

Canola National Variety Trial Results 2016

Matthew Davey, Kalyx Australia, Jackie Bucat, DAFWA

Key messages

- The 2016 growing season was wet across the state. Agzone 1-5 had optimal conditions whereas Agzone 6 experienced extremely wet conditions. The above average rainfall for the state, and the long growing season, favoured the mid-maturity class over the early maturity class.
- The new TT hybrid, InVigor T 4510 performed exceptionally well across all sites, surpassing the current benchmark Hyola 559TT by 120kg/ha on average, albeit with 1.4% lower oil. Monola 416TT was the overall highest yielding OP TT variety.
- Roundup Ready varieties Pioneer 45Y25 RR and Nuseed GT-53 were the highest yielding varieties in 2016. Nuseed GT-53 and GT-50 performed particularly well in the trials over 2t/ha. Pioneer 44Y24 performed well across the board. The early maturity Pioneer 43Y23 and Hyola 404 were both top performers again in their maturity class.
- In the IT chemistry group, Pioneer 44Y90 performed remarkably well across all environments.

Disclaimer: It is advisable not to make recommendations or management decisions on variety replacement or retention based solely on the 2016 NVT data.

Aims

The National variety trial (NVT) program is a national program of comparative crop variety testing with standardised trial management, data analysis, and reporting. The program is supported by the Australian Government and growers through the GRDC and is managed by the Australian Crop Accreditation System Limited (ACAS).

The aim of the program is to generate independent information to growers about current and newly released crop varieties.

Method

The trials are distributed across Australia in the main soil types and rainfall zones, and many trials are located with grower groups. The trials are sown and harvested close to district grower practice, to ensure variety performance is similar to that seen by growers on their farms. The varieties in the trials are either currently available to growers or will soon have commercial release to market and are benchmarked against district standards and quality check varieties. Field assessments of emergence, vigour, and days to flowering are conducted across all of the trials. All varieties have a CBH delivery standard analysis conducted on oil, seed protein and moisture.

There are two trial series; The early series are generally located in shorter season environments that may suit early maturity varieties. The mid series are located in longer season environments that may suit mid maturity varieties. In 2016 Agzone 4 was back in the TT trials, with a site at Kellerberrin, after a gap of several years.

New varieties in the 2016 NVT program were; TT varieties InVigor T4501, Pioneer 44T02 TT and SF Ignite TT; RR varieties Nuseed GT-53 and InVigor R 5520P; Clearfield varieties Pioneer 44Y90 and 45Y91.

Data analysis

The data analysis method has changed, from the variety rank on Agzone rank used previously. The varieties have been ordered by calculating their performance compared with the trial site average. This method is less affected by varieties not being present in all trials and it also shows the amount of difference between varieties. The results have been grouped by yield level (instead of Agzone) to give an indication of variety maturity effects on performance.

1. Variety yield performance compared with site average (i.e. amount above or below site average)
2. Varieties ordered by overall average yield performance across all trial sites.
3. Trials grouped by yield level for simple data presentation
4. Final yield data presented as % of trial average
5. TT results have been arranged into hybrid and OP groups.

Results

The 2016 growing season was wet across the state, with optimal conditions in Agzone 1-5 and extremely wet conditions in Agzone 6. Unfortunately, this led to loss of high rainfall (and higher blackleg pressure) NVT trials at Gibson, Kendenup and South Stirlings, leaving 18 successful trials. There were high yields for the 2016 TT trials, from 1.4 to 3.4t/ha, and 5 trials over 3t/ha. The above average rainfall and long growing season favoured the mid-maturity class over the early maturity class.

TT hybrids

Bayer's new variety, InVigor T 4510, performed exceptionally well in the long season of 2016. InVigor T 4510 had high yields at all 18 trial sites, apart from the lowest yielding trial, at Hyden. InVigor T4510 exceeded Hyola 559 by 120kg/ha on average, but produced 1.4% lower oil. Hyola 650 also out yielded Hyola 559 in 2016, although was only in 5 trials.

New TT hybrids SF Ignite, and Pioneer 44T02 performed as well as the benchmark variety Hyola 559, in 2016. SF Ignite was only tested in the Mid series and was a solid performer in these high rainfall zones, similar to Hyola 650, but produced 1.1% lower oil content than Hyola 650. Pioneer 44T02 had limited testing on the south coastline (since not in trials at Scaddan and Munglinup), however performed well in the northern and central districts in the medium rainfall zone.

Hyola 559 gave reliable yields in 2016 but was outclassed at sites over 3t/ha.

TT OP

For the TT OP group, which covered 71% of WA canola hectares in 2016, only ATR Bonito was included in all trials, with other OP varieties in 4-9 trials.

Monola 416TT was the overall highest yielding OP TT variety in 2016. Both ATR Stingray and ATR Mako out yielded ATR Bonito by 90-100kg/ha, when comparing matched trials (where concerned varieties were both grown). The hybrids Hyola 559 and InVigor T 4510 out yielded ATR Bonito by 330 and 440kg/ha, respectively.

Table 1. TT variety yield and oil performance, of 2016 WA NVT

	Yield group (t/ha)	Yield (% of mean)					Overall*	Mean oil advantage (%)	Number of trials
		1.4-1.6	1.6-2	2-2.5	2.5-3.2	3.2-3.5			
TT Hybrid	InVigor T 4510	107	104	107	116	110	109	-0.80	18
	Hyola 650TT		105	103	111	108	109	0.16	5
	SF Ignite TT	93	97	105	114	107	106	-0.92	9
	Hyola 559TT	110	107	102	106	104	105	0.59	18
	Pioneer 44T02 TT	109	108	103	107	97	104	-0.03	16
	SF Turbine TT	98	99	99	98	107	101	-1.29	15
	Hyola 450TT	98	101	98	98		99	0.96	11
	Pioneer 45T01TT		95		95	98	97	1.28	7
	DG 560TT	95	99	94	96	94	95	-1.85	9
TT+RR	Bayer 3000 TR	77	91	104	87		95	0.23	7
	Hyola 725RT		102	92	91	95	93	-0.33	4
	Hyola 525RT	90	92	96	94	91	92	0.48	13
TT OP	Monola 416TT		97	100	88	94	95	-0.54	8
	ATR Wahoo	103	103		77	100	94	0.58	4
	ATR Stingray		103	94	94	90	93	0.87	8
	ATR Mako	93	96	96	80	92	91	1.46	9
	ATR Bonito	86	94	93	90	89	90	-0.21	18
	Mean yield (t/ha)	1.47	1.77	2.24	3.01	3.39			
	Mean oil (%)	42.78	46.19	44.63	45.81	47.67			
	Number of trials	3	4	5	3	3			

yield limits adjusted slightly from half tonne increments, to make groups more even

* Average calculated from single sites, rather than average of grouped yield levels

TT+RR

Bayer 300TR out yielded Hyola 525RT in the Early series, while Hyola 725RT out yielded Hyola 525RT in the Mid series.

RR

In the long season of 2016, the longer season varieties Pioneer 45Y25 and GT-53 topped the yield leader board. Pioneer 45Y25 had reasonable representation (8 trials), with only one poor performance, at Buntine. Unfortunately this was the only 45Y25 trial in the 2-2.5 yield range, so the results are particularly obvious (Table 2).

Nuseed GT-53 and GT-50 performed particularly well in the trials over 2t/ha. GT-53 had a small but significant yield advantage over GT-50 in 3 trials for an overall yield advantage of 40kg/ha and similar oil results, across 11 matched trials.

Pioneer 44Y24 performed well across the board. As did the early maturity Pioneer 43Y23, apart from poor performance at the high yielding Greenough trial. Pioneer 43Y23 had the lowest oil of the RR group, at 3.2% lower than 45Y25.

Monola G11 did well for trials less than 2.5t/ha and Hyola 404 was a good performer for trials less than 3t/ha, relative to the early maturity class varieties.

InVigor R 5520P was a marked improvement on IH 51 Podguard in both yield and oil content. On a site by site analysis InVigor R 5520P averaged 255kg/ha and 1.65% oil better than IH51.

Table 2. RR variety yield and oil performance, of 2016 WA NVT

Yield group (t/ha)	Yield (% of mean)					Mean oil advantage (%)	Number of trials
	1.5-2	2-2.5	2.5-3	3-3.5	Overall*		
Pioneer 45Y25 (RR)	114	93	111	111	110	0.93	8
Nuseed GT-53	98	102	116	109	107	-0.29	11
Pioneer 44Y24 (RR)	107	105	102	105	105	-0.36	12
Nuseed GT-50	96	101	111	108	104	-0.51	12
Pioneer 43Y23 (RR)	102	108	102	100	103	-2.38	10
Hyola 600RR	101			101	101	1.56	3
InVigor R 5520P	94			103	100	0.86	2
Monola G11	103	105		90	98	3.19	6
Hyola 404RR	96	101	102	92	98	1.87	10
DG 460RR	95	89	97	104	98	1.50	10
IH52 RR	101	100	91	96	97	-1.04	7
Nuseed GT-41	88	98	95	101	96	-0.62	10
IH30 RR	97	102	93	90	96	0.12	11
Nuseed GT-42	86	90	102	95	93	-0.98	12
IH51 RR	91	90	87	95	92	-0.89	10
VICTORY V5003RR	90	89	95	92	92	0.70	5
Mean yield (t/ha)	1.80	2.28	2.83	3.25	2.46		
Mean oil (%)	44.73	44.66	46.93	46.74	45.9		
Number of trials	4	3	2	3	12		

* Average calculated from single sites, rather than average of grouped yield levels

IT

Pioneer 44Y90 had the best yield and oil for all trials. Yield of Pioneer 45Y91 was (not significantly) above Pioneer 45Y88 yields and outperformed by Pioneer 44Y90 for yield and oil, at both sites where varieties were grown together.

Table 3. IT variety yield and oil performance, of 2016 WA NVT

Series AgZone Nearest Town	Yield (% of mean)						Overall yield	Mean oil advantage (%)
	Mid 6 Munglinup	Early 5 Jerry	Early 1 Mingenew	Mid 3 Williams	Mid 2 Bolgart	Mid 2 Dandaragan		
Pioneer 44Y90 (CL)	113	114	104	113	110	108	110	1.07
Pioneer 45Y91 (CL)	100			103			102	0.74
Pioneer 45Y88 (CL)	96			99			98	-1.14
Hyola 474CL	97	83			89		92	-0.25
Hyola 577CL	92			85	96		91	-0.12
Pioneer 44Y89 (CL)	88	91	91	89	94	87	90	-0.39
Hyola 575CL	91	85		77	82	75	81	-0.43
Mean yield (t/ha)	1.56	1.87	3.27	3.51	3.52	3.53		
Mean oil (%)	46.16	47.43	47.14	47.74	48.15	46.69		

2016 Canola groups and varieties in WA (2016 grower planting intention data, courtesy CBH group)

There was a small reduction in the proportion of GM canola grown in WA in 2016, down to 24% of canola hectares planned to be sown. (Table 5)

ATR Bonito was the most widely grown canola variety in 2016, at 38%, up from 20% in 2015. Hyola 404RR was the most widely grown RR variety, at 8.6% of total canola Ha. The most popular 7 varieties account for 80% of the WA canola crop in 2017 (Table 6).

Table 5. Proportion (% area sown) of canola herbicide systems in WA (Data courtesy of CBH Group)

Growing season	2013	2014	2015	2016
TT	83	79	72	74
RR	13	19	24	23
TT+RR	-	-	2	1.5
CL	3	2	2	1.6
CC	1	~	~	0.2
GM (RR and TT+RR)	13	19	26	24

Table 6. Proportion (% area sown) of popular canola varieties in WA. (Data courtesy of CBH Group)

Group	Variety	2013	2014	2015	2016
TT OP	ATR Bonito	~	1.9	20.1	37.7
TT OP	ATR Stingray	19.3	27.7	23.0	17.1
RR Hybrid	Hyola 404RR	7.5	7.0	9.6	8.6
RR Hybrid	Pioneer 43Y23 (RR)	1.9	2.6	5.8	6.8
TT OP	ATR Gem	3.8	8.8	5.7	3.2
RR Hybrid	Nuseed GT-50	0.9	4.2	4.1	3.2
TT OP	Thumper TT	0.5	1.5	2.8	2.6

Conclusion

Disclaimer: It is advisable not to make recommendations or management decisions on variety replacement or retention based solely on the 2016 NVT data.

The Canola NVT presentation will include analysis of the forthcoming 2012-2016 MET results and recommendations for 2017.

Key words; NVT, Yield, Quality, Canola.

Acknowledgments; GRDC Project Number: National Variety Testing Program

GRDC Project Number: National Variety Testing Program

Paper reviewed by: Mark Seymour