

# Grassy Weeds Management

**Aim:** To assess both pre-emergent and post-emergent herbicides in controlling brome grass and annual ryegrass in wheat and barley.

**Background:** Brome grass is a weed of high concern for many growers who have adopted min-till farming practices. The ability to lay dormant over summer, be stimulated to germinate in darkness following soil throw at crop planting and the ability to germinate from great depths (up to 150cm) has led to it being the main problem weed for many grain growers. Unfortunately this trial site had very little Brome Grass present but a reasonable amount of annual ryegrass. Thu the main results reported on is for annual ryegrass.

**Table 1. Summary of barley emergence and weed control assessments.**

Treatment /ha.	Barley plants /m <sup>2</sup> 19 <sup>th</sup> June	ARG plants /m <sup>2</sup> 19 <sup>th</sup> June	ARG % control UTD
UTC	70 bcd	818 e	0
Sakura @ 118gms	65 cde	146 b	83
Sakura + Triflur @ 118gms + 1500ml	55 e	127 ab	85
Sakura + Avadex @ 118gms + 1600ml	63 de	48 ab	94
Triflur + Avadex @ 3000 + 3000ml	82 a	72 ab	91
Boxer Gold @ 2500ml	80 ab	99 ab	88
Boxer Gold @ 2000ml f.b. Boxer Gold @ 1500ml	79 ab	30 a	96
*Triflur + Metribuzin @ 1500 + 200gms f.b. Metribuzin @180gms (Z24)	64 cde	250 c	70
*Triflur @ 1500ml f.b Metrib'zn @ 360gms	75 abc	417 d	49
<b>Co-efficient of variation</b>	<b>14%</b>	<b>43%</b>	
<b>LSD 5%</b>	<b>11</b>	<b>103</b>	

**Table 2. Summary of barley yield assessments.**

Treatment /ha.	Yield T/ha	Yield % of Triflur + Avadex (T5)
UTC	2.32 bc	89
Sakura @ 118gms	2.34 bc	89
Sakura + Triflur @ 118gms + 1500ml	2.17 c	83
Sakura + Avadex @ 118gms + 1600ml	2.08 c	79
Triflur + Avadex @ 3000 + 3000ml	2.62 a	100
Boxer Gold @ 2500ml	2.82 a	108
Boxer Gold @ 2000ml f.b. Boxer Gold @ 1500ml	2.67 a	102
*Triflur + Metribuzin @ 1500 + 200gms f.b. Metribuzin @180gms (Z21)	2.57 ab	98
*Triflur @ 1500ml f.b Metrib'zn @ 360gms	2.54 ab	97
<b>Co-efficient of variation</b>	<b>10%</b>	
<b>LSD 5%</b>	<b>0.26</b>	

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- Means followed by the same letter do not significantly differ.
- f.b. means followed by (post emergent treatment Z21).
- Post-emergent treatments were applied on the same day as the ryegrass grass counts were taken, thus no effect was registered at this point in time.
- Greyed out boxes indicate product not registered and intended for trial purposes only.

## Barley Discussion:

The seasonal conditions immediately following pre-plant herbicide application and planting itself had a significant impact on the outcomes in this trial. In the week following planting, 60mm of rain fell and thoroughly wet the soil profile. This amount of rainfall moved the soluble herbicides both vertically and laterally throughout the seed bed and impacted both the emerging barley and weed seeds.

The first striking effect on the barley was the damage Sakura did to the barley (photo 1 & 2). All treatments reduced plant numbers significantly below the untreated control. The use of Metribuzin pre-plant with Triflur also had a similar effect. The crop was lentil stubble from the year before and as such, there was very little organic matter for herbicides to bind to and the vast majority hit the ground. Considering the moisture conditions, this damage was not surprising and shows the factors that need to be taken into consideration when using soluble herbicides in sandy soils. It is likely that such an effect would not have been as pronounced in a clay loam soil.



**Photo 1.** Untreated barley plot.



**Photo 2.** Sakura @ 118 gms

In regards to weed control, the addition of either Triflur or Avadex to Sakura improved ryegrass control which shows the benefits of utilizing multiple modes of action to control weeds. Boxer Gold applied pre-plant had similar levels of control to the Sakura treatments, however, when Boxer Gold was split with an application pre-plant and post-sow, pre-emergent, weed control increased significantly. This result highlights the benefits of having a PSPE herbicide to cover the soil including the seed row to eliminate weeds that germinate there.

Yield results demonstrate that the Sakura treated plots did not recover from the damage at planting time and even though annual ryegrass control was very good in these plots, there were not enough tillers set to capitalize on the weed control. The best yielding plots contained Boxer Gold and indicated that in barley in this soil type, this herbicide was safe to the crop and also provided a high level of annual ryegrass control which enabled the plots to achieve their full potential. The use of Metribuzin with Triflur did not have a much impact on improving annual ryegrass control and as a result, yields were similar to the untreated.

Table 3. Summary of wheat emergence and weed control assessments.

Treatment /ha.	Wheat plants /m <sup>2</sup> 19 <sup>th</sup> June	*ARG plants /m <sup>2</sup> 19 <sup>th</sup> June	ARG % control UTD
UTC	152 bc	667 e	0
Sakura @ 118gms	175 a	150 c	78
Sakura + Triflur @ 118gms + 1500ml	154 bc	120 bc	82
Sakura + Avadex @ 118gms + 1600ml	170 ab	39 ab	94
Triflur + Avadex @ 3000 + 3000ml	158 bc	50 ab	93
Boxer Gold @ 2500ml	170 ab	82 abc	88
Boxer Gold @ 2000ml f.b. Boxer Gold @ 1500ml	111 d	18 a	97
*Triflur + Metribuzin @ 1500 + 200gms f.b. Metribuzin @180gms (Z21)	155 bc	261 d	61
*Triflur @ 1500ml f.b Metrib'zn @ 360gms	142 c	353 d	47
<b>Co-efficient of variation</b>	<b>16%</b>	<b>44%</b>	
<b>LSD 5%</b>	<b>27</b>	<b>99</b>	

Table 4. Summary of wheat yield assessments.

Treatment /ha.	Yield T/ha	Yield % of Triflur + Avadex (T5)
UTC	2.58 d	88
Sakura @ 118gms	2.91 abc	99
Sakura + Triflur @ 118gms + 1500ml	2.95 abc	100
Sakura + Avadex @ 118gms + 1600ml	2.88 abc	98
Triflur + Avadex @ 3000 + 3000ml	2.94 abc	100
Boxer Gold @ 2500ml	3.08 a	105
Boxer Gold @ 2000ml f.b. Boxer Gold @ 1500ml	2.76 bcd	94
*Triflur + Metribuzin @ 1500 + 200gms f.b. Metribuzin @180gms (Z21)	2.70 cd	92
*Triflur @ 1500ml f.b Metrib'zn @ 360gms	2.99 ab	102
<b>Co-efficient of variation</b>	<b>9%</b>	
<b>LSD 5%</b>	<b>0.27</b>	

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### Wheat Discussion:

The effect of Sakura on wheat emergence was not noticeable at all showing the increased tolerance of this cultivar compared to barley. What is interesting is that in the wheat, Boxer Gold when applied as a split treatment, had a significant impact on wheat early vigor. This again shows the considerations that need to be taken into account when using soluble herbicides on sandy soils. The Boxer Gold applied over the rows obviously washed into the seed rows and damaged the emerging plants (photo 3 & 4).



**Photo 3.** Untreated barley plot.



**Photo 4.** Boxer Gold split pre/post plant.

As with the barley trial, the split treatment of Boxer Gold had the best level of annual ryegrass control, again no surprises with this result. The next tier of treatments had similar levels of control which included the Sakura treatments. Trifluralin combined with Metribuzin did not have acceptable control of annual ryegrass; indeed, these treatments were included for the brome grass that was expected to be present at the trial site.

Even though it easily had the best level of ryegrass control, the split treatment of Boxer Gold did damage the crop to the extent that it did not recover to reach full yield potential. The best treatments included the Sakura mixes and Boxer Gold applied only pre-plant; all of these treatments gave good levels of annual ryegrass control and had no crop effect.

### Take Home Points:

- Sakura will not be registered for use in Barley in 2014. In this trial it lead to reductions in Barley population of 20-25%, which translated into a yield reduction.
- Boxer Gold proved the safest in Barley, and provided the best ryegrass control. Both of these lead to the Boxer Gold treatments yielding the highest in the Barley.
- Treatments which applied some chemical to the row after seeding, increased the control of ryegrass. However, consideration must be given to the crop type and rainfall after application, as it can result in crop damage under the wrong conditions.
- Opposite to the Barley, the Sakura treatments proved to be very safe and provided high levels of ryegrass control.
- The Boxer Gold split treatment resulted in damage to the wheat and subsequent yield loss.
- In both crop types, the best treatment yielded half a tonne more than the untreated. When chemical treatments were removed, the grower would be \$65-100/Ha better off by removing the ryegrass competition.

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**Government of South Australia**

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