GRDC
Grains Research Update

Managing Clethodim Resistant Annual Ryegrass

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Resistance of annual ryegrass to clethodim is becoming a major problem in canola

Using RT canola to control clethodim-resistant annual ryegrass

- Trials in Victoria near Francis with MacKillop Farm Management Group and Lake Bolac with Southern Farming Systems
- RT canola resistant to glyphosate and triazine herbicides
- Offers the opportunity of using both post-emergent and residual herbicides

- Both sites RT canola in 2014, Wheat in 2015.

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HYBRID CANOLA
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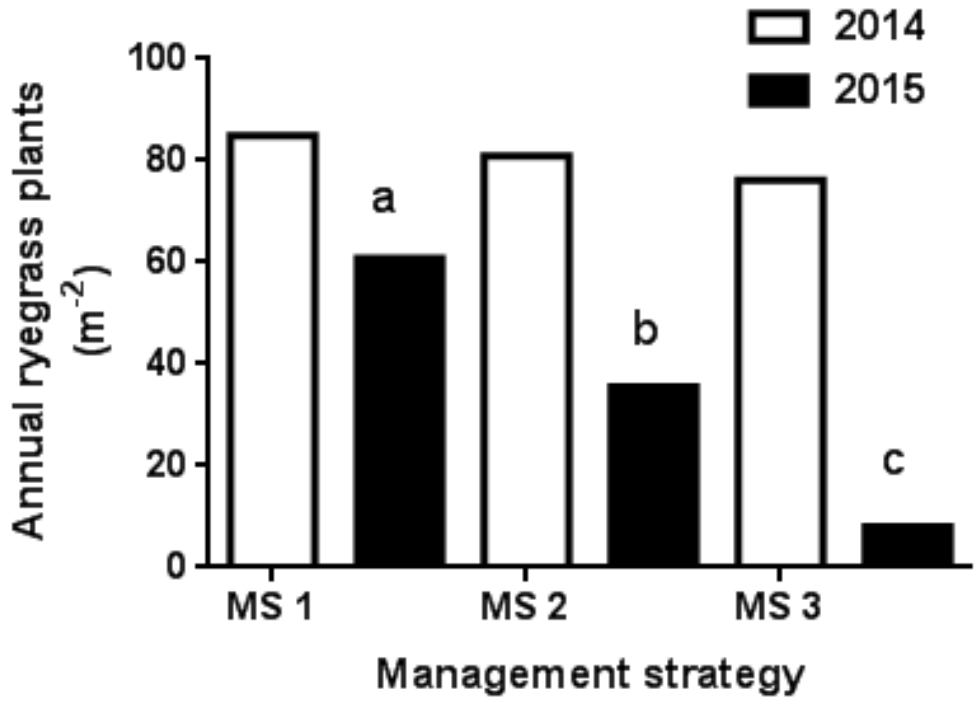
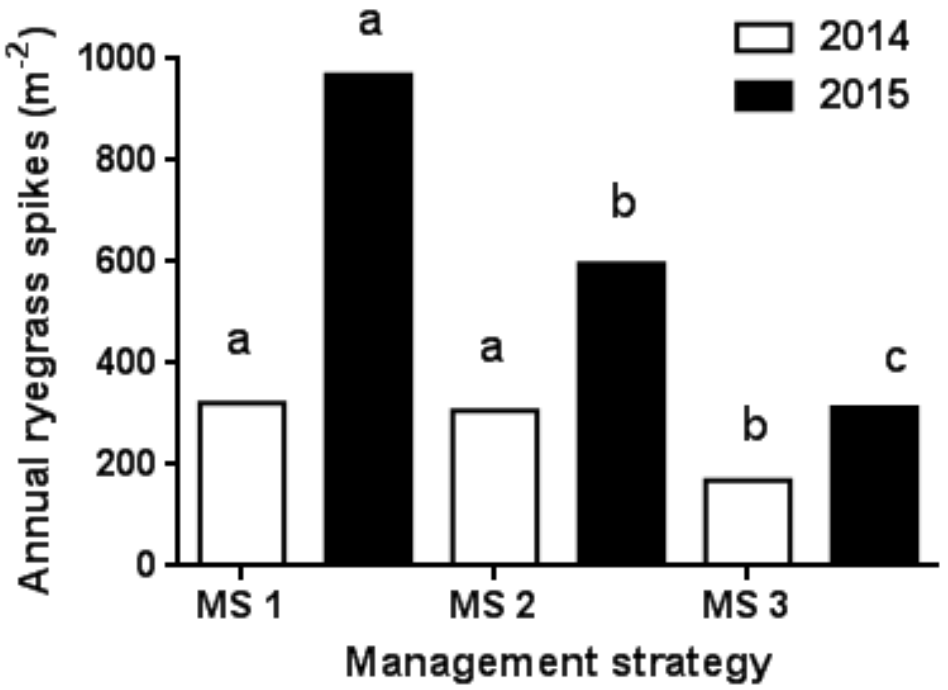
Lake Bolac trial

Management strategy	Canola phase	Wheat phase
Low intensity	Trifluralin (3 L ha^{-1}) + Atrazine (2.2 kg ha^{-1}) pre Clethodim (500 mL ha^{-1}) post	Trifluralin (3 L ha^{-1}) + Avadex Xtra (2 L ha^{-1}) + Dual Gold (250 mL ha^{-1}) pre
Medium intensity	Trifluralin (3 L ha^{-1}) pre RoundupReady (900 g ha^{-1}) cotyledon RoundupReady (900 g ha^{-1}) + Atrazine (1.1 kg ha^{-1}) 6 leaf	Sakura (118 g ha^{-1}) pre
High intensity	Rustler (1 L ha^{-1}) pre RoundupReady (900 g ha^{-1}) cotyledon RoundupReady (900 g ha^{-1}) + Atrazine (1.1 kg ha^{-1}) 6 leaf Weedmaster DST (2.5 L ha^{-1}) crop top	Sakura (118 g ha^{-1}) + Avadex Xtra (2 L ha^{-1}) pre Boxer Gold (2.5 L ha^{-1}) post

Annual ryegrass populations in canola and wheat with different management strategies



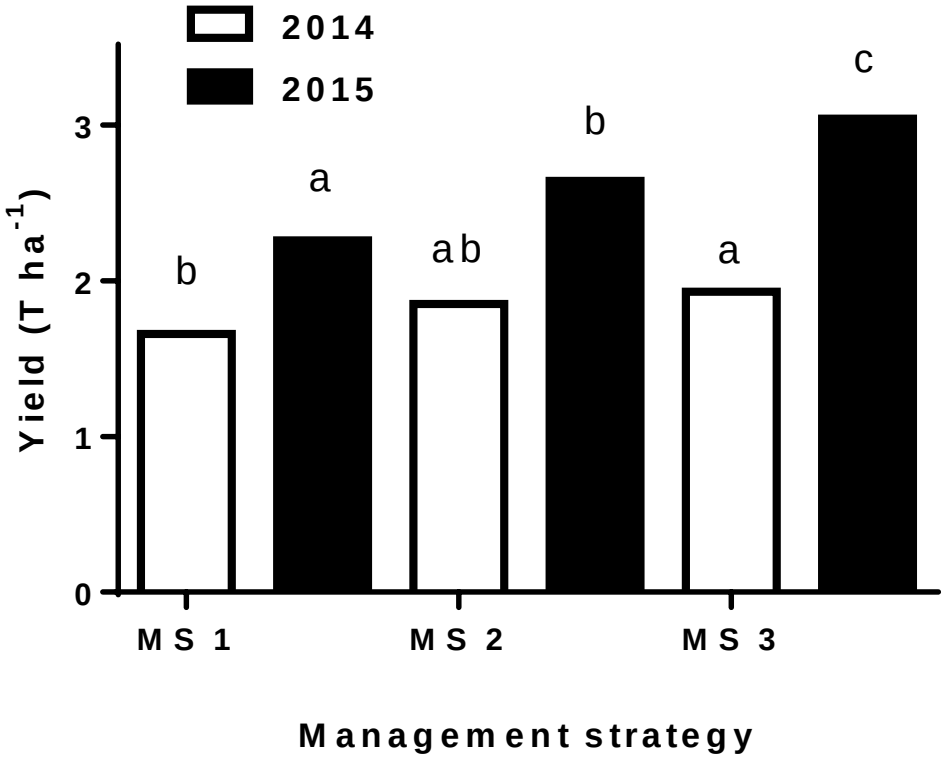


Lake Bolac 2015

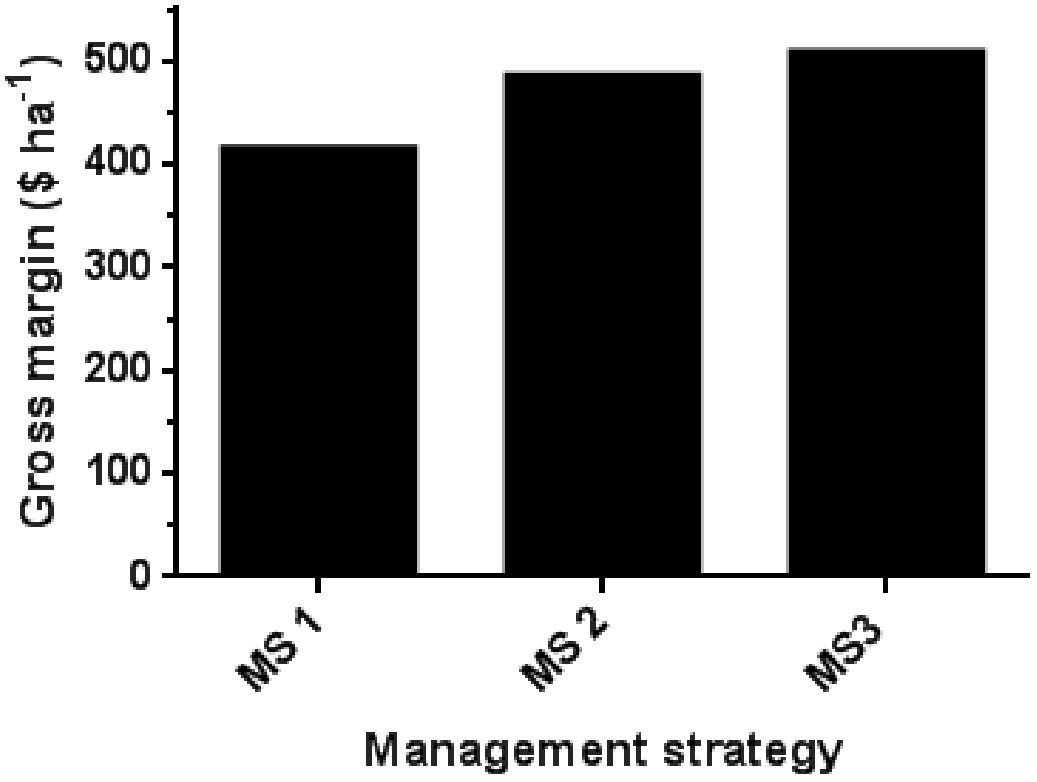
Management strategy 1

Management strategy 3

Canola and wheat yields with different management strategies



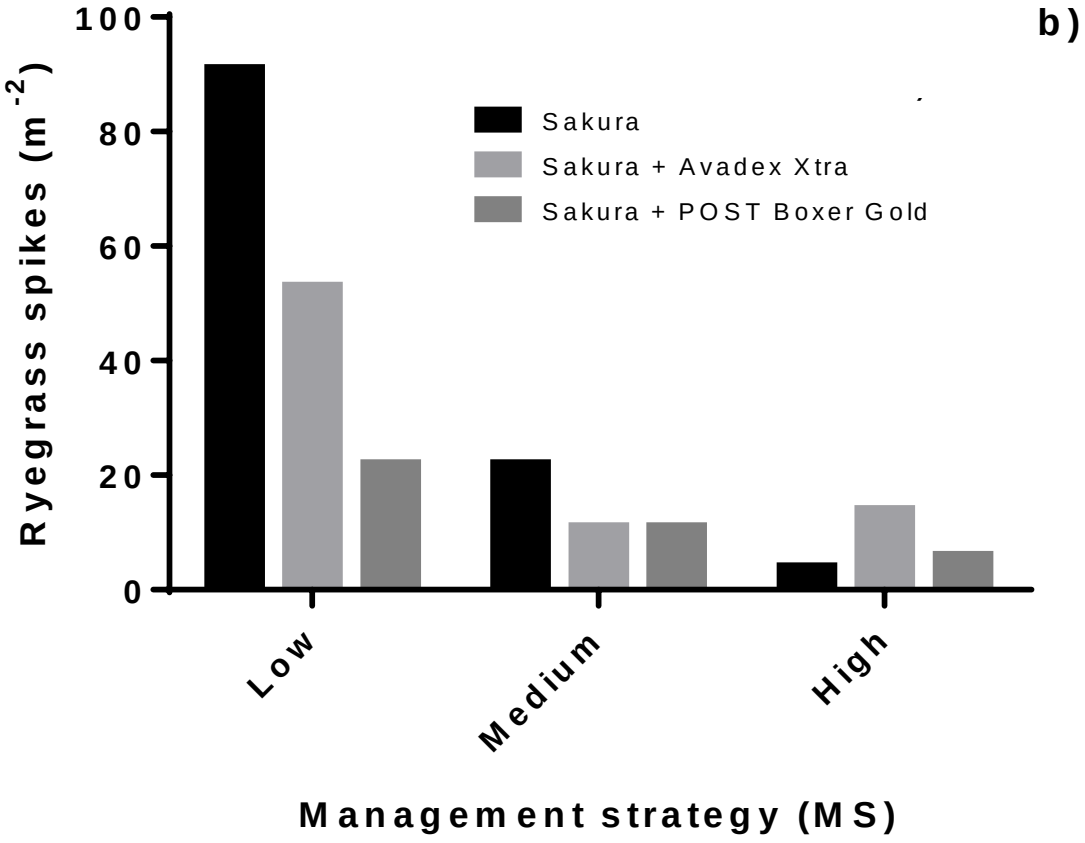
Can you make it pay?



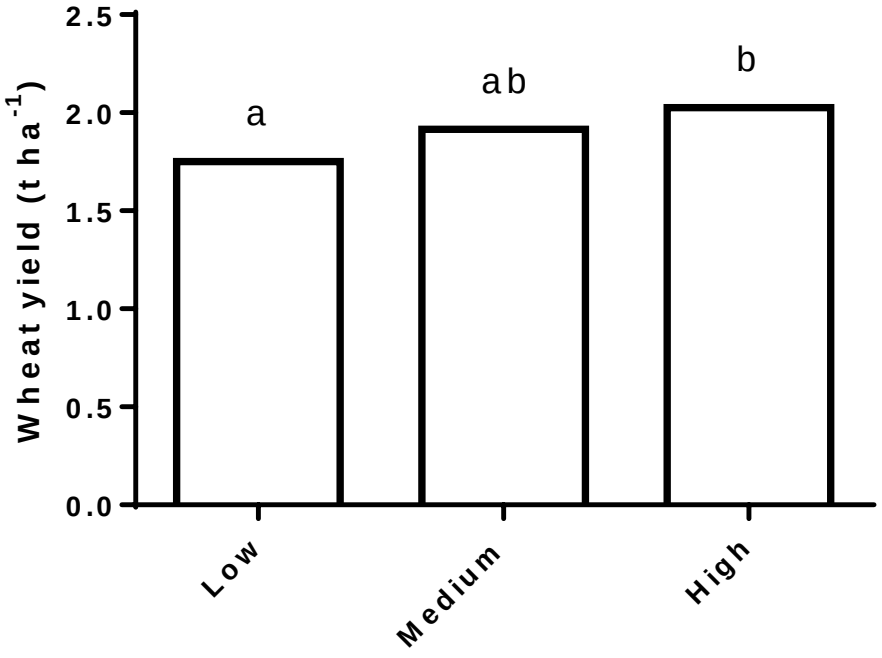
Frances trial

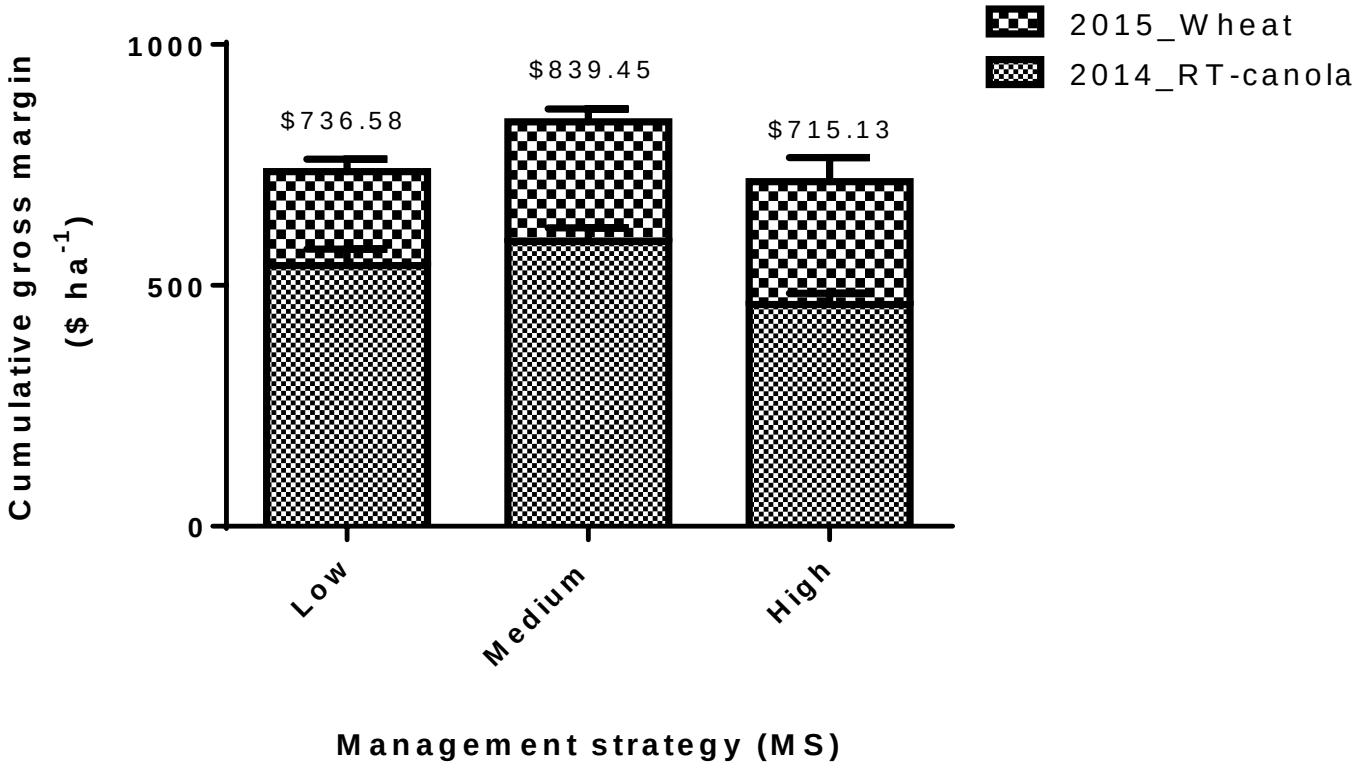
Management strategy (MS)	RT-canola phase	Wheat phase
Low intensity (MS1)	Simazine (1.1 kg/ha) pre Atrazine (1.1 kg/ha) + Select (500 mL/ha) post	Sakura (0.118 kg/ha) pre
Medium intensity (MS2)	Simazine (1.1 kg/ha) pre RoundupReady (0.9 kg/ha) cotyledon RoundupReady (0.9 kg/ha) + Atrazine (1.1 kg/ha) 6-leaf	Sakura (0.118 kg/ha) + Avadex Xtra (2 L/ha) pre
High intensity (MS3)	Rustler (1 kg/ha) + Avadex Xtra (2 L/ha) pre RoundupReady (0.9 kg/ha) cotyledon RoundupReady (0.9 kg/ha) + Atrazine (1.1 kg/ha) 6-leaf Weedmaster DST (2.4 L/ha) crop-top	Sakura (0.118 kg/ha) pre Boxer Gold (2.5 L/ha) post

Annual ryegrass seed heads



Wheat yield at Frances in 2015 and gross margins 2014-2015

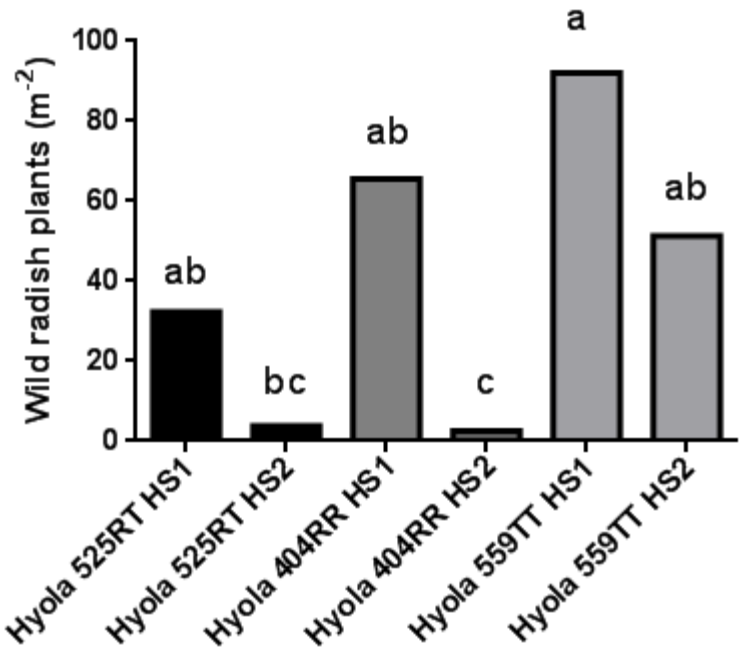


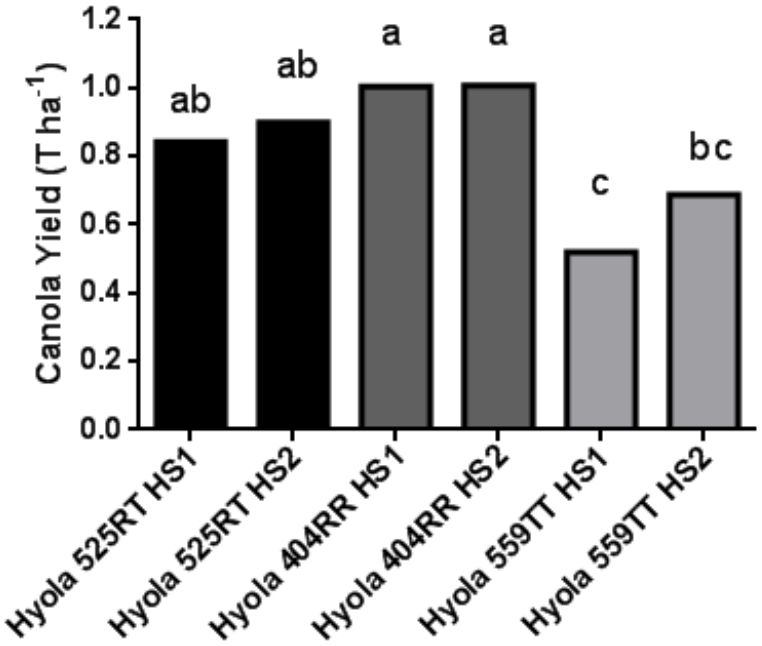


Young IWM trial

Cultivar	Herbicide treatment	
	Low cost	High cost
Hyola 525RT	Trifluralin 2.5 L ha^{-1} + 1.1 kg/ha Sinochem Atrazine pre fb RRH 900 g ha^{-1} @ 2-4lf	Rustler® (propyzamide) 1 L ha^{-1} + Avadex Xtra 2 L ha^{-1} pre fb RRH 900 g ha^{-1} + Sinochem Atrazine 1.1 kg ha^{-1} @ 2-4lf fb RRH 900 g ha^{-1} + Sinochem Atrazine 1.1 kg ha^{-1} @ 6-8lf fb Weedmaster DST 2.5 L ha^{-1} croptop
Hyola 404RR	Trifluralin 2.5 L ha^{-1} pre fb Roundup Ready Herbicide 900 g ha^{-1} @ 2-4lf	Rustler® (propyzamide) 1 L ha^{-1} pre fb Roundup Ready Herbicide 900 g ha^{-1} @ 2-4lf fb Roundup Ready Herbicide 900 g ha^{-1} @ 6-8lf fb Weedmaster DST 2.5 L ha^{-1} croptop
Hyola 559TT	1.1 kg ha^{-1} Sinochem Atrazine pre fb Clethodim 500 mL ha^{-1} @ 4lf	Trifluralin 2.5 L ha^{-1} + 1.1 kg ha^{-1} Sinochem Atrazine pre fb Sinochem Atrazine 1.1 kg ha^{-1} + Clethodim 500 mL ha^{-1} @ 4lf

Wild radish plants in canola and canola yield at Young





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Conclusions

- RT canola can be used to drive down annual ryegrass seed banks
- This leads to lower ryegrass numbers in the following wheat crop
- Considerable cost to controlling ryegrass effectively in canola (~$100 ha^{-1}) so there is a need to match the strategy to the expected wheat yield