

Ryegrass management in wheat

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Aim

To demonstrate the effectiveness of current and new chemistries for controlling ryegrass in wheat.

Take home messages

- **BOXER GOLD®** (Prosulfocarb + S-metalochlor) is a new chemistry released in 2008 that can be rotated with trifluralin (Group D)
- Rotation of herbicide groups is a must to ensure herbicide resistant weed populations do not emerge.

Method

This herbicide demonstration was established at Curyo and Manangatang.

Annual ryegrass (cv. Winterstar) was broadcast across the trial sites three weeks prior to sowing (using hand-held garden spreaders) in the morning prior to sowing and immediately after sowing at a rate of approx 64kg/ha. Winterstar is susceptible to most of the grass-selective in-crop and pre-emergent herbicides and was used in these demonstrations to illustrate the effect of the herbicides on ryegrass.

Twelve different sowing herbicide treatments were compared (Table 1) but not every treatment was applied at the two sites. These treatments compared both currently available herbicide mixes and a new chemistry BAY191, to be commercially released by Bayer CropScience in 2010.

Table 1. Sowing chemical treatments applied in this trial.

Treatment	Rate	Timing	Site/s
Control	-	-	Both
TriflurX®	1.5L/ha	IBS	Both
TriflurX	3.0L/ha	IBS	Both
TriflurX + Avadex Xtra®	1.5L/ha + 1.6L/ha	IBS	Manangatang
TriflurX + Dual Gold®	1.5L/ha + 250ml/ha	IBS	Manangatang
TriflurX + Logran®	1.5L/ha + 15g/ha	IBS	Both
Bayer BAY191*	166g/ha	IBS	Both
Triathelete (NUL1479)	2.3L/ha	IBS	Curyo
BOXER GOLD	2.5L/ha	IBS	Both
BOXER GOLD (on header row)	2.5L/ha	IBS	Curyo
BOXER GOLD	2.5L/ha	PSPE	Both
Bayer BAY191	166g/ha	PSPE	Both
TriflurX	3.0L/ha	PSPE	Both

IBS = incorporated by sowing, PSPE = post-sowing, pre-emergence. * The Bayer BAY191 rate used in this demonstration was higher than the registered rate. When using any herbicide always follow the instructions on the registered label.

All treatments (Table 1) were sown to wheat (cv. Clearfield JNZ) using 300mm row spacing and all treatments were sprayed prior to sowing with 2L/ha Gladiator (glyphosate 450g ai/l), 75ml/ha Striker and 0.2% wetter at Curyo, and 2L/ha Gladiator and 0.2% wetter at Manangatang.

The Manangatang site was sown on 5 May and Curyo on 15 May. Both sites were sown with 55kg/ha MAP. The Curyo site had 40kg/ha urea broadcast pre-sowing. Manangatang had no urea applied pre-sowing.

In-crop pesticide inputs were applied as required.

Emergence density of plants for each treatment was estimated by counting plants in 1m of crop row in each replicate on 3 June at Manangatang and 17 June at Curyo (Table 3). Weed numbers were estimated at Manangatang by randomly counting ryegrass plants within a 0.5m² quadrant ten times within each treatment.

Both sites were sprayed out in September to ensure no ryegrass set seed.

Location: Manangatang and Curyo

Replicates: 1 (Demonstration)

Sowing date: 15 May at Curyo 2008 and 5 May at Manangatang

Seeding density: 68kg/ha (at both sites) targeting 150 plants/m²

Crop type: Wheat cv. Clearfield JNZ

Seeding equipment: Smale bar (knife point press wheel), Trimble Auto-Pilot RTK (2cm) guidance, 300mm row spacing

Results

The demonstrations were assessed for crop emergence and ryegrass numbers to assess the safety and efficacy of the treatments. There was very little difference between the treatments in the number of ryegrass plants/m². Crop emergence was variable but generally lower than the control where a pre-emergent herbicide had been applied at Curyo (Table 3).

Table 3. Plant and weed counts taken post-emergence in July.

Treatment	Curyo	Manangatang	
	Wheat plants/m ²	Wheat plants/m ²	Ryegrass plants/m ²
Control	177	151	3
TriflurX 1.5L/ha IBS	147	158	1
TriflurX IBS 3L/ha IBS	147	138	0
TriflurX + Avadex Xtra IBS	-	144	0
TriflurX + Dual Gold IBS	-	119	0
TriflurX + Logran IBS	127	127	0
Bayer BAY191 IBS	188	160	2
Triathelete (NUL1479)	167	-	-
BOXER GOLD IBS	152	163	0
BOXER GOLD (on header row) IBS	153	-	-
BOXER GOLD PSPE	141	95	0
Bayer BAY191 PSPE	162	177	0
TriflurX PSPE	134	152	0

Ryegrass present in both trials appeared to be more highly concentrated in the crop rows with very few plants in between the rows.

Interpretation

These trials were established to demonstrate the effects of various herbicides on ryegrass and crop safety. It is difficult to draw conclusions from the above data due to the variable distribution of ryegrass and the lack of replication. Winterstar ryegrass was susceptible to all herbicides used in this demonstration, all pre-emergent herbicides worked extremely well in controlling ryegrass.

Ryegrass numbers were slow to germinate at both sites and failed to compete strongly against the crop. The highly adaptive Wimmera annual ryegrass has a greater tolerance and resistance to pre-emergent herbicides, especially trifluralin and the results obtained in this demonstration are unlikely to be as effective against this species.

Application

Trifluralin use has increased in Victoria with the adoption of no-till and the increase in Group A and B herbicide resistant ryegrass populations. A paddock survey conducted in Victoria by Chris Preston, University of Adelaide, in 2005 revealed 4.5 percent of paddocks surveyed displayed resistance to trifluralin. This is compared with 49 percent from a similar survey of South Australian paddocks in 2003.

The release of BOXER GOLD in 2008 saw the introduction of a pre-sowing herbicide with an alternative mode of action. BOXER GOLD contains both Group E and Group K active ingredients and is effective on trifluralin-resistant ryegrass. Currently BOXER GOLD retails at approx \$30/ha for 2.5L/ha rate, compared to 1.5L/ha trifluralin at approx \$10.50, so there is a premium attached to this new mode of action.

Bayer191 will be released in 2010 by Bayer CropScience and experimental results so far also show promise for this new product. Again, no cross resistance has yet been detected for ryegrass resistant to trifluralin, so this product will also become important as trifluralin resistance increases.

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