Post sowing use of pre-emergent herbicides for annual ryegrass control

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Key findings

- Preliminary results have shown that post sowing use of some pre-emergence herbicides can improve control of late emerging ryegrass & could be beneficial as a late salvage exercise where ryegrass has escaped earlier control
- Although no damage to the wheat crop was observed, these treatments present a higher risk to crop safety, depending on soil type & rainfall after application
- Post sowing use of these herbicides is currently off label & requires further investigation before registration can be granted

Why do the trial?

While pre-emergence herbicides initially provided excellent control of ryegrass last year it was clearly evident from the amount of late germinating ryegrass that their residual activity had been exhausted by late winter, particularly in the medium to higher rainfall areas. This was not entirely unexpected given the more favourable growing season experienced across much of the South Australian wheat-belt.

Although late emerging ryegrass is less competitive with the crop, weed seed set can still be significant allowing it to replenish the weed seed bank and create management issues for the following crop. Given that the new pre-emergent herbicides on the market are relatively stable in the field, is there potential to improve residual control by applying post-sowing. Furthermore, post emergence use of these herbicides maybe beneficial as a late salvage exercise where ryegrass has escaped earlier control.

Consequently a trial has been undertaken at the Hart field site to evaluate the efficacy of pre-emergent herbicides applied post sowing on ryegrass control & crop safety in wheat with the aim of a) increasing residual control, b) improving in-row control & c) preventing onset of trifluralin resistance.

How was it done?

Plot size	1.4m × 10m	**Fertiliser**	DAP Zn 2% @ 70kg/ha
Seeding date	30th of May 2012	**Variety**	Gladius wheat

The trial was established as a randomised complete block design with 3 replicates and 12 herbicide treatments (Table 1).

To ensure even annual ryegrass (ARG) establishment across the trial site ARG seed was broadcast at 25kg/ha ahead of seeding and tickled in with a shallow pass with the seeder prior to herbicide application. The ryegrass used was harvested from grower paddocks and is approximately 30% resistant to trifluralin.

A standard knife-point press wheel system was used to sow the trial on 22.5cm (9") row spacings.

Post-sowing pre-emergence (PSPE) herbicides were applied on the 31st of May, the day after sowing & post emergence treatments when the ryegrass was at the 1 to 3 leaf growth stage & just prior to rainfall.

Herbicides rates applied:

- Boxer Gold @ 1.5L/ha or 2.5L/ha
- Sakura @ 80g/ha or 118g/ha
- Dual Gold @ 350ml/ha or 500ml/ha

Herbicide timing of application:

- post sowing pre-emergent (PSPE) on the 31st May, 1 day after sowing. The site received 4mm of rainfall within the next week after the PSPE applications
- post emergent application treatments were applied on the 20th July, when the ryegrass growth stage was between 1 and 3 leaves. The site received 8mm of rainfall 8 days after the treatments were applied

Crop emergence was assessed by counting the number of emerged wheat seedlings along both sides of a 0.5m rod at 3 random locations within each plot. Ryegrass was counted at 6 & 10 weeks after sowing (i.e. July & August) using a 0.1 square metre quadrat from within and between the crop rows from 4 random locations within each plot.

Results

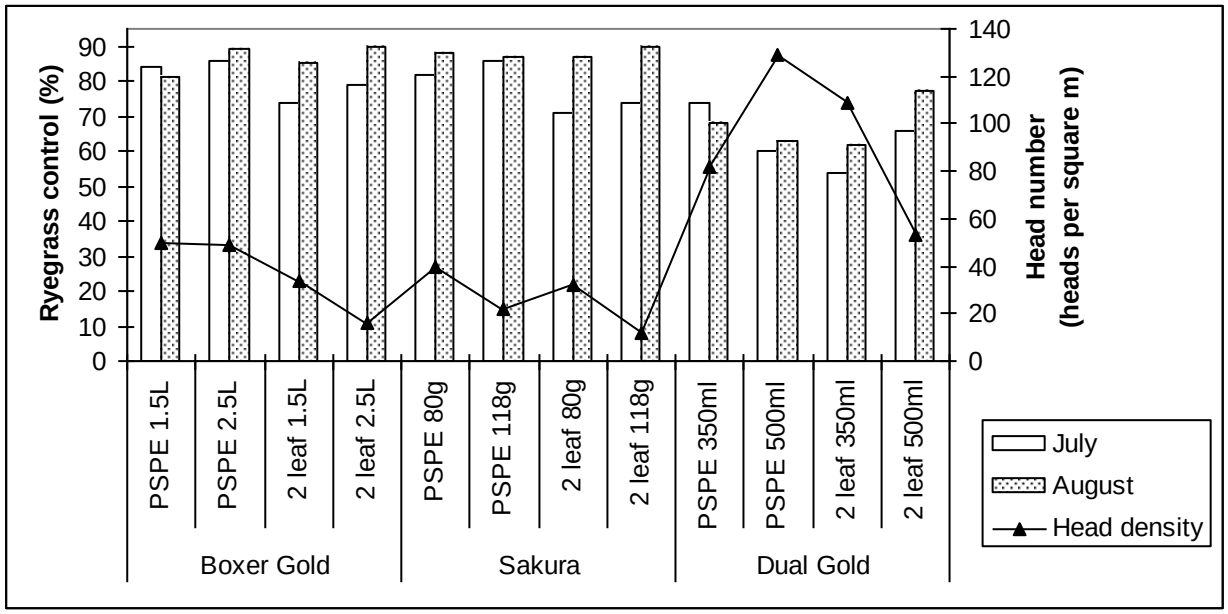

Figure 1: Effect of post-sowing use of pre-emergence herbicides on annual ryegrass control (%) & head density (heads per square metre) in wheat at Hart, 2012. Values in brackets are % control relative to unsprayed nil from the adjoining trial (July = 174 ARG plants per square metre; August = 254 ARG plants per square metre).

In August the ryegrass control ranged from 62% (Dual Gold, 500ml, 2 leaf) to 90% control (Boxer Gold, 2.5L, 2 leaf or Sakura, 118g, 2 leaf) (Figure 1). Dual Gold at any rate or timing produced significantly lower ryegrass control compared to Boxer Gold or Sakura. Average control for the Dual Gold was 68%.

Boxer Gold and Sakura gave very similar control, averaging 87% control. Boxer Gold applied PSPE at only 1.5L gave poorer control (81%), compared to the other Boxer Gold and Sakura treatments. For both products ryegrass control improved with herbicide rate. Compared to 2011, Sakura has produced much better ryegrass control when applied at the 1 leaf stage, at any rate.

Sakura generally gave the best control of ryegrass head numbers, averaging 27 heads per square metre, compared to 37 for Boxer Gold and 93 for Dual Gold (Figure 1). For Boxer Gold and Sakura control of ryegrass heads improved with the higher application rate and the latest timing.

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

Acknowledgements

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View of the site, Hart Field Day 2012