

# The Value of Dual Herbicide Tolerant RT® Canola Technology for WA Growers in Broadacre Cropping Integrated Weed Management Strategies

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## Key messages:

- The combination of Triazine Tolerant (TT) and Roundup Ready (RR) herbicide provided superior control of ryegrass and wild radish over individual chemistry treatments.
- Canola is an important rotational winter crop however, with increasing herbicide resistance across multiple chemistries in WA, growers are experiencing increasingly limited options with the current herbicide tolerance technologies available.
- Hyola RT® Technology allows the combination of strong knockdown and residual broad-spectrum herbicides from different herbicide groups and modes of action, targeting a wide range of weed species.
- Hyola RT® will provide an important role in addressing the increasing Clethodim resistance problem.
- RT® dual herbicide tolerant Hybrids have now demonstrated their value as a new competitive integrated weed management (IWM) tool, also providing increased convenience and flexibility of in-crop weed control.

## Aims

To demonstrate, compare and analyse the efficacy of new herbicide combinations and sequences to achieve control of hard to kill weeds such as ryegrass and radish, whilst maximising yield in hybrid canola, using the hybrid variety Hyola 525RT® (Roundup Ready® + Triazine Tolerant) canola herbicide tolerant system.

## Trial Details

|                                    |   |
|------------------------------------|---|
| <b>Property</b>                    | Candeloro's Bejoording Road, Toodyay  |
| <b>Plot size &amp; replication</b> | 0.8m x 10m x 3 replications   |
| <b>Soil type</b>                   | Grey brown sand   |
| <b>Soil pH (CaCl<sub>2</sub>)</b>  | 0-10cm: 6.6   |
| <b>EC (dS/m)</b>                   | 0-10cm: 0.054   |
| <b>Sowing date</b>                 | 04/05/2014  |
| <b>Seeding rate</b>                | 3.5 kg/ha   |
| <b>Paddock rotation</b>            | 2013 cereal   |
| <b>Fertiliser</b>                  | 04/05/2014: 120 kg/ha DAPSZC/SOP 80:20 blend<br>10/06/2014: 60 kg/ha Urea<br>30/06/2014: 120 kg/ha Ammonium sulfate |
| <b>Herbicides</b>                  | 04/05/2014: 2 L/ha Roundup<br>12/06/2014: As per protocol<br>01/07/2014: As per protocol                            |
| <b>Growing Season Rainfall</b>     | 367mm   |

## Methods

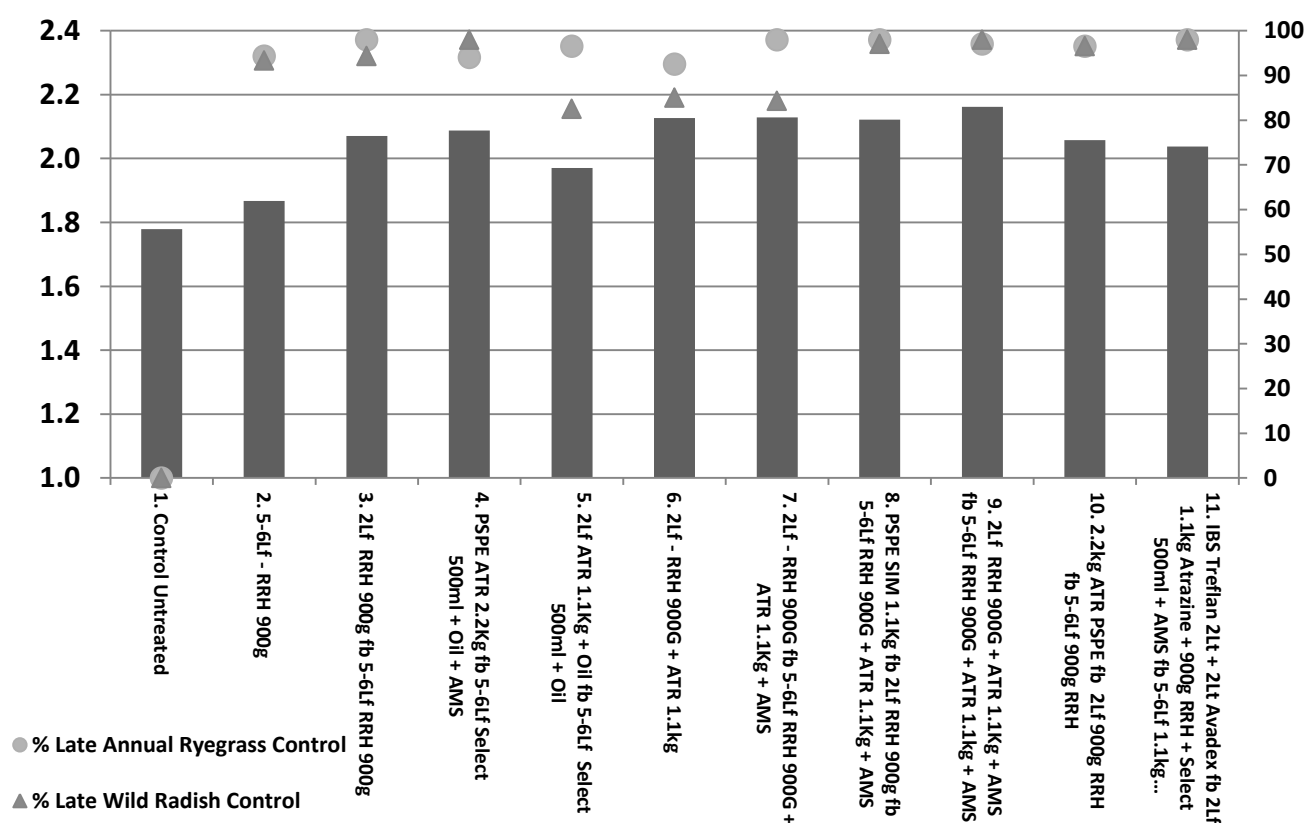
The trial was designed, conducted and analysed by an independent professional service provider organisation. The trial was sown and conducted as close as possible to district practice with a plot seeder on the 4<sup>th</sup> May 2014 into a granitic loam, located at Toodyay (York gum/jam) soil type.

There were 11 different herbicide treatments (see Table 1) including Roundup Ready® Herbicide (RRH), Atrazine (ATR), Simazine (SIM), and Select (SEL - Clethodim) with oils and/or ammonium sulphate (AMS) sprayed across Hyola 525RT®. The herbicides were used as standalone and in combinations using different rates and application timings. The target plant population across all plots was 35 plants/m<sup>2</sup>.

All herbicides were applied according to individual labels, except five treatments where Glyphosate and Atrazine were tank mixed together (currently an unregistered practice), which were applied under a trialling permit with Monsanto.

## Results and discussion

The trial site was selected to provide higher weed pressures of mixed species with the main target weeds being ryegrass and wild radish, however weed levels were not as high as anticipated. There was a significant positive response from all treated plots over the untreated control for harvested grain yield. The important result to highlight is that the combined treatments with Triazines and Roundup Ready herbicide at various application timings and rates provided the highest control levels of wild radish and ryegrass. This technology will be a critical IWM tool for lowering overall weed seed banks of different weeds and addressing the management of the growing weed resistance levels to either Clethodim or Glyphosate.



**Figure 1:** Mean yield (t/ha) and % weed control for 11 treatments on Hyola® 525RT® in Toodyay, 2014.

**Table 1:** Mean yield (t/ha) and oil (%) for 11 treatments (per/ha) on Hyola® 525RT®.

| Treatments  | Yield (t/ha)      | Oil % |
|---|-------------------|-------|
| 1. Control Untreated  | 1.67 <sup>b</sup> | 51.8  |
| 2. 5-6Lf - RRH 900g   | 2.02 <sup>a</sup> | 51.1  |
| 3. 2Lf RRH 900g fb 5-6Lf RRH 900g   | 2.07 <sup>a</sup> | 51.7  |
| 4. Post seeding pre-emergent (PSPE) ATR 2.2kg fb 5-6Lf Select 500mL + Oil + AMS   | 2.09 <sup>a</sup> | 51.4  |
| 5. 2Lf ATR 1.1Kg + Oil fb 5-6Lf Select 500mL + Oil  | 1.97 <sup>a</sup> | 51.0  |
| 6. 2Lf - RRH 900G + ATR 1.1kg   | 2.13 <sup>a</sup> | 51.6  |
| 7. 2Lf - RRH 900G fb 5-6Lf RRH 900G + ATR 1.1Kg + AMS   | 2.13 <sup>a</sup> | 51.4  |
| 8. PSPE SIM 1.1Kg fb 2Lf RRH 900g fb 5-6Lf RRH 900G + ATR 1.1Kg + AMS   | 2.12 <sup>a</sup> | 51.8  |
| 9. 2Lf RRH 900G + ATR 1.1Kg + AMS fb 5-6Lf RRH 900G + ATR 1.1kg + AMS   | 2.16 <sup>a</sup> | 51.4  |
| 10. 2.2kg ATR PSPE fb 2Lf 900g RRH fb 5-6Lf 900g RRH  | 2.06 <sup>a</sup> | 51.2  |
| 11. IBS Treflan 2L + 2L Avadex fb 2Lf 1.1kg Atrazine + 900g RRH + Select 500mL + AMS fb 5-6Lf 1.1kg Atrazine + 900g RRH + AMS | 2.04 <sup>a</sup> | 50.9  |
| <b>F Probability</b>  | 0.040             |       |
| <b>LSD 5 (%)</b>  | 0.3               |       |
| <b>CV (%)</b>   | 7.3               |       |

Means within the same cell with a letter in common are not significantly different (P>0.05).

Please note that the annual ryegrass and wild radish levels at the trial site were not as high as expected.

**Table 2:** Analysed % weed control of annual ryegrass and wild radish across 11 treatments on Hyola® 525RT®.

| Treatments  | % Late Annual Ryegrass Control | % Late Wild Radish Control |
|---|--------------------------------|----------------------------|
| 1. Control Untreated  | 0.0 <sup>d</sup>               | 0.0 <sup>c</sup>           |
| 2. 5-6Lf - RRH 900g   | 94.3 <sup>abc</sup>            | 93.3 <sup>ab</sup>         |
| 3. 2Lf RRH 900g fb 5-6Lf RRH 900g   | 98.0 <sup>a</sup>              | 94.3 <sup>ab</sup>         |
| 4. PSPE ATR 2.2Kg fb 5-6Lf Select 500ml + Oil + AMS   | 94.0 <sup>bc</sup>             | 98.0 <sup>a</sup>          |
| 5. 2Lf ATR 1.1Kg + Oil fb 5-6Lf Select 500ml + Oil  | 96.5 <sup>ab</sup>             | 82.5 <sup>b</sup>          |
| 6. 2Lf - RRH 900G + ATR 1.1kg   | 92.5 <sup>c</sup>              | 85.0 <sup>ab</sup>         |
| 7. 2Lf - RRH 900G fb 5-6Lf RRH 900G + ATR 1.1Kg + AMS   | 98.0 <sup>a</sup>              | 84.3 <sup>ab</sup>         |
| 8. PSPE SIM 1.1Kg fb 2Lf RRH 900g fb 5-6Lf RRH 900G + ATR 1.1Kg + AMS   | 98.0 <sup>a</sup>              | 97.0 <sup>ab</sup>         |
| 9. 2Lf RRH 900G + ATR 1.1Kg + AMS fb 5-6Lf RRH 900G + ATR 1.1kg + AMS   | 97.0 <sup>ab</sup>             | 98.0 <sup>a</sup>          |
| 10. 2.2kg ATR PSPE fb 2Lf 900g RRH fb 5-6Lf 900g RRH  | 96.5 <sup>ab</sup>             | 96.5 <sup>ab</sup>         |
| 11. IBS Treflan 2Lt + 2Lt Avadex fb 2Lf 1.1kg Atrazine + 900g RRH + Select 500ml + AMS fb 5-6Lf 1.1kg Atrazine + 900g RRH + AMS | 98.0 <sup>a</sup>              | 98.0 <sup>a</sup>          |
| <b>F Probability</b>  | <.001                          | <.001                      |
| <b>LSD 5 (%)</b>  | 3.72                           | 15.48                      |

**Paper reviewed by:** Michael Lamond, Principal Project Biologist/Director, Eurofins Agrisearch

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