



Brome grass control in lentils

Aim:

To evaluate a range of herbicide combinations for controlling brome grass in lentils.

Background:

In previous years, this N&Y NRM funded project has investigated brome grass control options in cereal crops. In 2015, this trial looked at herbicide options in the lentil phase of the cropping rotation. Lentils are a widely grown crop in the region and due to the nature of staggered germination of brome grass, combinations of pre plant and post sow-pre emergent herbicides can provide good control of brome grass.

Details:

Location:	Bute, Northern Yorke Peninsula, SA.
Researcher:	Leighton Wilksch.
Co-operators:	Northern & Yorke NRM, NSS & Nathan Hewett
Planting Date:	11 th May
Application date:	11 th June – lentils @ 7cm high, brome grass @ 3 -5 leaf.
GSR:	190mm.
Soil:	Red brown sandy loam with low soil moisture at planting
Trial Details:	Sown with Conserva Pac tynes on 260mm spacings. Herald XT Lentils planted @ 45kg/ha with MAP @ 90kg/ha. ZMC + Pyrinex Super @ 0.8 + 0.4L/ha applied 17 th June. Replicated three times. Plots not harvested.

Results:

Table 1. Summary of lentil crop effect assessments

Trt. No.	Pre-Planting Product	Rate /ha	Post-Planting Product	Rate /ha	Lentils /m ² 11 th June
4	Triflur + Avadex	1.0 + 1.6L	Verdict + Clethodim	0.1 + 1.5L	43 a
3	Triflur + Avadex	1.0 + 1.6L	Verdict + Clethodim	0.05 + 0.75L	47 a
11	Adama EXP				45 a
7	Triflur + Propizamide	1.0 + 0.5L	Propizamide	0.5L	49 a
2	Triflur + Avadex	1.0 + 3.0L			36 a
5	Triflur + Metribuzin	1.0L + 150gms	Diuron	0.3L	33 a
12	Sentry	40gms	Intervix	0.75L	42 a
1	Triflur + Avadex	1.0 + 1.6L			47 a
8	Triflur + Glean	1.0 + 1.6L + 10gms			39 a
6	Triflur + Terbyne	1.0 + 400gms	Terbyne	100gms	40 a
9	Triflur + Diuron + Simazine	1.0 + 0.2 + 0.2L	Diuron + Simazine	0.2+ 0.2L	37 a
10	Triflur + Metribuzin	1.0L + 150gms	Metribuzin	50gms	37 a
13	UTD				49 a
Co-efficient of Variation					25%
LSD 5%					18
Brown = Pre plant		Red = Post Plant, Pre Emergent		Green = 4 weeks Post Em.	

- Means followed by the same letter do not significantly differ



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Table 2. Summary of brome grass control assessments

Trt. No.	Pre-Planting Product	Rate /ha	Post-Planting Product	Rate /ha	Brome /m ² 11 th June	Brome % Ctrl. 18 th Aug
4	Triflur + Avadex	1.0 + 1.6L	Verdict + Clethodim	0.1 + 1.5L		9.7 a
3	Triflur + Avadex	1.0 + 1.6L	Verdict + Clethodim	0.05 + 0.75L		8.3 ab
11	Adama EXP				9 a	8.7 ab
7	Triflur + Propizamide	1.0 + 0.5L	Propizamide	0.5L	18 ab	6.7 abc
2	Triflur + Avadex	1.0 + 3.0L			50 abc	5.7 cde
5	Triflur + Metribuzin	1.0L + 150gms	Diuron	0.3L	54 bc	5.3 de
12	Sentry	40gms	Intervix	0.75L	65 bcd	7.7 abc
1	Triflur + Avadex	1.0 + 1.6L			72 cde	3.7 ef
8	Triflur + Glean	1.0 + 1.6L + 10gms			95 cdef	5.0 de
6	Triflur + Terbyne	1.0 + 400gms	Terbyne	100gms	115 defg	2.0 fg
9	Triflur + Diuron + Simazine	1.0 + 0.2 + 0.2L	Diuron + Simazine	0.2+ 0.2L	124 efg	5.0 de
10	Triflur + Metribuzin	1.0L + 150gms	Metribuzin	50gms	144 fg	1.3 g
13	UTD				156 g	1.0 g
Co-efficient of Variation					44%	25%
LSD 5%					52	2.2

Brown = Pre plant

Red = Post Plant, Pre Emergent

Green = 4 weeks Post Em.

- Means followed by the same letter do not significantly differ

Discussion:

This trial was planted on a sand hill where high brome grass numbers had been observed in a 2014 wheat crop. The crop type was Imidazolinone (group B) tolerant Herald XT variety. Due to low opening rainfall total's establishment was not particularly quick and there was some patchy mice damage too. However, all plots grew well enough for an early assessment (11th June - 4 weeks after planting) to be taken in order to establish if any damage had occurred to the lentils from the herbicides.

Whilst there was no significant difference between the lentil counts, there was a trend evident of some of the group C herbicides causing some slowness and even plant death (see Photo 1.) As rain events in the first month post planting had been very much below average, it is likely that those herbicides that are known to have some level of toxicity to lentils (such as Metribuzin) were concentrated in the furrow and thus negatively affected some of the germinating plants. The reasons for this is that there was a reasonable likelihood that wind had blown the dry sand particles that had the PSPE herbicides into the furrow; the lack of rainfall also would have meant that these herbicides were still on the surface and not washed throughout the top 5-10cm of the profile which would be the case in a "normal" season.

This apparent damage again highlights the importance of understanding how herbicides interact with the soil type, stubble loading and the planted crop. Group C herbicides in particular can be quite harsh on lentils, but when used at appropriate rates and soil moisture conditions are ideal, they can be very efficacious against a wide range of cereal and broadleaved weeds.



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Photo 1 shows group C damage to lentil plants in the trial taken 4 weeks post planting.

The brome grass control assessments proved to show some interesting results. Two assessments were taken, the first was 4 weeks post planting (11th June) and actual counts of brome grass were taken with a 0.25m square; 4/plot. The second assessment was taken on the 18th of August and consisted of taking a visual assessment of the level of brome grass control in the plots with 10 being completely controlled and 0 being the untreated. This second assessment incorporated the treatment applications of the Verdict + Clethodim and the Intervix.

Whilst there was a high level of variation across the plots (as is often the case with weed assessments) there were trends evident that showed those treatments that were robust in their control of brome grass and those that weren't. The new Adama experimental product was clearly the best of the pre-plant/PSPE treatments and further work will be required with this product. Using a split rate of Propizamide also gave impressive results. Sentry worked well indicating that there is still susceptibility to these herbicides in the brome grass population, although Glean did not do a particularly good job.

The later assessment of the brome grass control followed the application of the early post emergent treatments, Verdict + Clethodim and Intervix. These saw quite good levels of control with the higher rate of Clethodim being the standout. Interestingly, the Adama (Photo 2) EXP product was still presented a great level of control at this stage of the season. The levels of control in the later assessment generally followed the early assessment indicating that there was not a lot of brome grass that germinated in crop.

The site was not harvested as the levels of brome grass warranted being sprayed out completely prior to seed set in order to minimize damage for season 2016.

Summary:

The soluble, soil active herbicides in this trial are likely to not have worked as well controlling brome grass as they would have in a season where there was more soil moisture available after planting. This would have led to increased distribution through the profile, allowing for the herbicide to be around the target zone as the weeds germinated. It may also have caused some more crop damage with a couple of the treatments if they had concentrated in the crop root zone.

Understanding the levels of brome grass resistance that each paddock may be faced with in the next season is imperative to putting together a sound plan for this, and indeed, every problematic weed. Knowing how different herbicides react to soil moisture, soil type and



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trash loads will assist greatly with maximizing weed control and minimizing crop effect. Always follow labels and seek agronomic advice if there are questions about potential risks.

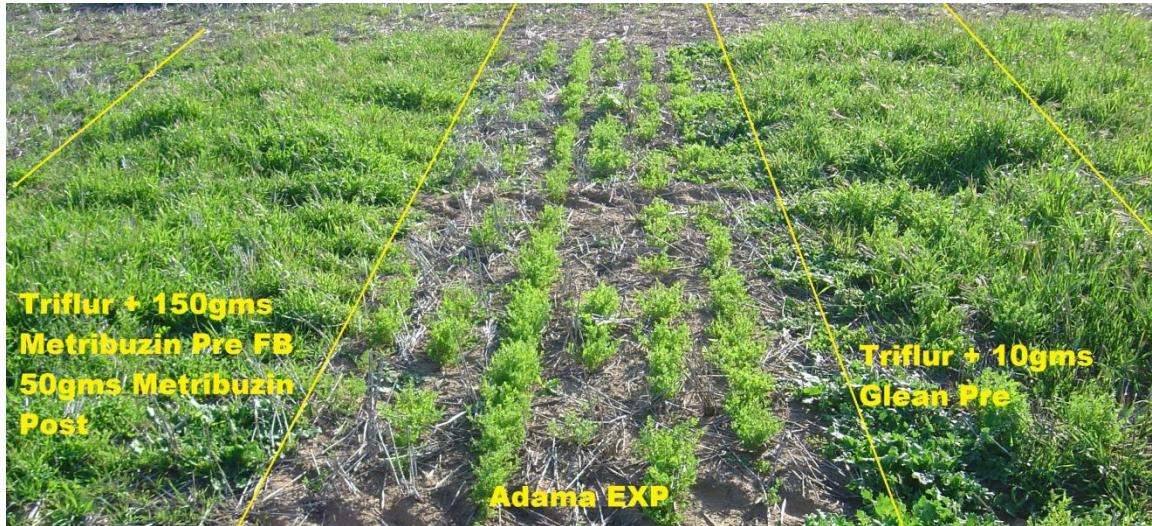


Photo 2 Adama experimental product showing excellent longevity in control throughout the season, here compared to two other commonly used treatments in Herald XT lentils.



Photo 3 presenting to the NSS group at the N&Y NRM funded site, early July.