

Pre-emergent control of ryegrass in barley

The aim was to investigate pre-sowing options for the control of group A resistant ryegrass.

Summary

Group D herbicides should not be used alone – it is important that resistance to this very important group of herbicides does not develop.

There was no difference in yield between the trifluralin in mixes with metribuzin, diuron or avadex applied; however there was a reduction in ryegrass heads at flowering due to the addition of Dual Gold (metolachlor) to trifluralin.

Background

Group A resistant ryegrass is now a major problem in most cropping rotations, it is particularly hard to control in cereal phases of rotations.

Use of Group D herbicides such as trifluralin has increased dramatically over the past decade as control options for ryegrass have become limited. In many rotations, group A herbicides are not considered for ryegrass control as resistance is likely. The use of trifluralin (Group D) to control Group A resistant ryegrass has increased dramatically in the last five years. Heavy reliance on one herbicide group to control ryegrass is a risky management strategy. If group D herbicides are the only control option implemented for control, the ryegrass populations will eventually develop resistance to group D herbicides. However, if the group D herbicide was mixed with herbicides from other groups it will take longer for the resistance to develop. This trial looked at efficacy of ryegrass control using a range of group D mixes.

Methods

This trial was established at the BCG herbicide resistance site north of St. Arnaud, Victoria. Plots were sprayed with a water rate of 80L/ha with XR11002 nozzles at 3 bar pressure onto standing stubble directly in front of an airseeder with narrow points and trailing prickle chain. Gairdner barley was sown at 71kg/ha with MAP at 56kg/ha and urea at 60kg/ha on June 12. Herbicide treatments are listed in Table 1.

Table 1. Herbicides used in Group D plus mixes for the control of ryegrass.

Herbicide	Rate/ha	Timing	Group
Triflur X	1.5L	IBS	D
Triflur X+Lexone	1.5L+130g	IBS	D, C
Triflur X+Diuron+Avadex Xtra	1.5L+0.5L+0.6L	IBS	D, C, E
Triflur X+Diuron+Avadex Xtra+Dual Gold	1.5L+0.5L+0.6L+0.4L	IBS	D, C, E, K
Duet	2.3L	IBS	D
Duet+Lexone	2.3L+130g	IBS	D, C
Duet+Diuron+Avadex Xtra	2.3L+0.5L+0.6L	IBS	D, C, E
Duet + Diuron + Avadex Xtra + Dual Gold	2.3L+0.5L+0.6L+0.4L	IBS	D, C, E, K

The level of ryegrass control was assessed by counting ryegrass seed heads per square metre (at the flowering stage of the crop). Crops were harvested in December.

Results

There was a significant difference in ryegrass heads, as counted at flowering, between the treatments. There were no treatment effects on yield (low yields due to very dry season).

Table 2. The influence of herbicide treatments on ryegrass and barley yield

Herbicide	Ryegrass Heads/m ²	Yield t/ha
Triflur X	13.7	1.3
Triflur X + Lexone	13.1	1.4
Triflur X + Diuron + Avadex Xtra	23.5	1.3
Triflur X + Diuron + Avadex Xtra + Dual Gold	8.8	1.3
Duet	18.1	1.3
Duet + Lexone	6.3	1.4
Duet + Diuron + Avadex Xtra	16.2	1.3
Duet + Diuron + Avadex Xtra + Dual Gold	12.5	1.3
LSD 5%	14.0	NS

Interpretation

While there were no significant yield benefits resulting from the herbicide treatments applied there were some significant difference in ryegrass control achieved. However, the results are difficult to interpret due to uneven distribution of ryegrass across the site. As an approximation of the effects:

- There was no significant difference between TriflurX and Duet (trifluralin + oryzalin)
- Lexone (metribuzin) had activity on ryegrass when mixed with Duet but not with TriflurX
- Dual Gold (metolachlor) had increased activity on ryegrass when it was used in a mix with TriflurX (or Duet)
- TriflurX + Diuron + Avadex did not provide additional control compared to TriflurX alone

At this trial site a total of 21.5mm fell over the 10 days after the application of the herbicide, this made for ideal conditions for Dual Gold activity on ryegrass as the surface was moist for a sustained period.

There is some care that has to be taken when using these herbicides:

- Dual Gold (metolachlor) – works well on ryegrass but rainfall is required within 10 days of application otherwise activity is reduced.
- Lexone (metribuzin) – is registered in barley for control of ryegrass when mixed with trifluralin but moist conditions are required around the time of spraying. Caution should be used on light soils; excessive movement of water in the profile will leach the chemical and can damage crops.

Commercial Practice

The use of Dual Gold as a spike with Trifluralin can be beneficial, but the risk of dry weather after application should be taken into consideration.

It is important to prolong or avoid selecting for resistance to Group D herbicides, resistance to Trifluralin is likely if it is exploited. It should not be used as the sole method of controlling ryegrass. To optimise the benefits of using Trifluralin it is essential to:

- Strategically add herbicides from other groups to achieve additional control.
- Always use two or more ryegrass control techniques every year.