and requires further investigation.

Blackleg and sclerotinia stem rot risk in 2011

Observations made on commercial crops and in NVT trials in 2010 suggest that 2011 carries a high disease risk. Blackleg was moderate to severe in some varieties at some NVT sites, where all seed is sown untreated. Most commercial seed is sown with a seed treatment or with treated fertiliser, and so infections levels are much lower and hence are not readily noticeable. These observations suggest that preventative treatment is essential for 2011. Seed or fertiliser treatments are a small fraction of the total growing costs of canola. A new tool called the Blackleg Risk Assessor (BRA) will be available in 2011 to make better risk management decisions on blackleg (see paper by Kurt Lindbeck *et al.* this Update).

Sclerotinia was also prominent in a number of crops in 2010. Disease inoculum over the previous eight dry years was comparatively low and a run of dry springs did not favour the disease, but 2010 did, so inoculum levels are now higher than they have been over the previous eight years (see paper by Kurt Lindbeck *et al.* this Update). Apart from well established rotation practises, foliar fungicides remain the main method of control, but the interaction between host-pathogen-environment-fungicide is not clear cut and affects the economics of fungicide control.

Quality of farmer-retained seed

Whilst sowing farmer-retained seed is not generally recommended or promoted it is a reality. An important question to emerge from the 2010 harvest is “what is the risk of using weather damaged farmer-retained seed for sowing in 2011”? Research conducted over the years on open-pollinated varieties indicates yield losses could be anywhere from 0-12% by sowing seed harvested from commercial crops the previous year. By grading seed and conducting germination and vigour tests most of the risk is usually minimised. However, seed that has been subjected to rain events between physiological maturity and harvest in 2010/2011 may be weather damaged without obvious signs and may not be suitable for sowing. Seed with test weights lower than 62 kg/hL could indicate some form of weather damage. Lighter seed means that stored energy has been used to begin the growing of the sprout. In this instance not only should a germination test be done but also a vigour test should be done. A germination percentage <90% and certainly <85% may indicate a vigour problem. This may have important implications for sowing rates and sowing depth.

Variety choice

Most variety choices are made within the context of the farming system and the weed spectrum and herbicide options available to achieve satisfactory weed control. For this reason a variety or hybrid should be selected as a package – herbicide tolerance and weed management objectives, maturity suitability, blackleg tolerance, standability, performance over varied seasonal conditions and yield and oil content. The long-term management of herbicide resistant annual ryegrass is a key challenge in growing canola with more and more glyphosate resistant populations being identified (see paper by Chris Preston this Update).

Long-term across sites and years analysis of NVT trial data is not available at the time of writing. Individual trial site results can be obtained from the NVT website www.nvtonline.com.au/home.htm

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