Early or delayed sowing for improved ryegrass control?

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Key findings

- The early break to the 2015 season meant soil moisture and rainfall conditions were similar between ToS 1 and 2 and there was little variation in annual ryegrass control among pre-emergent herbicides tested.
- Grain yield and quality were not affected by pre-emergent herbicide however, there was a 0.7 t/ha yield penalty for the later ToS.
- Over two seasons of research ryegrass seed set was greater when sowing was delayed.

Why do the trial?

A ryegrass management trial at Hart in 2008 showed the best additional management strategy to herbicide application was delaying sowing by 7 days. Delayed sowing reduced ryegrass numbers by 55% for all herbicide treatments. However, this often results in lower crop yield and reduced subsequent crop weed competition.

Since then, the introduction of new residual herbicides has reduced the reliance on post emergent selective grass sprays and provided an improved option for dry sowing. Anecdotal grower evidence would suggest that dry or early sown crops and using adequate rates of residual pre-emergent herbicide provides similar levels of ryegrass control. The aim of this trial was to investigate the effect of early or delayed sowing on reduction of ryegrass numbers in combination with different pre-emergent herbicides.

How was it done?

Plot size	1.75 m x 10.0 m	**Fertiliser**	DAP (18:20) + 2% Zn @ 100 kg/ha
Seeding date	TOS 1: 30th April 2015 TOS 2: 27th May 2015		
Crop	Estoc wheat @ 80 kg/ha		

To ensure even annual ryegrass establishment across the trial site annual ryegrass seed was broadcast at 25 kg/ha in 2014, prior to seeding. Again prior to seeding in 2015 an additional 5 kg/ha annual ryegrass seed was spread ahead of seeding & tickled in with a shallow pass with the seeder prior to herbicide application. The ryegrass used was previously harvested from commercial paddocks and had medium resistance to trifluralin. A standard knife-point press wheel system was used to sow the trial on 22.5 cm (9") row spacings.

The trial was a split block design with one wheat variety, two times of sowing and six pre-emergent herbicides:

1. Nil
2. IBS Boxer Gold 2.5 L/ha
3. IBS Sakura 118 g/ha
4. IBS trifluralin 1.5 L/ha + triallate 1.6 L/ha
5. IBS Sakura 118 g/ha + IBS triallate 2.0 L/ha
6. IBS Boxer Gold 2.0 L/ha + PS (crop 2-3 leaf) Boxer Gold 1.5 L/ha

Pre-sowing herbicides were applied within an hour of sowing & incorporated by sowing (IBS). The post-sowing herbicides were applied on the 27th May (ToS 1) and 29th June (ToS 2) at the 2-3 crop leaf growth stage. Assessment of annual ryegrass plant number per square metre was made for 10th July and head number per square metre on 16th October for both ToS.

Results and discussion

Grain yield was higher for the early time of sowing by 0.7 t/ha (Table 1). Protein was higher in the later time of sowing which can be attributed to yield dilution effects (lower yield = higher protein). Pre-emergent herbicide treatments did not affect final grain yield or quality.

Table 1. Summary of wheat grain yield, protein, test weight and screenings for 30th April and 27th May time of sowing.

Time of sowing	Grain yield t/ha	Protein %	Test weight kg/hL	Screenings %
30th April	2.2	9.4	81.1	1.7
27th May	1.5	12.3	78.5	12.1
LSD (P≤0.05)	0.1	0.8	0.8	1.4

The moist soil conditions in late April meant a good germination of ryegrass had occurred prior ToS 1 (Figure 1). The knockdown herbicide controlled the initial germination and the plots were sown into good moisture following 25 mm of rainfall. This was followed by 5.6 mm ten days after sowing (Figure 1). Conditions prior to the second ToS were similar with 23.4 mm falling eight days prior and 0.2 mm in the week after sowing. The early ryegrass control and optimum sowing conditions were not those initially anticipated (ie. dry sowing), however by early August there were still more than 20 ryegrass plants per square metre (Table 2).

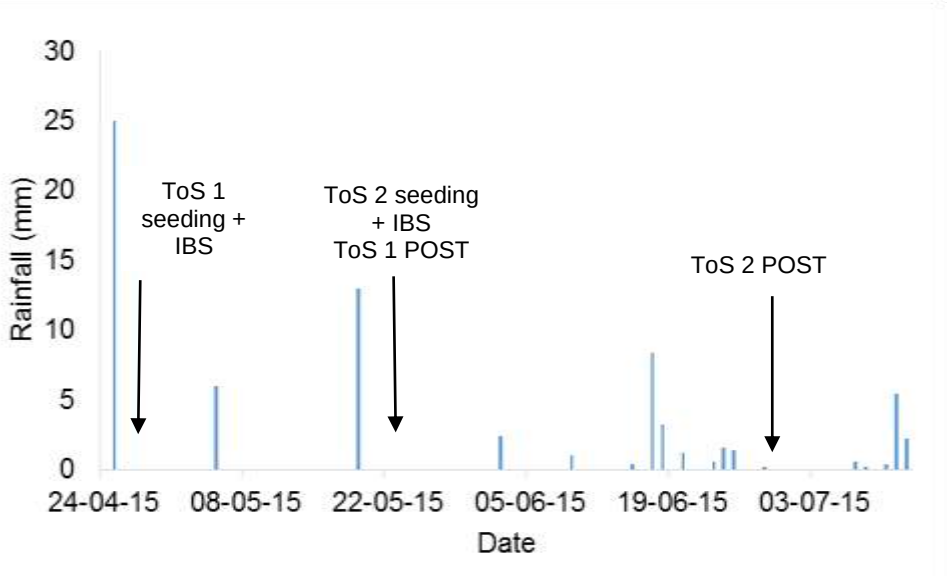

Figure 1. Rainfall from 24th of April through 10th of July at Hart with seeding and herbicide applications indicated in relation to rainfall.

Similarities in starting soil moisture and rainfall following the herbicide applications mean the pre-emergent herbicides behaved similarly across both times of sowing. Early plant counts showed all pre-emergent herbicides reduced annual ryegrass number compared to the nil for both times of sowing (Table 2).

The final head count followed similar trend to the early plant count. All treatments had reduced the number of heads to less than 25% compared to the nil. Overall the final head number was not significantly different between the two times of sowing. However, similar to 2014 there appeared to a greater number of heads/m^2 in ToS 2. As reflected in the grain yield, ToS 2 produced a smaller and less competitive wheat crop.

Table 2. Effect of different pre-emergent herbicides on annual ryegrass plants (plants per metre squared) and head density (heads per metre squared) at Hart, 2015.

	Plant count/m^2		Head count/m^2	
	ToS 1	ToS 2	ToS 1	ToS 2
Nil	18	6	45	44
IBS Boxer Gold	3	1	5	9
IBS Sakura	1	2	3	13
Trifluralin + triallate	2	2	6	14
IBS Sakura + IBS triallate	0	1	0	15
IBS Boxer Gold + POST Boxer Gold	1	2	8	9
LSD (P≤0.05) Herbicide	5.3		12.3	

Acknowledgements

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