

Crop safety of SAKURA® 850WG with discs or knife points compared to Boxer Gold® for the pre-emergent control of Annual Ryegrass (*Lolium rigidum*) in Wheat



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Aim

To demonstrate the crop safety, extended incorporation time and efficacy of Sakura® 850WG pre-emergent herbicide on annual ryegrass (*Lolium rigidum*) in wheat compared to Boxer Gold®.

Background

Bayer CropScience is planning to launch Sakura®850WG containing the new active ingredient pyroxasulfone in time for the 2012 season. Sakura®850WG's mode of action is an inhibitor of Very Long Chained Fatty Acid biosynthesis and is likely to be classed as a Group K herbicide. It works through both root and shoot uptake and has been submitted for registration for the pre-emergent control of annual ryegrass, barley grass, phalaris, silver grass and toad rush in wheat, barley and triticale. Sakura®850WG is a pre-emergent herbicide that can be applied up to 14 days prior to sowing with knife points and press wheels or knife points and harrows. It works best when incorporated by sowing (IBS). Sakura®850WG is to be applied at 118 g/ha and is compatible with a range of other knockdown and pre-emergent products.

Trial Details

Property	Nankivell's property, East Maya
Plot size & replication	5m x 15m x 3 replicates
Soil type	Sandy Loam
Soil condition	40% average ground cover, Lupins and Ryegrass stubble thick in patches. Some germinated Lupins, and Wild Radish to 4 leaf.
Application date	28/5/10
Water Rate	80 L/ha
Ground Speed	9.2 kph applied by quad bike
Nozzle Type	DG11002 (Yellow Drift Guard 02's)
Sowing date	2/6/10
Time to incorporation	6 hours
Seeding Equipment	Nankivell's – Knife point and press wheels, McKenzie's – Bullet single disc
Seeding Rate	65 kg/ha
Row Spacing	12 inch
Seeding Speed	Nankivell's - 8 kph, McKenzie's – 16 kph
Seeding depth	3cm
Fertiliser (kg/ha)	2/6/10 60 kg/ha MAP
Herbicides	28/5/10: 5 L/ha Sprayseed®
Paddock rotation	07 Cadiz Serradella, 08 Wheat, 09 Lupins
Growing Season Rainfall:	141mm

Site Comments

This site received a single application of Sprayseed® applied by quad bike on the 28/5/10 immediately prior to application of the pre-emergent herbicides. The trial treatments were applied to moist soil on the 28/5/10. The trial was sown by the two different seeders on the 2/6/10 six days after the application of the pre-emergent herbicides using a Bullet single disc seeder and a standard Knife Point and Press Wheels system; both on 12 inch row spacing. The disc seeder had depth control issues with some of the seed being buried too deep. The aggressive setting of the sweep angle and the increased sowing speed of the disc

resulted in more soil throw and therefore a greater stimulation and germination of weed seed. After sowing there was some trash across the site.

A site inspection on the 17/6/10 observed crop and weeds only just beginning to emerge with emergence from the knife point and press wheel system ahead of the disc seeder. Depth control problems with the disc seeder contributed to this reduced vigour.

Rainfall

There was a 30mm summer rainfall event over two days on the 21-22/3/10. A total of 138.5mm of rainfall was recorded at the site from the start of May to the end of November. 128.5mm of rainfall was recorded on the site from the application of the treatments to harvest with the last significant rainfall event of 36mm over two days to the 1st September.



Figure 1: Site at application 28/5/10

Results

Table 1: Crop effects in Arrino wheat.

		Assessment Date	7/7/10	3/8/10	3/8/10	9/9/10	9/9/10
		Days after application	40 DAA	67 DAA	67 DAA	104 DAA	104 DAA
		Rating Type	Rating	Rating	Rating	Rating	Rating
		Rating Scale	%	%	%	%	%
		Seeding System	Both	KNIFE	DISC	KNIFE	DISC
No	Treatment	Rate /ha	Biomass Reduction	Biomass	Biomass	Biomass	Biomass
1	UNTREATED		0	100	83	95	80
2	SAKURA® 850 WG	118 g/ha	0	100	85	100	93
3	BOXER GOLD®	2.5 L/ha	0	100	85	100	95

Note: Biomass ratings compared to Sakura 118 g/ha seeded by knife point and press wheels.

Crop Safety

All treatments were safe to the crop with no crop discolouration or biomass reduction recorded by either herbicide treatment.

On the 7/7/10, crop emergence was even across the site with the knife point and press wheel system still showing improved vigour over the disc seeded plots.

Biomass ratings at 67 and 104 DAA did not highlight any differences between herbicide treatments. The biggest factor was sowing system, with the improved crop vigour and reduced soil disturbance in the knife point and press wheel system resulting in lower numbers of ryegrass and therefore a larger crop biomass.

Table 2: Crop yield (t/ha) in Arrino wheat.

		Assessment Date	10/11/10		10/11/10	10/11/10	10/11/10	
		Days after application	166 DAA		166 DAA	166 DAA	166 DAA	
		Rating Type	Harvest		Harvest	Harvest	Harvest	
		Rating Scale	t/ha		%	t/ha	%	
		Seeding System	KNIFE		KNIFE	DISC	DISC	
No	Treatment	Rate /ha	Yield		% Untreated	Yield		% Untreated
1	UNTREATED		1.19	a	100	0.77	b	100
2	SAKURA® 850 WG	118 g/ha	1.33	a	112	1.21	a	156
3	BOXER GOLD®	2.5 L/ha	1.37	a	115	1.25	a	161

Yields t/ha followed by the same letter do not significantly differ (P= 0.05, Duncan's New MRT).

Yield

Knife points and press wheels: Both treatments recorded higher yields than the untreated although none were significant (P≤ 5%).

Single disc seeder: Both treatments recorded significantly higher yields (P≤ 5%) than the untreated although there was no difference between herbicides.

Yield differences between seeding systems were due to a combination of early crop vigour and the numbers of ryegrass present in the disc plots.

Late differences in ryegrass control did not influence end yield due to warm dry conditions throughout spring.

Table 3: Grain quality analysis and gross return (\$/ha) in Arrino wheat.

	No	Treatment	Rate /ha	Protein	Moisture	H/Weight	Screenings	Grade	t/ha	Gross Return \$/ha
Knife	1	UNTREATED		9.9	8.6	75.2	3.4	ANW1	1.19	\$595.00
	2	SAKURA®	118	10.5	9.0	77.0	2.1	ANW1	1.33	\$665.00
	3	BOXER®	2.5	10.2	9.0	77.7	2.1	ANW1	1.37	\$685.00
Disc	1	UNTREATED		9.9	8.8	78.1	3.6	ANW1	0.77	\$385.00
	2	SAKURA®	118	10.0	8.5	78.2	3.1	ANW1	1.21	\$605.00
	3	BOXER®	2.5	10.1	8.9	78.1	2.2	ANW1	1.25	\$625.00

*Based on Grain Trade Association wheat receival standards 2010-11.

Pricing based on AWB contract pricing delivered to Geraldton port zone, ANW1 = \$500 9/12/2010

All treatments regardless of seeding system met the receival standards for Australian Standard White Noodle Varieties (ANW1).

Table 4: Weed Control – Annual ryegrass (*Lolium rigidum*).

Assessment Date	3/8/10	3/8/10	9/9/10	9/9/10
Days after application	67 DAA	67 DAA	104 DAA	104 DAA
Rating Type	Rating	Rating	Rating	Rating
Rating Scale	%	%	%	%

		Seeding System	KNIFE	DISC	KNIFE	DISC
No	Treatment	Rate /ha	Control	Control	Control	Control
1	UNTREATED		0	0	0	0
2	SAKURA® 850 WG	118 g/ha	85	82	87	76
3	BOXER GOLD®	2.5 L/ha	85	78	74	65

Annual ryegrass control

The lack of a decent rainfall event until the 8th July when 22.5 mm was recorded at the site did not favour the redistribution of Sakura® back into the cropping row or off stubble. The majority of ryegrass in the Sakura® plots was in patches of high stubble or on the edge of the furrow where nil herbicide was located. On the 7/7/10 there was no difference in control between herbicide treatments with ryegrass emergence too low to accurately assess.

Both herbicide treatments recorded comparable control of ryegrass at 67 DAA with the knife point system slightly ahead of the disc seeder.

Following a 36mm rainfall event over two days to the 1/9/10, good activity with an improvement in control was recorded from Sakura® 118 g/ha at 104 DAA with ideal conditions for root uptake with moist soil conditions remaining for several weeks. At the final assessment on the 9/9/10 the Boxer Gold® treatments did not record an improvement in weed control compared to Sakura®. Boxer Gold® had increased numbers of tillers per plant compared to Sakura® that resulted in a lower level of final ryegrass control recorded.



Figure 2: 9/9/10 (104 DAA) - Sakura® 118 g/ha symptoms of root activity on ryegrass.

Comments

At the time of publication Sakura 850WG is not registered. An application for the registration of Sakura 850WG has been made.

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