Wild oat control with pre-emergent herbicides in barley

This trial is funded by the GRDC and is part of a collaborative project. It was conducted with Sam Kleemann and Chris Preston, University of Adelaide and Peter Boutsalis, Plant Science Consulting.

Key findings

- A combination of Monza and Sakura applied PSPE provided the highest levels of wild oat control (68%)
- Even with good control a high weed density remained (>200 plants per square metre) which would still be expected to cause significant crop yield losses (90%)

Why do the trial?

The density of wild oats *(Avena fatua)* is increasing in the Mid North. This is due to an increase in cereal cropping intensity and the increase in herbicide resistance to Group A fop and dim herbicides. Also, traditional measures implemented for the control of annual ryegrass such as pre-emergent herbicides, export oaten hay, chaff carts and crop topping are generally less effective against wild oats.

This trial aims to evaluate the performance of new pre-emergent herbicides on the control of wild oats.

How was it done?

Plot size	1.75m x 8m	**Fertiliser**	27:12 (MAP/Urea) @ 100kg/ha 46:0 (Urea) @ 60kg/ha
Seeding date	29th May 2012	**Variety**	Commander barley @ 80kg/ha

This trial was established in a grower paddock, east of Clare (Hill River) on an existing patch of wild oats.

The trial was established as a randomised complete block design with 3 replicates and 10 herbicide treatments (Table 1). Active ingredients of the herbicides used in the trial are listed in Table 2.

Herbicides treatments were applied IBS (incorporated by sowing) prior to sowing of barley with a commercial seeder (i.e. knife-point & press wheels), or two days after (31st May) PSPE (post sowing pre-emergent) where listed.

Wild oats were counted 6 weeks after sowing using a 20cm × 30cm quadrat from 4 random locations within each plot.

Table 1. Pre-emergent herbicide treatments used at Clare in 2012.

Treatments		Cost ($/ha)
1	Nil (untreated control)	
2	Trifluralin 480 2.0L/ha	11.0
3	Trifluralin 480 2.0L/ha + tri-allate 3.0L/ha	38.0
4	Propyzamide 1.0kg/ha	23.0
5	Sakura 118g/ha	38.0
6	Sakura 177g/ha	57.0
7	Sakura 118g/ha + tri-allate 2.0L/ha	56.0
8	Monza 25g/ha (PSPE) + tri-allate 2.0L/ha	30.0
9	Sakura 118g/ha + Sakura 80g/ha (PSPE)	64.0
10	Monza 25g/ha (PSPE) + Sakura 80g/ha (PSPE)	38.0

Table 2. Pre-emergent herbicides & their active ingredients

Herbicide	Active ingredients	Herbicide group
Trifluralin 480	trifluralin 480g/L	D
Avadex Xtra	tri-allate 500g/L	J
Boxer Gold	prosulfocarb 800g/L + S-metolachlor 120g/L	J + K
Monza	sulfosulfuron 750g/L	B
Sakura (BAY-191 850WG)	pyroxasulfone 850g/kg	K

Results

The site had a high density of wild oats with 886 plants per square metre in the untreated plots. They were generally emerging from a soil depth of 2 to 3cm. All herbicide treatments reduced wild oat emergence and gave an average control of 52%, relative to the nil treatment (Figure 1). This is a low level of control and is likely to be a reflection on the very high nature of the starting seedbank.

A mixture of Monza and Sakura applied PSPE gave 68% control and propyzamide gave 67% control (Figure 1). Both of these treatments also gave improved reliability of control across the trial site. The only other treatment to give more than 50% control was trifluralin with tri-allate (57%).

The other treatments provided less than 50% control, with Sakura giving the poorest control (40%) when applied alone at 118g/ha. This is opposite to previous results measured in 2009 and 2010 where Sakura and Sakura mixtures provided the highest levels of wild oat control.

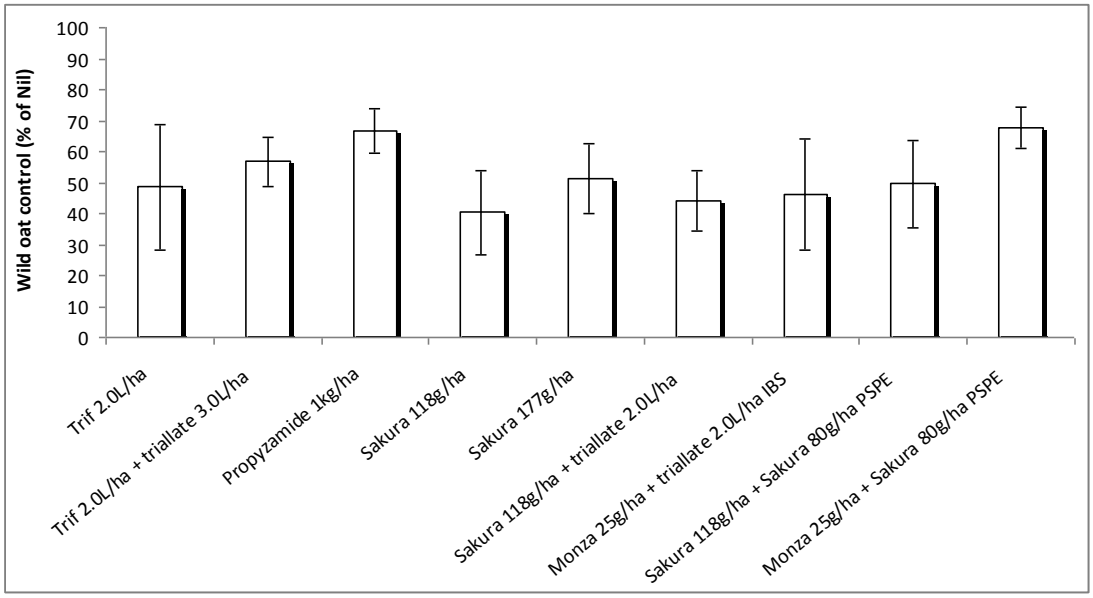

Figure 1: Effect of pre-emergent herbicide treatments on wild oat control relative to the nil treatment (untreated control).

Although the best treatments gave 68% control the weed density remaining was just over 200 wild oat plants per square metre. This would have still certainly caused significant crop yield losses (70%) and increased the weed seedbank. Post emergent herbicides would still have been required in addition to gain improved control.

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.

Acknowledgments

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