

Triazine Tolerant Roundup Ready canola hybrid canola – an effective tool for controlling annual ryegrass and wild radish.

Triazine Tolerant Roundup Ready (TT-RR) hybrid canola is a new dual herbicide tolerant system being commercialised by Pacific Seeds and Monsanto. This technology will be tolerant to both the triazine herbicides and Roundup Ready Herbicide with PLANTSHIELD® by Monsanto. TT-RR hybrid canola incorporates one already approved GM event – Roundup Ready, and triazine tolerance which has been developed using conventional breeding.

This combination of herbicide tolerant traits will provide growers with the broad spectrum knockdown control of Roundup Ready Herbicide with PLANTSHIELD by Monsanto along with the residual activity of the triazine herbicides. Both of these herbicide groups have a relatively low resistance risk profile compared to other herbicide groups, such as Group A and B herbicides, making this herbicide tolerant system a valuable and timely addition to on-farm Integrated Weed Management (IWM).

Currently Roundup Ready canola provides growers the ability to spray two applications of Roundup Ready Herbicide with PLANTSHIELD by Monsanto from emergence to the six leaf stage. The TT-RR system will incorporate the current Roundup Ready use-pattern along with the ability to spray atrazine and/or simazine as outlined by currently registered triazine products for use in Triazine Tolerant (TT) canola.

In 2013 a comprehensive weed control and varietal performance trial program was conducted by independent contract researchers across Australia. This involved nine trials in typical canola growing regions, with five sites in Western Australia and four in the eastern states. The TT-RR canola system was compared with TT and Roundup Ready canola and spray regimes were chosen within each system to mirror typical on-farm spray decisions. The key weed species, annual ryegrass (*Lolium rigidum*) and wild radish (*Raphanus raphanistrum*), were targeted.

For further information, visit the Roundup Ready canola website www.roundupreadycanola.com.au or the Pacific Seeds website www.pacificseeds.com.au



TRIAZINE TOLERANT ROUNDUP READY® CANOLA HYBRID TRIAL RESULTS SUMMARY



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Cover image: Trial site at Monteagle, New South Wales, 2013



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Weed control trials

The results summary from the trial conducted at Mingenew in Western Australia which included both of the key weed species annual ryegrass and wild radish are shown in Figure 1.

In the TT-RR treatments (treatments 1 and 2) greater than 90% control of ryegrass and wild radish was achieved. The clethodim (Select®) treatment (treatment 3) within the TT canola system provided very little ryegrass control, likely indicating that the paddock had clethodim resistant ryegrass.

The TT-RR system provided greater control of ryegrass, relative to the TT canola system (treatments 3-5), which was attributed to the Roundup Ready Herbicide with PLANTSHIELD by Monsanto providing high levels of control

of the clethodim resistant ryegrass.

The TT-RR system also provided improved radish control, relative to the TT canola treatments, due to the additive control of Roundup Ready Herbicide with PLANTSHIELD by Monsanto.

Similarly, the TT-RR canola treatments also provided greater radish control relative to the Roundup Ready canola treatment (treatment 6). This was most likely due to the extended radish control provided by the residual activity of the atrazine and/or simazine used.

One of the nine trial sites was conducted at Cunderdin in Western Australia in 2013 which included the key weed species - annual ryegrass (refer to Figure 2).

In the TT-RR treatments that included atrazine and/or simazine and Roundup Ready Herbicide with PLANTSHIELD by Monsanto (treatments 2-4), the ryegrass control was 95% and above (refer to Figure 3). The greater control of ryegrass in the TT-RR treatments relative to the TT system, was attributed to the Roundup Ready Herbicide with PLANTSHIELD by Monsanto, either controlling potentially clethodim resistant ryegrass and/or the addition of another mode of action providing improved control.

At this site the Roundup Ready system (treatment 8), which included two applications of Roundup Ready Herbicide with PLANTSHIELD by Monsanto, provided similarly high levels of ryegrass control relative to the TT-RR treatments that included atrazine and/or simazine and Roundup Ready Herbicide with PLANTSHIELD by Monsanto. Although the Roundup Ready system provided high levels of control, the atrazine alone treatment (treatment 1) in the TT-RR system provided 60% control of ryegrass. This shows a benefit to adding atrazine to the Roundup Ready system with another mode of action reducing the potential for the development of glyphosate resistant ryegrass.



Figure 2. Early flowering stage at trial site, Cunderdin, Western Australia.

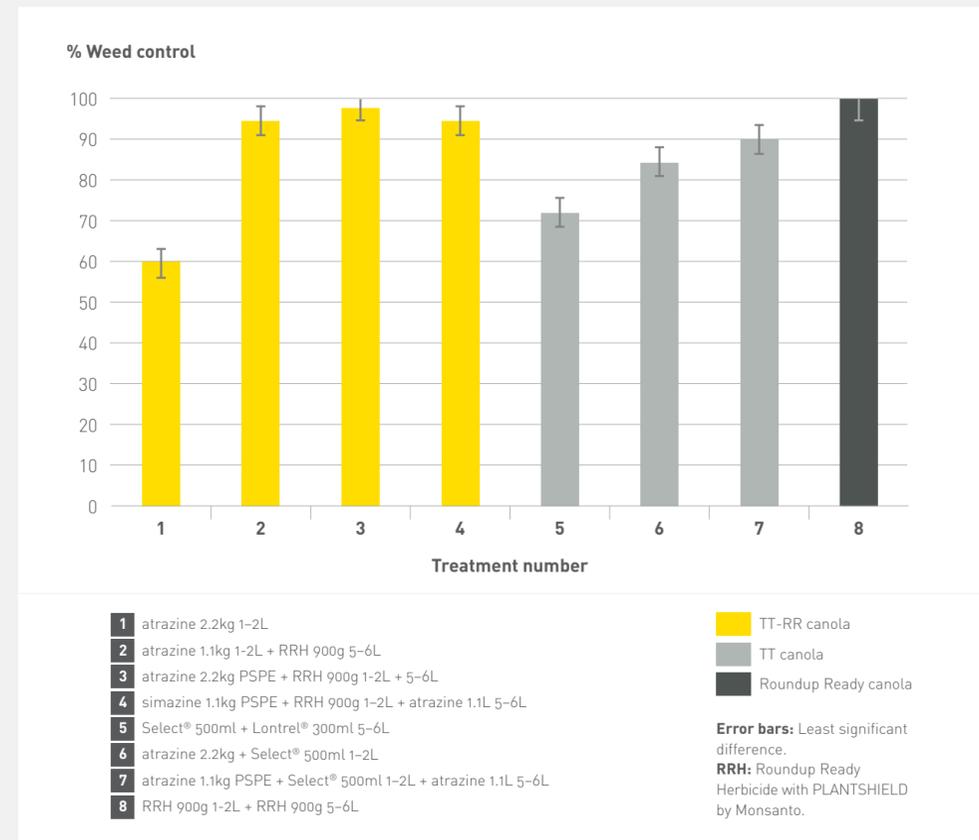


Figure 3. Herbicide tolerant canola systems trial, Cunderdin, Western Australia, 2013.

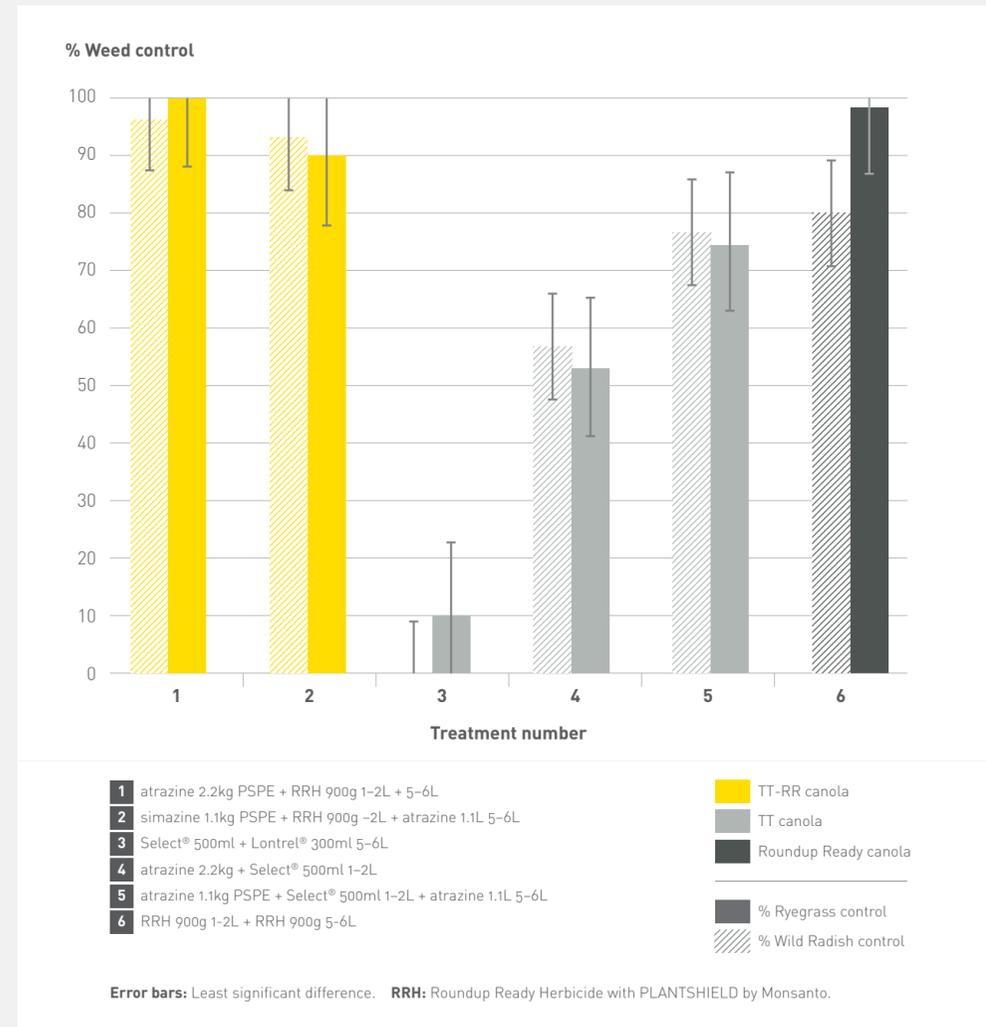


Figure 1. Herbicide tolerant canola systems trial, Mingenew, Western Australia, 2013.

Yield performance

Average yields of the TT-RR hybrid (525RT) canola over all nine sites were similar to a current top-performing TT hybrid, Hyola® 559TT (refer to Figures 4, 5 and 6).

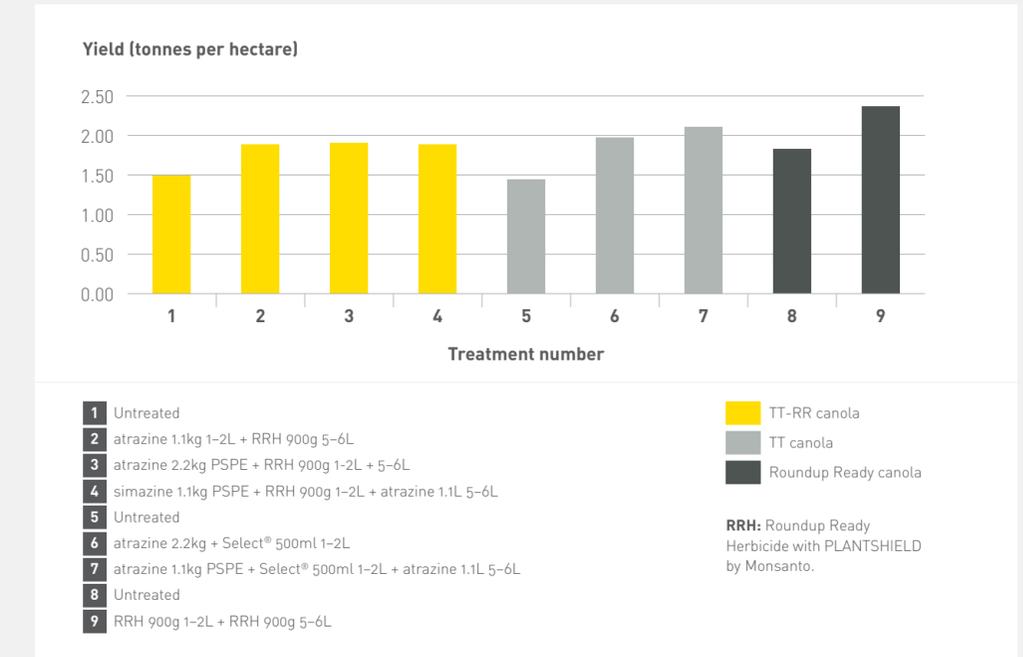


Figure 4. Herbicide tolerant canola systems trial Cunderdin, Western Australia, 2013

As to be expected Hyola® 404RR, one of the top-performing Roundup Ready canola hybrids outperformed Hyola® 525RT and Hyola® 559TT in terms of average yield across all sites due to the known inherent lower yield potential associated with the triazine tolerant system.

Summary

The TT-RR system provides an effective tool to control a wide range of weed species including the key weed species of annual ryegrass and wild radish.

From an IWM perspective TT-RR canola can be a valuable addition to manage the development of herbicide resistance as it uses two different herbicide modes of action within the cropping season. As with all herbicide resistance management strategies though, this system will only be effective if used as one part of a whole IWM strategy, including non-chemical tactics such as higher plant populations and weed seed capture techniques.

Trial data to date shows that the current commercially available TT-RR canola hybrid, Hyola® 525RT has similar yields in comparison with the current commercial TT hybrid, Hyola® 559TT.



Figure 5. 525RT plot at Cunderdin, Western Australia, trial site.



Figure 6. 559TT plot at Cunderdin, Western Australia, site.