

Control of clethodim resistant ryegrass with pre-emergent herbicides

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Key findings

- Measurements in August showed clethodim to give 82% control and pre-emergent treatments to give 85% control of annual ryegrass
- Averaged across the trial the ryegrass still set 15 heads per square metre

Why do the trials?

With an increasing reliance and importance of group A 'dim' herbicides in the management of annual ryegrass a field trial was established at Hart to investigate various pre-emergent options to improve the control of Group A resistant ryegrass in canola.

How was it done?

| | | | |
|---------------------|------------------------------|-------------------|---------------------|
| Plot size | 1.75m x 12m | Fertiliser | DAP Zn 2% @ 80kg/ha |
| Seeding date | 31 st of May 2012 | Variety | Clearfield canola |

Trials were established with canola to evaluate the efficacy of pre-emergent herbicides on the control of Group A resistant ryegrass.

The range of pre-emergent herbicides, rates and timings for application are shown in Table 1. All treatments were applied using a handheld boom fitted with nozzles delivering a medium droplet spectrum and a spray volume of 100L/ha.

To ensure even annual ryegrass (ARG) establishment across the trial site ARG seed was broadcast at 10kg/ha ahead of seeding & tickled in with a shallow pass with the seeder. The ryegrass population at the site was known to be resistant to Group A fop herbicides, and partially resistant to the dim herbicides.

Pre-sowing herbicides were applied within an hour of sowing & incorporated by sowing (IBS), the post-sowing pre-emergence (PSPE) herbicides were applied on the 31st May.

The PSPE treatments targeted before rainfall were applied on the 19th June and received 25mm on the 22nd June. Another 15mm rain fell on the 10th July. At the application timing the ryegrass was at 1 to 3 leaves.

Annual ryegrass head density was assessed on 31st October.

Table 1. Pre-emergence herbicides, rates & timings in canola at Hart in 2012

| Treatments | |
|------------|---|
| 1 | Trifluralin 480 1.5L/ha + tri-allate 3.0L/ha (IBS) |
| 2 | Experimental 1 (IBS) |
| 3 | Outlook 1.0L/ha (IBS) |
| 4 | Outlook 0.7L/ha (IBS) + 0.5L/ha (PSPE) |
| 5 | Propyzamide 1.0kg/ha 50% (IBS) + 50% (PSPE) |
| 6 | Propyzamide 1.0kg/ha 50% (PSPE) + 50% (3-4 leaf) + clethodim 0.5L/ha (POST) |
| 7 | Propyzamide 1.0kg/ha (PSPE – before rain) |
| 8 | Propyzamide 1.0kg/ha (3-4 leaf) + clethodim 0.5L/ha (POST) |
| 9 | Dual Gold 0.5L/ha 50% (IBS) + 50% (PSPE) |
| 10 | Dual Gold 0.5L/ha 50% (PSPE) + 50% (3-4 leaf) + clethodim 0.5L/ha (POST) |
| 11 | Dual Gold 0.5L/ha (PSPE – before rain) |
| 12 | Dual Gold 0.5L/ha (3-4 leaf) + clethodim 0.5L/ha (POST) |
| 13 | clethodim 0.5L/ha (POST) |
| 14 | butroxydim 180g/ha (POST) |
| 15 | clethodim 0.5L/ha + butroxydim 180g/ha (POST) |

Application of clethodim at 500ml/ha is not a registered rate & was undertaken for experimental purposes.

Results

The pre-emergent herbicides included in this trial all performed very well and could provide some promising options for the control of Group A resistant ryegrass. The ryegrass measurements in August showed clethodim to give 82% control and when applied with a full rate of butroxydim gave 96% control (Table 2).

The pre-emergent herbicide combinations were also able to achieve this level of control with trifluralin and tri-allate, Outlook and propyzamide all producing over 85% control. 1.0kg/ha of propyzamide split equally between seeding and PSPE gave 96% control (Table 2).

The herbicide treatments that include IBS applications or a clethodim treatment provided the best ryegrass control. The treatments that relied mainly on PSPE applications were generally poorer.

By October, the best herbicide treatments were able to reduce ryegrass head numbers down to below 5 heads per square metre. These treatments included Outlook and Dual Gold split between IBS and PSPE timings, and propyzamide also in a split timing and included with clethodim (Table 2). Propyzamide applied after the PSPE timing and the full rate of Dual Gold applied PSPE produced the most ryegrass heads, due to their poor early control.

Averaged across the trial the ryegrass managed to set 15 heads per square metre, or 15,000 heads per hectare. This is a large and significant potential for seed set, meaning extra integrated weed management strategies will be required to reduce ryegrass numbers.

Table 2. Effect of different pre-emergence herbicides on annual ryegrass control (%) & head density (no./m²) in canola at Hart, 2012. Values in brackets are % control relative to unsprayed treatments (July - T13, T14 & T15 = 36 ARG plants/m²; August – adjoining trial = 49 ARG plants/m²).

| Herbicide treatments | Annual ryegrass | | | | |
|----------------------|-----------------------------------|------|--------|------|--------------------------|
| | July | | August | | October |
| | plants/m ² (% control) | | | | - heads/m ² - |
| 1 | 5 | (86) | 5 | (90) | 10 |
| 2 | 3 | (92) | 4 | (92) | 11 |
| 3 | 5 | (86) | 6 | (88) | 8 |
| 4 | 2 | (94) | 6 | (88) | 2 |
| 5 | 3 | (92) | 2 | (96) | 8 |
| 6 | 26 | (28) | 3 | (94) | 4 |
| 7 | 22 | (39) | 26 | (47) | 53 |
| 8 | 50 | (0) | 16 | (67) | 18 |
| 9 | 9 | (75) | 4 | (92) | 5 |
| 10 | 41 | (0) | 5 | (90) | 10 |
| 11 | 33 | (9) | 36 | (26) | 62 |
| 12 | 34 | (6) | 6 | (88) | 10 |
| 13 | 32 | - | 9 | (82) | 11 |
| 14 | 38 | - | 12 | (75) | 14 |
| 15 | 39 | - | 2 | (96) | 1 |
| LSD (0.05) | 14 | | 7 | | 15 |

Some of the herbicide treatments contain unregistered pesticides, application rates and timings. The results within this document do not constitute a recommendation for that particular use by the author or author's organisations.

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