

## Controlling ryegrass along fence lines

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### Key findings

- Glyphosate alone at high rates produced poor control of annual ryegrass along the fenceline.
- Spray.seed + Diuron, Round up Power Max + Diuron and Alliance all gave good control of the glyphosate resistant annual ryegrass.

### Why do the trial?

To investigate the effectiveness of different herbicide mixes at controlling glyphosate resistant ryegrass along fencelines.

### How was it done?

<b>Plot size</b>	1.75m x 7m	<b>Application dates</b>	18 <sup>th</sup> August 31 <sup>st</sup> August
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Herbicides were applied in plots along a fenceline infested with annual ryegrass, 40% resistant to glyphosate.

Herbicides were applied using a hand boom with flat fan 110° 01 nozzles with 84 L/ha water.

Visual assessments and ryegrass head counts were made to evaluate the control of each herbicide or herbicide mix.

### Results

Glyphosate is an important herbicide in no-till farming systems. A problem with the continual reliance on glyphosate for weed control is the evolution of glyphosate resistant weeds. To date glyphosate resistance has been confirmed in populations of three weed species in Australia: annual ryegrass, barnyard grass and liverseed grass. Resistance is suspected in other weed species. In principle any weed species can evolve resistance to glyphosate; however, in South Australia the biggest risk is annual ryegrass.

Glyphosate resistance can occur wherever glyphosate is intensively used, no other effective herbicides are used and no other weed control is practiced. Glyphosate is widely used for controlling vegetation growth along fence lines and crop margins. Where glyphosate is the only effective weed control used, resistance can occur. Of the 103 confirmed sites with glyphosate resistant annual ryegrass in Australia, a quarter are from fence lines and crop margins (Table 1). Many of these populations are from South Australia.

Table 1: Situations containing glyphosate resistant annual ryegrass in Australia

Situation		Number of sites	States
Broadacre cropping	Chemical fallow	28	NSW
	No-till winter grains	19	Vic, SA, WA
Horticulture	Tree crops	4	NSW
	Vine crops	15	SA, WA
Other	Driveway	1	NSW
	Fence line/Firebreak	25	NSW, SA, Vic, WA
	Irrigation channel	8	NSW
	Airstrip	1	SA
	Railway	1	WA
	Roadside	1	SA

From Preston, C. (2009) Australian Glyphosate Resistance Register. Australian Glyphosate Sustainability Working Group. Online. Available from [www.glyphosateresistance.org.au](http://www.glyphosateresistance.org.au)

There is a concentration of glyphosate resistance on fence lines in the area around Clare in South Australia. Populations are also present on the Eyre Peninsula, Yorke Peninsula and around Horsham in Victoria.

Management of glyphosate resistant annual ryegrass on crop margins is necessary in order to stop resistance moving into the cropped area. A trial was conducted to look at the ability of glyphosate mixtures and alternative herbicides to control a glyphosate-resistant population of annual ryegrass on a fence line (Figure 1). This site had a high density of annual ryegrass and when tested proved to have high levels of resistance to glyphosate.

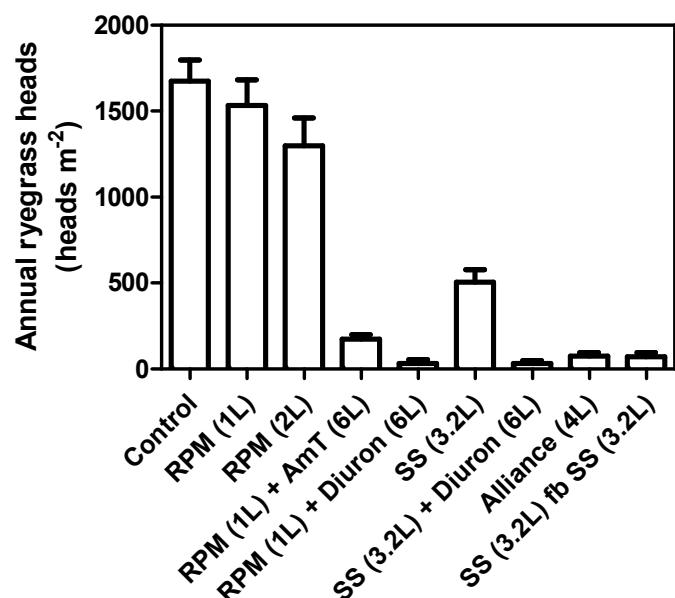


Figure 1: The efficacy of different mixes and rates of herbicides on glyphosate resistant ryegrass. RPM = Roundup PowerMax, SS = Spray.Seed, AmT = Amitrole T, fb = followed by after 14 days.

Glyphosate, even at high rates provided little control of the resistant ryegrass. Roundup PowerMax at 1 L/ha and 2 L/ha provided very little control of the ryegrass on the fence line. Some mixtures with glyphosate were more effective. Adding Amitrole at 6 L/ha to Roundup PowerMax did not provide sufficient control. Diuron at 6 L/ha was a more effective mixing partner.

Spray.Seed alone at 3.2 L/ha was insufficient to control the ryegrass. However, Diuron at 6 L/ha added to Spray.Seed was effective, as was Alliance and two applications of Spray.Seed 14 days apart. Additional treatments are being explored in other trials.

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*Hart's Linden Price at the  
2009 Hart Field Day*