

Canola varieties



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Take home messages

- *Garnet, Hyola 50 and 44Y84 yielded significantly better than the site mean (2.40t/ha).*
- *Quality was exceptionally high in all varieties.*
- *Average yields of Triazine Tolerant (TT) varieties were similar to the Roundup Ready (RR), Imi-Tolerant (IT) and conventional varieties in 2010. Traditionally TT varieties have been lower yielding than IT and conventional varieties.*

Background

A wet summer and relatively poor cereal grain prices prompted many growers to grow canola in 2010. Over the past decade, canola has been considered to be a relatively high risk crop for the southern Mallee, as it requires more soil moisture and growing season rainfall than cereals. New varieties, including Roundup Ready, provide growers with alternative options for controlling weeds.

Location:	Culgoa	
Replicates:	4	
Sowing date:	22 April 2010 (harvested 15 November)	
Seeding equipment:	Gason parallelogram knife point, press wheel bar (30cm spacings).	
Fertiliser:	22 April	50kg/ha MAP (10% N, 21.9% P)
	7 June	100kg/ha Urea (46% N)
	15 June	50kg/ha Urea (46% N)
	17 July	60kg/ha GranAm (24% S, 20% N)
Herbicides	15 June	750ml/ha Intervix + 0.5% v/v Hasten (IT only)
		1.1kg/ha Atrazine (TT only)
		900g/ha Roundup Ready (RR only)
		500ml/ha Select + AMS (Conv. only)

Table 1. Details of the varieties sown in this trial.

Description	Herb. tolerance	Seed company	Blackleg rating	Maturity	Sowing rate (kg/ha)
Hyola 404 [^]	Roundup Ready	Pacific Seeds	Mid-Ear/Mid	R*	2.5
Hyola 505 [^]		Pacific Seeds	Mid	R*	2.5
GT61		Nuseed	Early	MR-MS	3.5
GT Scorpion		Nuseed	Early/Early-Mid	MR	3.5
GT Cougar		Nuseed	Mid	MR	3.5
GT Mustang		Nuseed	Mid/Late	R-MR	3.5
Monola TT 76	Triazine Tolerant	Nuseed	Early-Mid	R-MR	3.5
Monola TT 77		Nuseed	Mid	R-MR	3.5
Tawriffic		Nuseed	Early-Mid	MR	3.5
Crusher		Pacific Seeds	Mid	MR	3.0
ATR-Cobbler		Nuseed	Early-Mid	MS	3.5
ATR-Marlin		Nuseed	Mid-Late	R-MR	3.5
Hurricane		Pacific Seeds	Early	MR	3.0
Hyola 575 [^]	Clearfield IT	Pacific Seeds	Mid	R*	2.5
Oasis		Viterra	Mid	R	2.5
Sahara		Viterra	Mid	R	2.5
43C80		Pioneer	Early	MS	3.55
44C79		Pioneer	Early	MS	2.95
44Y84 [^]		Pioneer	Early	MS	2.75
45Y82 [^]		Pioneer	Early-Mid	MR	2.85
Hyola 50 [^]	Conventional	Pacific Seeds	Mid	R	2.5
AV-Garnet		Nuseed	Mid	MR	3.5
Hyola 433 [^]		Pacific Seeds	Mid	R-MR	2.5
Tarcoola		Nuseed	Early	MR-MS	3.5

* Provisional rating

[^] Hybrid technology

Results

Seasonal conditions, with above average rainfall, favoured canola production in 2010. A very wet August (68mm) caused the site to experience temporary water-logging. All varieties tolerated the water-logging well.

With a low soil N status (total available N = 64kg N/ha), measured prior to sowing there was a heavy reliance on applied N during the season. Three separate applications prior to rainfall events ensured that the canola was not nitrogen stressed at any stage. Sulphur (14.5kg S/ha) was applied in July.

There were insufficient weeds to justify the early application of Roundup Ready; the only application occurred at bud formation. Late germinations of mustard and wild oats were observed. Application of herbicides for TT, IT and RR were delayed to the latest possible stage (bud formation) to provide a complete kill. Though there is no herbicide registered for controlling mustard in conventional varieties in-crop, the lateness of the mustard germination

meant there was sufficient crop competition to suppress any possible adverse effects.

Grain yields and oil content were exceptionally good. The trial mean yield was 2.40t/ha and oil was 47%. To ensure all varieties came in together, all plots were desiccated prior to harvest. The trial was direct headed prior to any harvest rain and minimal loss from shattering or lodging was observed. In the Roundup Ready varieties, GT Scorpion was the only variety which failed to yield higher than 44C79. The two Juncea canolas (Sahara and Oasis) yielded relatively poorly. It was observed that these varieties did not establish well and later were found to have very low germination and vigour. This would have affected the yield of these varieties.

Table 2. Grain yield and quality for the canola varieties at Culgoa.

Description	Herb. tolerance	Yield (t/ha)	Oil (%)	Yield (% 44C79)	Test Weight (g/hc)
Hyola 404	Roundup Ready	2.59	116	49	66
Hyola 505		2.44	109	49	66
GT61		2.40	108	47	66
GT Scorpion		2.27	102	43	67
GT Couger		2.47	111	46	67
GT Mustang		2.38	107	47	67
Monola TT 76		Triazine Tolerant	2.56	115	49
Monola TT 77	2.50		112	49	64
Tawriffic TT	2.39		107	47	65
Crusher	2.51		113	45	66
ATR-Cobbler	2.38		107	45	66
ATR-Marlin	2.09		94	48	66
Hurricane	2.44		109	47	66
Hyola 575	Clearfield IT	2.49	112	48	64
Oasis		1.73	78	48*	63
Sahara		1.61	72	45*	64
43C80		2.46	110	47	66
44C79		2.23	100	47	66
44Y84		2.77	124	46	65
45Y82		2.58	116	46	65
Hyola 50	Conventional	2.77	124	47	63
AV-Garnet		2.99	134	47	64
Hyola 433		2.75	123	47	62
Tarcoola		2.55	114	48	65
Sig. Difference		P<0.001	P<0.001	P<0.001	P<0.001
LSD (P<0.05)		0.14	7%	1.2%	
CV%		8.1%	8.1%	3.8%	1.2%

Bolded **Yield values** were significantly better than 44C79.

* there is no calibration for Juncea canola; this result has been determined by the canola napus calibration.

In comparing the results obtained this year to a trial in Horsham in 2009, similar trends between varieties were observed (Figure 1). In all herbicide tolerant groups, the range of yields between varieties highlights that varietal choice is more important than the herbicide grouping (e.g. IT).

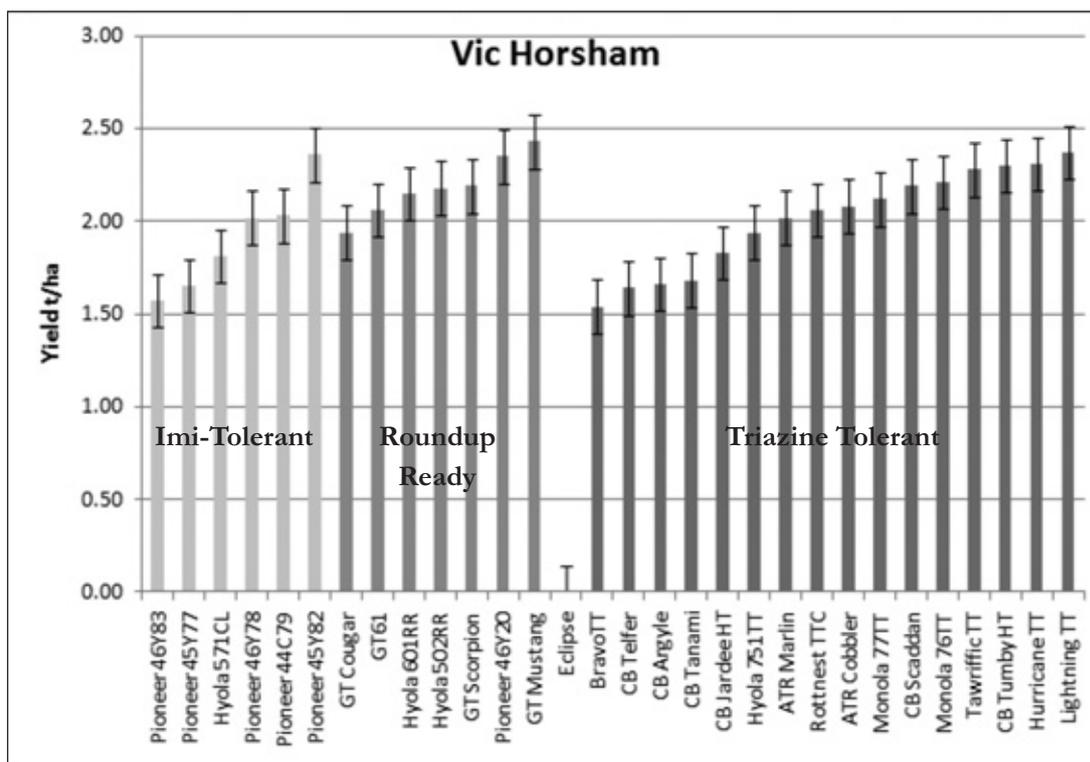


Figure 1. Results from the 2009 Victorian Herbicide Tolerant Canola variety trials (source: www.nvtonline.com.au).

A crude analysis of the theoretical ‘partial’ gross margins in this trial highlights the different costs and premiums associated with growing the different varieties (Table 3). The highest yielding varieties within each herbicide tolerant group (e.g. RR or IT) were used for the analysis. A partial gross margin analysis compares only the costs that vary between treatments. For example, costs such as sowing or harvesting are not included as they are considered to be the same for each system. Seed costs are based on 2011 recommended retail prices and are subject to variation between now and sowing. Juncea canola was not included in the analysis as there is little information about receival points and standards.

Table 3. ‘Partial’ gross margin for the different options for growers in 2011.

Description	Herbicide Group	Seed cost (\$/ha)	Herbicide cost+ (\$/ha)	Premium /EPR (\$/t)	Freight (\$/t)	Income (\$/ha)	Partial Gross Margin (\$/ha)
Hyola 404	RR	35.00	9.00	-13.20	-20.00	1,511.80	1,434.60
Monola TT76	TT	31.50	21.00	+35.00	-30.00	1,583.90	1,501.40
Crusher		36.00	21.00	0.00	-5.00	1,385.60	1,323.60
44Y84	IT	57.75	33.20	0.00	-5.00	1,551.00	1,455.05
AV-Garnet	Conv	31.50	10.30	0.00	-5.00	1,697.90	1,651.10

* There is no official receival site for Juncea canola – an individual arrangement with Cargill or Viterra and the buyer (e.g. Smorgan Fuels) will be required to segregate the seed. This will incur warehousing or storage fees that are not included in these economics.

+ The Herbicide costings are based on 1 application of 0.9kg/ha Roundup Ready, an application of 1.1kg/ha Simazine & 1.1kg/ha Atrazine. For Clearfield, Intervix applied was 750ml/ha + Hasten 0.5% v/v. Conventional costings were based on 500ml/ha Select + 0.5% Uptake. The initial Knockdown and Triflur X application was not included as all varieties received this application. Fertiliser, insecticide and machinery costs also were not included.

Freight was based on delivery to nearest receival point from Culgoa. For GM canola, the nearest receival point was Warracknabeal, for Monola it was Horsham. All other varieties were delivered to Nullawil for \$5/t.

Interpretation

Several varieties yielded better compared with the most commonly grown variety 44C79. Conventional varieties (Hyola 50, Garnet and Hyola 433) were amongst the highest yielding, achieving yields just below 3t/ha. Of the Clearfield lines, hybrid varieties 44Y84 (2.77t/ha) and 45Y82 (2.58t/ha) were higher yielding than 44C79. The Triazine Tolerant varieties performed generally better than 44C79. Monola 76TT and 77TT are specialty varieties; as a result, they attract a premium of \$35/t if delivered to Horsham. Both have yielded reasonably well in NVT trials in recent years and if a receival site is closer, the premium could be worth considering. Of the Monolas, 76TT seems to be higher yielding than 77TT.

In the trial at Culgoa, the plots were very clean until harvest: hedge mustard was the only weed present. This allowed the conventional varieties in particular to grow without competition. It is unlikely that without herbicides this would happen in the paddock situations, unless the paddock were relatively weed-free. Without a dominant weed species present, differences between herbicide groups could not be identified.

Based on these results, growers may consider any of these varieties. With a canola price of around \$520/t, canola grown in 2010 was profitable. However, it must be remembered that these yields are not going to be achievable every year. Canola can be seen as a 'break crop' in the rotation, with other benefits in herbicide rotation in controlling resistant weeds and disease break. The advantages are not always accounted for.

Varietal choice should be based on:

- weed spectrum
- the ability to control in-crop weeds with herbicide if necessary
- the most appropriate variety for the environment, ie. the time of maturity.
- proven performance (if there are a number of varieties that fit individual maturity and herbicide requirements)

It is important to note the restrictions and issues which may limit the crop rotations and effective weed control. Below are some points about each herbicide tolerant group which should be taken into account

Roundup Ready (RR):

- RR herbicide can be applied in only two applications between dicotyledon and bud formation stages. If sprayed twice, the two sprays must be timed at least 14 days apart. A two spray approach is unlikely in the Mallee, primarily because of the cost and the length of time between applications. Typically, a knockdown prior to sowing, followed by one application at 6-leaf, is adequate for the Mallee.
- Because Glyphosate has no residual activity, late weed germination may be problematic in wet springs. Competitive crops with dense canopies will aid weed control through suppression and shading, although some weeds will still manage to set seed.

- There are no registrations for tank mixing RR herbicide with any other herbicides for use in-crop. However, herbicides used on conventional canola such as Lontrel and grass selectives can be applied in a separate pass.
- RR technology is a great option for group A and B resistant ryegrass. However, it may fast track resistance to glyphosate.

Triazine Tolerant (TT):

- TT's are very good for brome and ryegrass, especially in combination with grass selectives.
- Atrazine and Simazine provide good residual control of broadleaf weeds, including radish.
- With few plant back issues, residual control is a real bonus.
- Tend to be lower yielding than RR or IT varieties.
- Consider including a TT variety in the rotation if using other Clearfield technology such as STL and Janz wheat to avoid developing resistance to Group B herbicides.

Imi-Tolerant (IT):

- Unless using higher rates of Intervix (600-750ml/ha), ryegrass may be only suppressed, depending on the sensitivity to the herbicide. Addition of Select or Aramo will improve control and allow for lower rates of Intervix to be used.
- Very good for broadleaves, including radish.
- Generally higher yielding than TT varieties.
- Residual activity will limit plant back options.
- Plant back options for subsequent year: for cereals, Clearfield wheat (Stiletto) or Clearfield Barley (Scope).

Acknowledgments

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