HERBICIDES FOR DRY SOWING OF WHEAT

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Key messages

- All herbicides provided effective control of brome grass and barley grass in wheat this season.
- Crop safety in wheat was achieved by all herbicide mixes in 2008.

Why do the trial?

Growers are gaining confidence with earlier sowing than the "traditional" sowing strategy of waiting for a germination of weeds after the opening rain. Better grain yields are almost always achieved on paddocks sown earlier than what was considered the traditional optimum sowing date in mid May.

Dry sowing is a strategy that enables some paddocks to be sown prior to the opening rains. These paddocks can then take advantage of the complete growing season. It also reduces the time pressure on growers at seeding as a portion of the program has already been completed.

As part of the increased adoption of dry sowing, many growers are eager to know what herbicides might fit into a dry sowing scenario. This trial compared the efficacy and crop safety of various pre-sowing herbicide mixes on grassy weeds in a dry sowing situation for wheat, and followed the treatments through to final grain yield.

How was it done?

The trial was dry sown at Buckleboo on 24 April using a commercial DBS no-till seeder on 304 mm row spacing. Yitpi wheat was sown at 40 kg/ha with 30 kg/ha MAP. Herbicide treatments were applied pre-sowing using a hand boom calibrated to deliver 70 L/ha with 11001 Turbodrop Airmix nozzles producing a medium/coarse droplet spectrum. The trial was sown into an un-grazed oat hay stubble with minimal stubble levels on the surface.

The trial was assessed for crop emergence on 9 May. Grass weed establishment was assessed on 1 July. Barley grass was very competitive on the controlled traffic bare wheel tracks, so a separate assessment was made for barley grass numbers on 10 October. Grain yields for each plot were taken at crop maturity using a plot header and sub-samples kept for quality analysis.

What happened?

The trial site only remained dry for two days post sowing, as the first major rainfall of 11 mm fell between 26-27April. A follow up rain of 12 mm fell between 16-18 May.

Crop establishment was not adversely affected by any of the herbicides applied pre-sowing but the light and sporadic nature of the opening rains in 2008 may have helped.

All herbicide mixes reduced barley grass emergence. However, the herbicide mixes (per ha) of (1.5 L Trifluralin + 180 g Metribuzin), (1.9 L Trifluralin + 360 mL Cinmethylin) and (1.5 L Trifluralin + 500 g Diuron) were more effective at reducing barley grass emergence than 280 mL Cinmethylin alone.

Barley grass dominated the bare wheel tracks in the controlled traffic system, 1.5 L Trifluralin + 30 g Logran offered better control than all other herbicide treatments. Logran provided longer lasting control than the other herbicide treatments which gave good early control.

Ryegrass numbers across the site were very low and no differences were measured between the herbicide treatments.

Brome grass levels were low across the site, however all herbicides were effective in reducing brome grass emergence compared to the untreated area.

Herbicide treatments had no impact on final grain yield. Despite the higher grass weed burden in the untreated plots, there were no differences in yield compared to the cleaner plots this season. However, the resulting weed burden next year will be greater in the plots with less effective control.

Grain quality was unaffected by the herbicide treatments. The final grade of wheat harvested was AGP, with a test weight of 71.6 g/hL, protein 14% and screenings 8%. A greater weed infestation may have resulted in treatments being downgraded due to weed seed contamination.

Table1 Grassy weed and wheat growth with different herbicides pre sowing at Buckleboo

Treatment	Treatment	Cost ($/ha)	Wheat Plants/m²	Barley Grass plants/m²	Brome Grass plants/m²	Ryegrass plants/m²	Barley Grass heads/m² in wheel tracks	Wheat Yield (t/ha)
1	1 L Trifluralin	5.5	116	6.9	0.5	0.5	104	0.43
2	1.5 L Trifluralin	8.25	112	9.3	2.3	1.4	222	0.42
3	1.5 L Trifluralin + 500 g Diuron*	14	118	3.7	1.4	1.4	129	0.44
4	1.5 L Trifluralin + 1 kg Diuron*	19.8	114	6.5	1.9	0.9	101	0.46
5	1.5 L Trifluralin + 1.6 L Avadex	30.7	97	6.5	0.0	2.8	153	0.41
6	1.5 L Trifluralin + 180 g Metribuzin*	14	102	1.9	1.9	2.3	103	0.45
7	1.5 L Trifluralin + 280 ml Cinmethylin*	N/A	95	7.4	0.9	0.0	164	0.44
8	1.9 L Trifluralin + 360 ml Cinmethylin*	N/A	108	3.2	1.9	1.4	124	0.43
9	1.5 L Trifluralin + 30 g Logran*	10.4	110	4.2	0.5	0.0	47	0.47
10	1.5 L Trifluralin + 1.5 L Boxer Gold	26.3	120	6.0	0.9	0.5	149	0.43
11	2.5 L Boxer Gold	30	101	8.8	0.5	0.9	103	0.45
12	280 ml Cinmethylin*	N/A	105	11.6	2.3	0.9	236	0.45
13	3 L Trifluralin	16.5	104	4.2	2.3	0.0	85	0.46
14	Untreated	0	108	20.4	7.4	4.6	178	0.36
	LSD (P=0.05)		*NS*	7.6	2.7	*NS*	96	*NS*

**Treatments marked with asterix are off label and for experimental usage only. Prices are as at seeding 2008, exclusive of GST.*

What does this mean?
Despite the lack of herbicide damage found at Buckleboo, there are serious risks with applying herbicides pre-seeding when dry sowing. The main risk involves the herbicide treated soil in-filling the seeding furrow. This is a particular issue with seeding rigs that use press wheels. This can happen either through wind erosion on sandy soils, or a heavy rainfall event can also wash herbicides back into the crop row, or from soil throw from adjacent seeding rows. Stubble cover will improve the stability of the press wheel furrow and therefore reduce the associated risks of herbicide damage in a dry sowing situation and will also reduce soil throw.

The more soluble herbicides such as S-Metolachlor, Metribuzin and Diuron are the most likely herbicides to cause a reduction in crop emergence if a heavy downpour occurs post-sowing. Crop safety should increase with wider (>250 mm) row spacings.

Weed levels in a controlled traffic bare wheel track scenario need close monitoring to ensure that there are no weed blowouts for the following crops. Some growers who incorporate their header in the controlled traffic system manage this at harvest by directing chaff to the wheel tracks to create a mulch over their weeds. Another option is to apply an increased rate of herbicide to the wheel tracks.

The mixture of Logran with Trifluralin provided very effective weed control at the Buckleboo site. This site has had minimal usage of group B chemicals in the past, which means that resistance has not had a chance to build up. Resistance to the group B chemicals can build up with as little as three applications, which would result in this mixture being less effective.

When selecting paddocks for dry sowing cereal crops, choose paddocks with a low grass weed burden, so that herbicides with less crop safety don't need to be used. Dry sowing without good weed control can be the weak link in a whole farming system, where clean paddocks can end up with heavy grassy weed burdens for seasons to come.

At Buckleboo, there was no yield loss associated with poor weed control. The site was clean early in the season, with weeds emerging well after the crop. It is likely that if follow up rains occurred in spring the weed impacts in the untreated plots would have been more severe.

The cheapest option for herbicide selection this season at Buckleboo was to not apply any herbicide at all. This however would result in a significant increase of weeds to the seedbank. The cheapest herbicide was 1 L Trifluralin which was quite effective on the three main target weeds at the site. Given a similar circumstance of low weed burden and the current financial pressure, it would be difficult for a grower to justify using expensive alternative chemicals like Avadex or Boxer Gold. However a higher weed burden may validate their use.

Resistance to Trifluralin is gaining momentum as we continue to use this herbicide as a primary source of initial weed control at sowing. Mixing Trifluralin with other modes of action will reduce the selection pressure on this herbicide, and although this comes at an increased initial cost it should lead to increased longevity of the herbicide.

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Products used:
Trifluralin – 480 g/L Trifluralin
Avadex – 500g/L Tri-Allate
Logran – 750g/kg Trisulfuron
Diuron – 900 g/kg Diuron
Boxer Gold – 800 g/L Prosulfocarb + 120 g/L S-Metolochlor
Metribuzin – 750 g/kg Metribuzin
Cinmethylin – An experimental product from Nufarm which is likely to be released as a mix with Trifluralin.

Many of the herbicide mixes used in this trial are off label and for research purposes only to indicate potential efficacy. Use herbicides according to label directions.

Category:
1. "Try this yourself now" – that's about all we can do, it's time to try it out for yourself.

Location
Buckleboo
Group: BIG FIG
Rainfall
Av Annual: 306 mm
Av GSR: 220 mm
2008 Total: 153 mm
2008 GSR: 105 mm
Yield
Potential: 0.6 t/ha (W)
Actual: 0.4 t/ha
Paddock History
2007: Oaten Hay
2006: Oaten Hay
2005: Wheat
Soil Type
Red clay loam
Plot size
3 m x 15 m x 4 reps
Yield Limiting Factors
Sky juice

For further information

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