

Mid season CLEARFIELD® canola National Variety Trials (NVT) in New South Wales

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Take Home Messages

- In 2007, the hybrids Hyola 50, Hyola 75 and Hyola 76 and the open pollinated variety ^{AV}Garnet tended to consistently produce the highest yields of conventional varieties grown in the mid-season ("main") trials across the NSW regions.
- The varieties with the highest oil content in 2007 tended to be Skipton and ^{AV}Jade. Location had a far greater effect on oil content than variety.
- The hybrids Hyola 50 and Hyola 75, and the open-pollinated variety ^{AV}Garnet are, on average, the highest yielding mid season conventional canola varieties/hybrids in the from 2000-2007. However, note that not all current varieties are listed.
- Variety choices need to be based on the variety's maturity, potential yield and oil content and blackleg resistance rating.
- Hybrid seed is more expensive than seed of open pollinated varieties.

Introduction

NVT is a national program of comparative crop variety testing with standardised trial management, data generation, collection and dissemination. The program is supported by the Australian Government and growers through the Grains Research and Development Corporation (GRDC) and is managed by the Australian Crop Accreditation System (ACAS) Limited. Further information can be found on the website: www.nvtonline.com.au.

This report provides the yield and oil results for five sites in NSW in 2007 and the long-term yield results for 2000-2007 from the "main" mid season non herbicide tolerant (conventional) canola variety trials, constituting part of the NVT.

Methods

Information about methods used at each site can be viewed through the NVT online website www.nvtonline.com.au.

The New South Wales NVT trials were conducted by Agrisearch Services Pty. Ltd. These were undertaken using small plot equipment, on behalf of Australian Crop Accreditation System as part of the National Variety Trials program, supported by the GRDC.

Data was analysed using multi-environment trial (MET) analysis. The predictive ability of this method increases with the number of trials a variety has been in.

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Bellata site:

The trial was sown into a clay soil with good subsoil moisture on 16 May 2007. Fertilisers applied on that date were 120 kg/ha urea and 52.7 kg/ha Starter Z (N:P:K:S:Zn 10.5:19.2:0:2.2:2.5). The insecticide Bifenthrin was applied at 0.10 L/ha as Talstar 100 EC and 1.7 L/ha trifluralin was applied for weed control on the same date. Early growth and plant emergence was very good to excellent. The post-emergent herbicide OnDuty® was applied at 40 g/ha (+ Hasten) on 2 July. The trial was topdressed with 151.5 kg/ha sulphate of ammonia on 30 July. Aphids were controlled with 1 kg/ha pirimicarb on 8 September. The crop was desiccated with paraquat + diquat at 2 L/ha on 5 October and harvested on 16 October. Rainfall for 2007 was 415 mm, but with only 171 mm growing season (April-October) rainfall. Only 35 mm fell between August and the end of October.

Croppa Creek site:

110 kg/ha urea was pre-drilled on 30 May. The site was sprayed 0.10 L/ha bifenthrin as Talstar 100 EC on the sowing date 11 May 2007. The trial was sown with 52.7 kg/ha Starter Z (N:P:K:S:Zn 10.5:19.2:0:2.2:2.5) and trifluralin was applied at 1.70 L/ha. Early growth was average to very good. The post-emergent herbicide OnDuty® was applied at 40 g/ha (+ Hasten) on 19 July. The trial was topdressed with 152 kg/ha sulphate of ammonia on 30 July. The crop was desiccated with paraquat + diquat at 2 L/ha on 5 October and harvested on 12 October. Rainfall for 2007 was 408 mm (144 mm in December), with only 193 mm growing season (April-October) rainfall. 67 mm fell between August and the end of October.

Harden site:

A knockdown of 1.50 L/ha glyphosate 540 g/L was applied on the sowing date of 9 May 2007. The site was sprayed 0.10 L/ha bifenthrin as Talstar 100 EC on the same day. The trial was sown with 115 kg/ha Granulock 12 (N:P:K:S:Zn 11.9:17:0:5.5:0) and trifluralin was applied at 1.50 L/ha. The herbicides 0.25 L/ha S-Metolachlor 960g/L as Dual Gold was also applied. The trial was harvested on 21 November. Rainfall for 2007 was 452 mm with only 214 mm growing season (April-October) rainfall and 154 mm falling in November and December. Only 40 mm fell between August and the end of October.

Lockhart site:

A knockdown of 1.0 L/ha glyphosate 540 g/L was applied on 10 May, as was 1.5 L/ha trifluralin 480 g/L. Glyphosate was applied again at 1.5 L/ha on the sowing date of 22 May 2007. The site was sprayed with 0.10 L/ha bifenthrin as Talstar 100 EC on the same day. The trials was sown with 115 kg/ha Granulock 12 (N:P:K:S:Zn 11.9:17:0:5.5:0) and the herbicide 0.25 L/ha S-Metolachlor 960g/L as Dual Gold was also applied. The trial was topdressed with 150 kg/ha urea on 2 July. The trial was harvested on 16 November. Rainfall for 2007 was 317 mm with only 170 mm growing season (April-October) rainfall. Only 33 mm fell between August and the end of October.

Results

In 2007, the early-mid maturity Clearfield hybrid Pioneer®45Y77 tended to produce the highest yield, along with the early maturity open-pollinated variety Pioneer®44C73 and the mid maturity hybrid Pioneer®46Y78 (Table 1). *Although data for Grenfell are presented, they need to be viewed with caution due to high variability across the site.*

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Table 1:

Yield of mid maturity Clearfield conventional canola varieties in 2007 NSW trials expressed as a percentage of Pioneer®46C76.

Variety	Maturity	North East		South East		South West
		Bellata	Croppa Creek	Harden	Grenfell	Lockhart
Pioneer®46C76 (t/ha)		0.91	1.47	1.49	0.44	0.92
		% Pioneer®46C76				
Pioneer®45Y77	Early-mid	142	118	126	127	124
Pioneer®44C73	Early	115	127	119	157	114
Pioneer®46Y78	Mid	137	114	119	125	118
Warrior CL	Early-mid	105	116	111	95	109
Pioneer®46C76	Mid-late	100	100	100	100	100
Site mean** (t/ha)		1.15	1.71	1.74	0.5	1.15
CV (%)		6.94	7.37	11.27	15.30*	10.98
Ave LSD (%)		13	14	21	27	22

*Note: high coefficient of variation at Grenfell. Results from this site must be viewed with caution; ** Data for Surpass 603 CL not shown.

Location had a far greater effect on oil content than variety. The varieties with the highest oil content tended to be Warrior CL, Pioneer®46Y78 and, on average, Pioneer®44C73 – although Pioneer®44C73 was the most variable between sites (Table 2).

Table 2:

Oil content (%) of mid maturity Clearfield canola varieties in 2007 NSW trials.

Variety	Bellata	Croppa Creek	Harden	Grenfell	Lockhart
Warrior CL	37.9	40.5	39.2	32.0	34.4
Pioneer®44C73	38.1	40.3	38.2	30.5	35.6
Pioneer®46Y78	39.6	40.2	40.2	33.0	35.0
Pioneer®45Y77	39.4	39.3	38.8	32.7	35.8
Pioneer®46C76	36.2	37.7	38.5	32.3	34.7
Site mean*	38.2	39.6	39.0	32.1	35.1

* Data for Surpass 603 CL not shown.

The hybrid Pioneer®45Y78 is, on average, the highest yielding mid maturity Clearfield® canola in NSW tested in NVT from 2000-2007 (Table 3). This was followed by three breeders' lines, 05N289I, 05N293I and 05N290I.

Note that not all currently available varieties are listed in the table and that the prediction has better accuracy with an increased number of trials, which are quite low.

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Table 3:

Long-term average yield (t/ha) of mid maturity Clearfield® canola varieties from 2000 to 2007 NSW trials, with number of trials in brackets*.

Genotype	North East	South East
Pioneer®46Y78	1.44 (4)	1.23 (2)
05N289I	1.41 (4)	1.18 (2)
05N293I	1.40 (4)	1.19 (2)
05N290I	1.36 (4)	1.14 (2)
Pioneer®44C73	1.31 (4)	1.14 (2)
Pioneer®45Y77	1.30 (4)	1.11 (2)
Pioneer®46C76	1.27 (4)	1.05 (2)
Warrior CL	1.25 (4)	1.04 (2)

*View these yield estimates with some caution due to low number of trials.

Commercial practice

In addition to its track record for yield and oil content, growers should select a variety based on the maturity most suited to the growing season of the crop. Later sowing may require a slightly earlier maturing variety. The choice of variety also needs to match up the risk of blackleg to the variety's blackleg resistance rating, as fungicides alone will not give complete control of the disease when disease pressure is high. The triazine tolerant (TT) varieties are generally inherently lower yielding than conventional varieties, whereas CLEARFIELD® varieties/hybrids do not have such a yield penalty. Growers need to consider the use of group B herbicides as part of a herbicide resistance management plan, and also be aware of plantback periods following the use of these herbicides. CLEARFIELD® varieties/hybrids can be grown without the use of any "imi" herbicide to allow for the break down of herbicide residues for subsequent crops. Note that hybrid seed is around \$12/kg more expensive than open pollinated varieties and cannot be retained for sowing the following year's crop.

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