Hi-Biomass S Series and spring canola herbicide technology hybrid versus OP performance evaluations

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Key messages

- Winter Graze n Grain Hybrids provide huge yields and multiple cropping and grazing opportunities.
- Hyola® late Spring Super Hi-Biomass Hybrids show very high yield potential in the HRZ with Hyola 725RT and Hyola 600RR topping their respective herbicide technology groups.
- Triazine Hybrids show similar performances and gross returns to the best Clearfield Hybrids and much higher Gross returns $/ha than OP TT varieties especially Hyola 650TT and Hyola 559TT.
- RT® dual herbicide tolerant Hybrids show their $/ha value and as a critical new competitive IWM management tool for all canola growers.

Background

Hybrid canola is now being adopted more widely as 45% of the seed sold to growers across Australia due to some growers consistently having gross return increases of $200 to $500/ha over open pollinated varieties. As part of our National Hyola® FCTS Performance and Agronomy Trialling Network, Pacific Seeds is working closely with the SFS conducting replicated canola trials. The trials are evaluating new herbicide technologies, new hybrid varieties, herbicide efficacy and higher rainfall integrated weed management.

This trial was one of 24 replicated trial sites around Australia being conducted to evaluate the latest canola varieties in Conventional, Roundup Ready®, Clearfield, Triazine Tolerant and new dual tolerant RT® technologies in a composite design that allows all herbicide technologies to be compared within and against each other technology for yield, oil % and gross returns in $/ha.

Aim

To compare new hybrid and open pollinated (OP) varieties in the mid to late maturity groups suited to the 2.0 to 4.0 t/ha environments and evaluate them statistically, head to head, across all five herbicide technologies. The trial also evaluated the performance of spring types (e.g. Hyola® hybrids) versus S-Series Hyola® (Super Hi-Biomass late spring types) versus winter Grain'n'Graze/dual purpose types in a composite design that allows all herbicide technologies to be compared within and against each other technology for yield, oil % and gross returns in $/ha.



Figure 1. Pacific Seeds Canola Business Manager, David Harris with Territory Manager, Anton Mannes inspecting the new Hyola 525RT dual tolerant herbicide technology in the 2014 Westmere Hyola FCTS Trial.

Method

Table 1. Trial agronomic details.

Location	Westmere
Trial design	3 replicate randomised complete block design ensuring effective randomization across and within different herbicide technology varietal groups across randomised blocks
Soil type	Clay-clay loam
Soil pH ($CaCl_2$)	5.6
EC	0.1
Sowing date	6 May 2014
Seeding rate	All varieties adjusted by seed count/kg and germination % to target 40 to 50 plants/m^2
Fertiliser	100 kg/ha MAP (at sowing) 157 L/ha UAN (6-8 leaf) 65 kg/ha Urea (6-8 leaf) 100 kg/ha Urea (full flower)
Previous crop	Barley
Herbicides	14 July 2014 (2-leaf) Triazine Tolerant: Atrazine 1.1 kg/ha + Hasten 1% + Verdict 75 mL Clearfield: Intervix 700 mL/ha + Hasten 1% + Verdict 75 mL Roundup Ready: Roundup 690 900 g/ha + Hasten 1% Conventional: Verdict 75 mL/ha + Hasten 1% 14 August 2014 (6-8 leaf) Roundup Ready: Roundup 690 900 g/ha + Hasten 1%
GSR	304 mm

Results

Table 2. Yield and gross returns for Westmere trial.

Treatment	Herbicide tolerance	Yield (t/ha)		Gross return ($/ha)	Oil %	Oil % Factor
ATR BONITO	TT	2.62	m	1,371	45.1	105
HYOLA 450TT	TT	2.67	lm	1,387	44.6	104
T28166	TT	2.62	m	1,306	41.8	100
HYOLA 559TT	TT	2.79	ijkl	1,451	44.7	104
HYOLA 525RT	TT	2.83	hijk	1,485	45.3	105
HYOLA 650TT	TT	2.99	efgh	1,538	43.9	103
HYOLA 750TT	TT	2.83	hijk	1,481	45.1	105
ATR WAHOO	TT	2.71	klm	1,392	43.8	103
HYOLA 725RT	TT	3.11	de	1,630	45.2	105
HYOLA 404RR	RR	3.02	efg	1,619	46.8	107
44Y24	RR	3.13	cde	1,603	43.6	102
43Y23	RR	3.07	def	1,597	44.7	104
HYOLA 600RR	RR	3.32	b	1,857	49.9	112
HYOLA 400RR	RR	2.93	cde	1,608	48.5	110
GT COBRA	RR	2.76	jklm	1,461	45.9	106
HYOLA 525RT	RR	2.87	ghij	1,508	45.4	105
GT50	RR	3.19	bcd	1,648	44.2	103
HYOLA 500RR	RR	3.14	fghi	1,697	47.4	108
AV GARNET	CC	2.87	ghij	1,525	46.2	106
HYOLA 50	CC	3.19	cde	1,693	46.1	106
HYOLA 635CC	CC	3.27	bc	1,819	49.5	111
HYOLA 971CL	CL	3.52	a	1,763	42.1	100
LSD (*p*=0.05)		**0.16**				

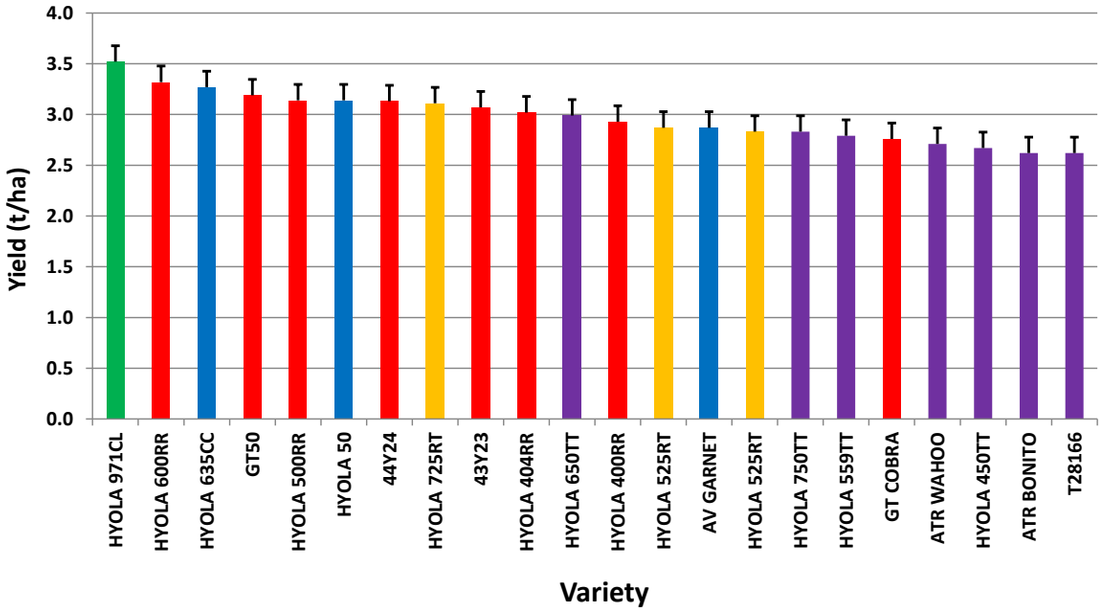


Figure 2. Mean analysed yield results, colour coded by herbicide tolerance technology. Trial statistics - LSD (p=0.05) = 0.157, CV = 3.20, site mean yield = 2.98 t/ha.

Key: Dark Green = Clearfield Winter Hybrids, Blue = Conventional Spring Hybrids, Red = Roundup Ready® Spring Hybrids, Light Green = Clearfield Spring Hybrids, Purple = Triazine Tolerant Hybrids or OP, Gold = RT® Dual Herbicide tolerant Technology – Roundup Ready & Triazine Tolerant.

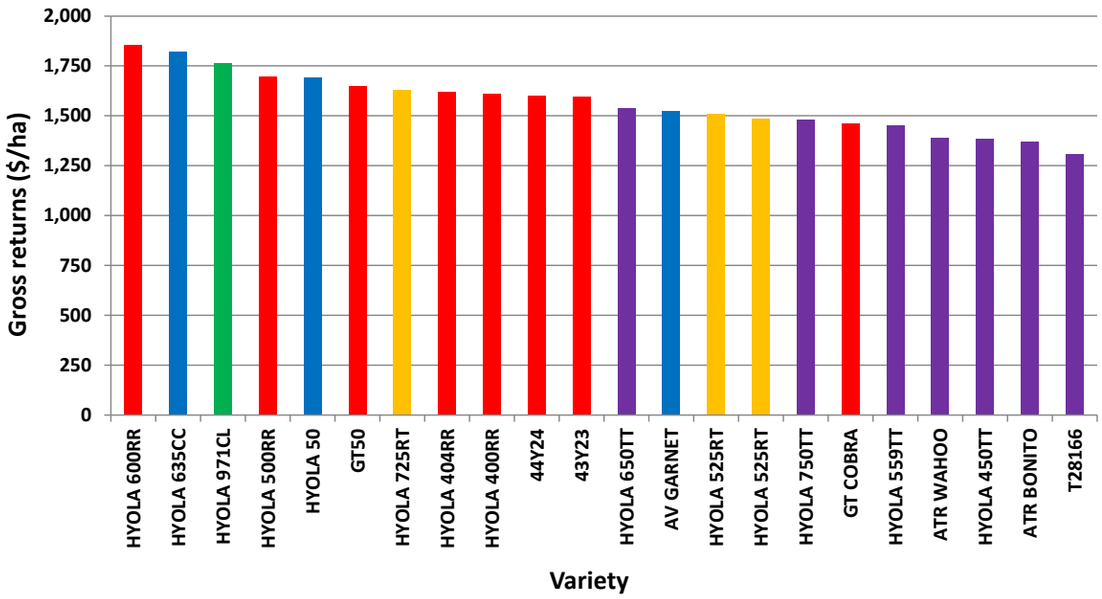


Figure 3. Gross Returns $/ha color coded by herbicide tolerance technology. Based on canola commodity grain price of $500/t with Oil based on 42% +/- bonus or deduction.

Key: Dark Green = Clearfield Winter Hybrids, Blue = Conventional Spring Hybrids, Red = Roundup Ready® Spring Hybrids, Light Green = Clearfield Spring Hybrids, Purple = Triazine Tolerant Hybrids or OP, Gold = RT® Dual Herbicide tolerant Technology – Roundup Ready & Triazine Tolerant.

Comments

The trial did suffer some early insect damage; however plant populations were recorded and included as a variable in the statistical analysis. Overall the trial was managed as best as possible and top-dressed with adequate amounts of nitrogen during the season.

Discussion

Yield results demonstrated that the more adaptable varieties for HRZ regions performed well within each herbicide technology and longer season higher biomass types fully demonstrated their high genetic yield potential with the highest yields, oils and gross returns.

The later Spring Hi-Biomass Hybrid types - Hyola® 600RR and Hyola® 725RT - showed exceptional yield demonstrating

significantly higher yield than current leading RR and TT Spring Hybrid types respectively.

Hybrids clearly showed significantly higher yields than OP varieties in the TT and RR technologies and the mid-season RT® hybrid, Hyola 525RT® demonstrated equal performance as expected to the highest yielding TT hybrid, Hyola 559TT. ATR Bonito and ATR Wahoo OP TT varieties showed the lowest yields and gross returns in the trial. The highest yields, oils and gross returns were demonstrated by the more adapted RR hybrids. Hyola 650TT showed the highest returns of all the TT Hybrids.

The new dual herbicide tolerant hybrids Hyola® 725RT and Hyola® 525RT demonstrated that RT® technology is extremely competitive with both of some of the best RR and TT Tolerant Hybrids.

Conclusion

Most RR Hybrids showed higher yields, oils and gross returns than RT or TT Hybrids or OP varieties as expected. The later maturing S Series Hi-Biomass RR hybrid, Hyola 600RR performed extremely well by demonstrating the highest oil% and thus effectively the highest competitive gross return against other RR hybrids. RR Technology is set to become a big part of the HRZ over the next few years.

RT® technology showed equal or greater performance and returns to the best TT Hybrids demonstrating that this technology has huge applications for Victorian and furthermore Australian canola cropping regions due to its adaptable performance, extended spraying residual and knockdown window and improved weed control efficacy in IWM systems especially including the management of Clethodim resistant ryegrass.

More adapted TT Hybrids showed significantly higher performance and gross returns than OP TT varieties which aligns up with 2014 published GRDC NVT trial results in many locations across VIC and Australia, and continues to demonstrate to canola growers that new TT hybrids have higher more competitive production than OP TT varieties.

Results also indicated that winter type Hybrids with Clearfield tolerance that have the potential to improve grain yields above the Australian cultivars currently available to growers in higher rainfall zones. These High yielding cultivars are designed for spring or autumn sowing and multiple grazing events before then being harvested for grain.

Acknowledgements

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