

## **Brome grass control in wheat and barley**

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The aim of this trial was to compare control options for Brome grass in wheat and barley.

**Summary:** Brome grass populations are increasing and with limited options in cereals it is often difficult to control. Knockdown treatment of Gramoxone offer good control of Brome grass but must be applied before the 0.5-leaf crop stage to provide sufficient crop safety. RoundUp is also used in some situations but because it is a translocated herbicide it can do significantly more crop damage.

Lexone offers good in-crop control of Brome grass in both barley and wheat (Lexone is not registered in wheat and only registered for broadleaf control in barley) however the window for application is both small, and critical, for safe and effective use.

Monza offers suppression of Brome grass (at the 1 to 3 leaf stage) in wheat but has long plant-backs that need to be observed.

The introduction of Clearfield technology in wheat appears to offer another tool against Brome grass.

### **Background**

Brome grass populations appear to be increasing in the grain growing districts of the Mallee and northern Wimmera. Control of Brome grass is most difficult in cereal crops. Pressure from high populations can lead to significant grain yield penalties and even downgrading due to contamination at harvest.

### **Methods**

Two replicated trials (wheat and barley) and one demonstration (JNZ Clearfield wheat) were established at Woomelang to compare Brome grass control options.

Wheat (Galaxy H45) was sown at 80 kg/ha on June 28 with 80kg/ha Mallee Mix 1. A plot of JNZ Clearfield wheat was also sown on June 28 at 80kg/ha with 80kg/ha of Mallee Mix 1. The commercial barley crop (Schooner) surrounding the research site was used for the barley component – this crop was sown at 65kg/ha in the 2<sup>nd</sup> week of June.

The site was sprayed with 0.6L/ha Triflur 480 on May 1.

Six weeks after application all treatments were scored for weed control and crop effect.

The wheat trial and demo was not taken through to harvest to prevent Brome grass seed-set due to high populations in several treatments.

### **Results**

In barley, the knockdown treatments (Roundup Max and Gramoxone) gave significantly better Brome grass control than Lexone or IPU (Isoproturon) but the crop damage caused by both knockdowns was commercially unacceptable. Lexone and IPU had the best crop safety in barley (refer Table 1).

In wheat, Gramoxone, Roundup Max and Lexone all provided significantly better Brome grass control than Monza and IPU. Gramoxone offered significantly better Brome control the Lexone but not Roundup Max. Roundup Max however did cause significantly more crop damage than any other treatment (refer Table 2).

**Table 1:** Weed control, crop effect and crop yield in barley (Schooner) for a range of Brome grass control options.

Treatment	Crop stage	Rate /ha	Cost ^ \$/ha	Weed control	Crop effect	Yield
Control	-	-	-	1	3.0*	#
Roundup Max	1 leaf	0.5 L	3.10	8.8	7.8	0
Gramoxone	1 leaf	0.6 L	6.40	8.8	9.0	0
Lexone	4-5 leaf	280 g	20.15	7.3	1.5	3.4
Isoproturon (IPU)	4-5 leaf	1.5 L	Not avail.	6.3	1.8	3.3
<b>Significant difference</b>				<b>P&lt;0.001 LSD=1.1</b>	<b>P&lt;0.001 LSD=2.2</b>	<b>P&lt;0.001 LSD=0.2</b>

Scores for weed control and crop effect: 1- no symptoms evident; 3 – slight symptoms; 5- severe symptoms; 7 – heavy damage; 9 – complete loss of plants

\* In the control plots high populations of Brome grass lead to crop suppression.

# Control plots were not harvested due to spray drift.

^ Costs are approximate and quoted GST-exclusive

**Table 2:** Weed control and crop effect in wheat (Galaxy H45) for a range of Brome grass control options.

Treatment	Crop stage	Rate /ha	Cost ^ \$/ha	Weed control	Crop effect
Control	-	-	-	1	2.0*
Roundup Max	1-leaf	0.5 L	3.10	5.0	6.8
Gramoxone	1-leaf	0.6 L	6.40	5.3	1.8
Lexone	3-4 leaf	280 g	20.15	4.0	2.8
Isoproturon (IPU)	3-4 leaf	1.5 L	Not avail.	1.5	1.5
Monza	5-leaf	20 g	20.20	1.5	3.0
<i>Demonstration</i>					
JNZ Clearfield	-	-	??	1	1
JNZ Clearfield + Midas	5-leaf	0.9 L	??	7	2
<b>Significant difference</b>				<b>P&lt;0.01 LSD=2.1</b>	<b>P&lt;0.001 LSD=2.0</b>

Scores for weed control and crop effect: 1- no symptoms evident; 3 – slight symptoms; 5- severe symptoms; 7 – heavy damage; 9 – complete loss of plants

\* In the control plots high populations of Brome grass lead to crop suppression.

^ Costs are approximate and quoted GST-exclusive

All Lexone and Monza treatments were applied to stress-free crops onto moist soil in cool weather conditions.

## **Interpretation**

Failing to control Brome grass led to crop suppression due to severe competition from the high Brome grass populations. Although the wheat was not taken through to harvest, it is reasonable to say that this crop suppression would have led to a yield penalty. Failing to control the Brome grass would also increase pressure from this grass weed in subsequent seasons.

**Barley:** The knockdown treatments (Gramoxone and Roundup Max), applied at the 1 leaf stage in barley, gave significantly better Brome grass control than Lexone and IPU. However, applied at the 1 leaf stage heavy damage and complete plant loss was present in the crop making this timing commercially unacceptable. Gramoxone or Roundup must be applied before the 0.5 leaf stage of the crop.

Lexone gave significantly better control of Brome grass than Isoproturon (IPU). Lexone killed a substantial number of the Brome grass plants and those remaining were severely stunted. Although after application the barley crop showed yellowing and some stunting it recovered quickly with very little crop effect noticeable at the time of scoring. IPU, which is not currently available in Australia, caused moderate damage to Brome grass and crop effect was not significantly different to that seen with Lexone.

**Wheat:** Gramoxone, Roundup Max (applied at the 0.5 leaf stage) and Lexone provided significantly better Brome grass control than Monza and IPU. Gramoxone provided significantly better Brome control than Lexone.

Gramoxone (contact herbicide) burnt the emerging crop off, but it recovered well to show little effect at maturity. Roundup Max (translocated herbicide) however caused unacceptably high crop damage.

Lexone provided less control in wheat than barley, which may be attributed to the less competitive nature of wheat. Note Lexone is not registered in wheat.

Monza and IPU offered very little suppression of Brome grass in this trial. The Brome grass was at the 4-leaf stage at the time of application and may have been too well established for these products to offer effective suppression.

In the JNZ Clearfield wheat demonstration the application of Midas herbicide provided excellent control of Brome grass. Some crop stunting was visible.

## **Commercial Practice**

Knockdown options can be effective if applied early enough – before the 0.5 leaf stage in both wheat and barley (refer to 1996/97/98 BCG Crop and Pasture Production Manuals). The safest knockdown option is Gramoxone as it is a contact herbicide unlike Roundup Max which is translocated within the plant. Severe crop damage can be expected if knockdowns are applied after the 0.5-leaf stage.

In barley, in-crop options are limited to Lexone. Lexone does offer good control of Brome grass but the window for application is both small and critical for safe and successful use. It is essential the crop has secondary roots established (5-leaf stage) and that 6-12mm of rain falls within 2 weeks of application. Applying Lexone during cool and even showery conditions will greatly improve its efficacy, if it warm and dry it is unlikely that Lexone will be effective in controlling brome grass.

Lexone is not registered for post emergent brome grass control in barley.

In wheat in-crop Brome grass control is also limited.. Monza, which offers suppression only, needs to be applied early post-emergent when the brome grass has between 1 and 3 leaves. If Monza is applied when brome grass has 4 leaves or more it is not effective enough. Monza is a Group B herbicide with long plant-back periods that should be adhered to.

The recently released Clearfield technology in wheat looks to offer another tool to control Brome grass.

Chemical suppression and control of Brome grass will be further enhanced if the crop is healthy and competitive – get your plant populations, crop nutrition and rotation right!