

Arable Extra



Issue 107

Grassweed herbicide screening trial 2014

Background

This research follows on from similar trials in previous seasons (FAR Arable Extra No.40, 47, 60, 67, 76, 88, 93, 96 and 99). The trial is designed to indicate potential herbicide options for a range of problematic species when growing cereal crops.

NB. Some species have been difficult to control with available products and therefore unregistered products have also been tested.

Three important points:

1. The grassweeds established in this trial were grown without crop competition.
2. This is one trial and should be read in conjunction with other published work on grassweed control.
3. Some herbicide application timings have changed compared with the previous season.

Field trial

A trial was set up at the FAR Arable Site, Chertsey. Twelve species were sown on 15 and 16 May 2013 in 20 m long strips. Sixteen different herbicide treatments (Table 2) were tested across the species using a log sprayer, which gives a concentration gradient down the length of the plots. Rates began at twice the 'full rate' diluting down to 20% of the full rate at the end of each 20 m plot. A score representing percentage kill at the full, half and quarter rates is reported. Plots were un-replicated.

The pre-emergence applications went across all species at one date (Table 1). There were two post emergence timings for different species (two leaves GS12 and start of tillering GS21). Results for these herbicides should be compared with those from previous years when making application decisions. Note: application timings may vary between seasons. Within the 16 herbicide treatments, some products were applied in combination with other herbicides and/or at multiple timings (Table 2).

Additives were mixed as per label recommendations e.g. Partner® was added to all Othello® treatments. Simplicity™ treatments were applied twice as per label recommendation.

For clarity; f.b. refers to 'followed by'.

Table 1. Application dates and growth stages of the four application timings reported in Table 2.

1. Pre-emergence	30 May 2013
2. Pre-emergence f.b Post-emergence (Growth stage 12)	30 May followed by 4 July 2013
3. Post-emergence (Growth stage 12)	4 July 2013
4. Post- emergence (Growth stage 21)	22 August 2013

Annual Ryegrass

- Tolerant to: None of the treatments.
- Mostly tolerant to: Teedal™.
- Mostly susceptible to: Gardoprim® + Glean®, Firebird®.
- Fully susceptible to: Gardoprim + Firebird, FAR 11/01, FAR 11/01 + Quantum®, FAR 11/01 + Firebird, FAR 11/01 + Avadex® Xtra 300, Gardoprim f.b. Othello + Partner, Firebird f.b. Othello, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello, FAR 11/01 f.b. Cougar®, Othello, Simplicity f.b. Simplicity, Simplicity + Stomp® f.b. Simplicity.

Annual ryegrass was controlled by all treatments except for Teedal. Gardoprim + Glean applied pre-emergence was not as successful as other treatments which included Gardoprim. FAR 11/01 and Simplicity both showed excellent control, either as individual products or when sequenced with other products.

Key points

- A screening trial using a log-sprayer was able to give indications of the relative efficacy of different herbicides, at different rates, on a range of grassweeds. Results show several promising options.
- The interpretation of the scores from Table 2 is based on; 0-3 = fully tolerant, 3-5 = mostly tolerant, 5-8 = mostly susceptible and 8-10 = fully susceptible. However where doubt exists around the repeatability of the data based on previous results, the summary of each species may be adjusted.
- Use of rates below the full label rate is done at growers' risk.
- **Always consult your agronomist before implementing decisions concerning herbicide screening results. NB. Use of product in this trial does not constitute a recommendation.**

Perennial Ryegrass

- Tolerant to: None of the treatments.
- Mostly tolerant to: Teedal.
- Mostly susceptible to: None of the treatments.
- Fully susceptible to: Gardoprim + Glean, Firebird, Gardoprim + Firebird, FAR 11/01, FAR 11/01 + Quantum, FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Gardoprim f.b. Othello, Firebird f.b. Othello, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello, FAR 11/01 f.b. Cougar, Othello, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity.

Perennial ryegrass was controlled by all treatments except Teedal. The control given by Gardoprim + Glean was better compared with previous seasons. All of the Firebird, Othello, Simplicity and FAR 11/01 treatments were effective at controlling perennial ryegrass. As in previous years Teedal was an option for removing wheat from ryegrass.

Hairgrass

- Tolerant to: Simplicity f.b. Simplicity, Gardoprim + Glean.
- Mostly tolerant to: Teedal.
- Mostly susceptible to: Gardoprim f.b. Othello
- Fully susceptible to: Firebird, Gardoprim + Firebird, FAR 11/01, FAR 11/01 + Quantum, FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Firebird f.b. Othello, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello, FAR 11/01 f.b. Cougar, Othello, Simplicity + Stomp f.b. Simplicity.

Control of hairgrass was excellent from many products again this year. The Gardoprim treatments again showed a weakness in controlling hairgrass, including when applied in combination with Glean and when followed by Othello. Othello alone gave a greater level of control this season compared with previous seasons. Simplicity showed limited activity while Firebird and FAR 11/01 showed very good control again this season. Over the past three seasons FAR 11/01 has provided slightly better control of hairgrass than Firebird (Figure 1).

Prairie Grass (Bromus willdenowii)

- Tolerant to: None of the treatments.
- Mostly tolerant to: Teedal.
- Mostly susceptible to: Gardoprim + Glean, Firebird, Gardoprim + Firebird, Gardoprim f.b. Othello, Firebird f.b. Othello.
- Fully susceptible to: FAR 11/01, FAR 11/01 + Quantum, FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello, FAR 11/01 f.b. Cougar, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity.

This season prairie grass appeared more susceptible to a wide range of products, ensure you read previous updates when making decisions on prairie grass. Prairie grass was the most tolerant of all weed species and generally required a sequence of products to provide useful control. Once again FAR 11/01 provided the basis for the majority of the more effective treatments while Simplicity also showed potentially useful control.

Soft Brome

- Tolerant to: None of the treatments.
- Mostly tolerant to: Gardoprim + Glean, Teedal.
- Mostly susceptible to: Gardoprim + Firebird, Firebird, Firebird f.b. Othello,
- Fully susceptible to: FAR 11/01, FAR 11/01 + Quantum, FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Gardoprim f.b. Othello, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello, FAR 11/01 f.b. Cougar, Othello, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity.

Soft brome control by Firebird was better than previous seasons. FAR 11/01 and Simplicity showed good levels of control. Gardoprim based treatments were similar to the long term average.

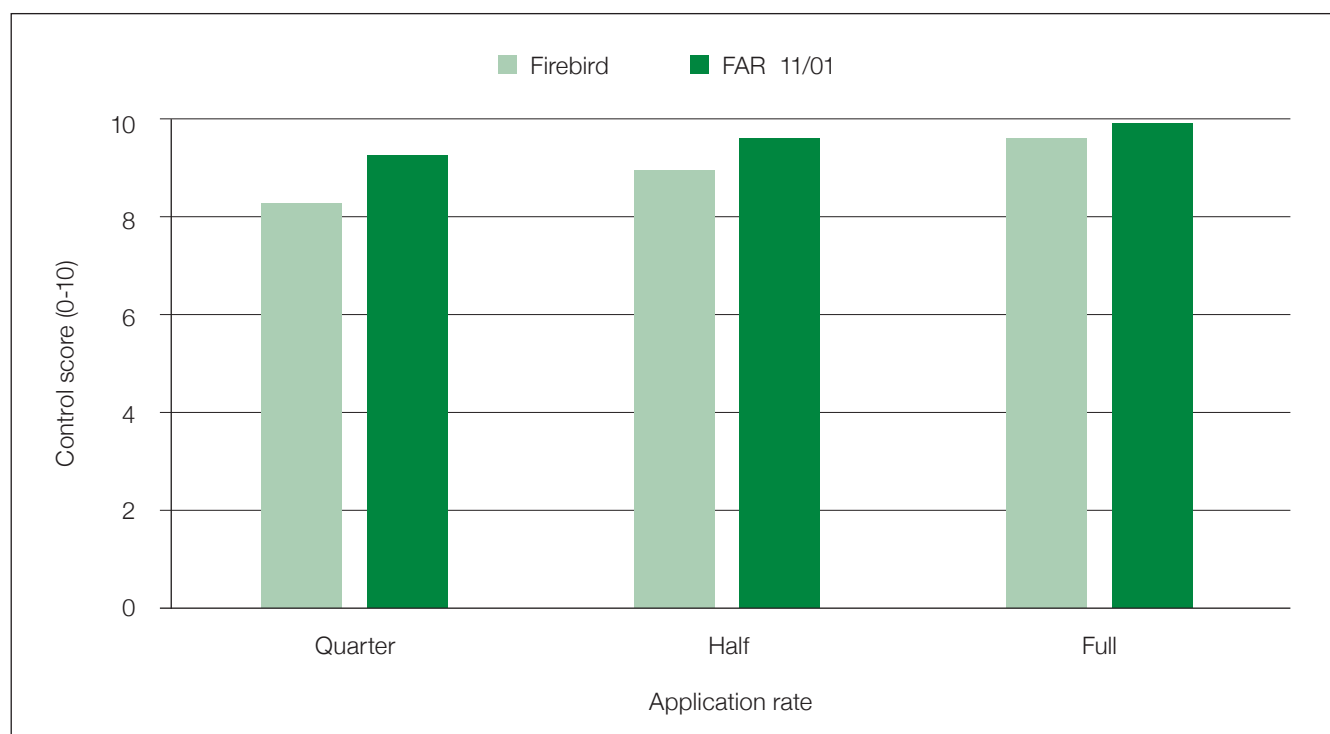


Figure 1. Control of hairgrass given by a single application of Firebird and FAR11/01 – Chertsey Arable Site 2011 – 2013, 0 = no kill, 10 = complete control Full rate Firebird = 0.3 l/ha, FAR 11/01 = 150 g/ha.

Ripgut Brome

- Tolerant to: None of the treatments.
- Mostly tolerant to: Gardoprime + Glean, Teedal.
- Mostly susceptible to: Firebird, Gardoprime f.b. Othello, Othello.
- Fully susceptible to: Gardoprime + Firebird, FAR 11/01, FAR 11/01 + Quantum, FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Firebird f.b. Othello, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello, FAR 11/01 f.b. Cougar, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity.

Ripgut brome control by Firebird and Othello was better than in previous seasons. Control by Simplicity was very good either alone or following other pre emerge products. FAR 11/01 performed better when applied as part of a pre and post emergence combination.

Wheat – cv. Oakley

- Tolerant to: Gardoprime + Glean, Firebird, Gardoprime + Firebird, FAR 11/01, FAR 11/01 + Quantum, FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Gardoprime f.b. Othello, Firebird f.b. Othello, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello, FAR 11/01 f.b. Cougar, Othello, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity.
- Mostly tolerant to: None of the treatments.
- Mostly susceptible to: Teedal.
- Fully susceptible to: None of the treatments.

Oakley wheat showed tolerance to all products applied except Teedal. These results are promising given the level of grass weed control provided by FAR11/01, Simplicity, Othello and Firebird.

Wheat – cv. Conquest

- Tolerant to: Firebird, Gardoprime + Firebird, FAR 11/01, FAR 11/01 + Quantum, FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Gardoprime f.b. Othello, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello, FAR 11/01 f.b. Cougar, Othello, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity Gardoprime + Glean.
- Mostly tolerant to: None of the treatments.
- Mostly susceptible to: None of the treatments.
- Fully susceptible to: Teedal.

Conquest was tolerant of all products with the exception of Teedal.

Barley - cv. Quench

- Tolerant to: Gardoprime + Glean, Firebird, Gardoprime + Firebird, FAR 11/01, FAR 11/01 + Quantum, FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Gardoprime f.b. Othello, Firebird f.b. Othello, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Cougar, Othello, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity,
- Mostly tolerant to: FAR 11/01 f.b. Othello, Teedal.
- Mostly susceptible to: None of the treatments.
- Fully susceptible to: None of the treatments.

Barley was tolerant to a wide range of products, and mostly tolerant to Teedal, suggesting limited control of barley would be achieved in ryegrass seed crops. Based on late season scores (later than those presented in Table 2), Othello appeared to provide a check to barley growth particularly when applied in sequence with FAR11/01. Many of the products tested in this trial are not registered for barley and

use in barley is at growers' risk. These plots were not taken to grain yield, therefore some potential damage to yield is not recorded.

Oats

- Tolerant to: Gardoprime + Glean, Firebird, Gardoprime + Firebird.
- Mostly tolerant to: Teedal.
- Mostly susceptible to: FAR 11/01. FAR 11/01 + Quantum, FAR 11/01 f.b. Cougar.
- Fully susceptible to: FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Gardoprime f.b. Othello, Firebird f.b. Othello, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello, Othello, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity.

Oats showed good levels of tolerance to Gardoprime, but be aware of sequencing issues – see FAR Arable Update, No. 96.

Note that Avadex Xtra controlled oats in this trial and should never be applied to an oat crop.

For the third year in succession oats were tolerant of Firebird alone and also when it was used in combination with Gardoprime. Othello and Simplicity provided control in many treatments but neither product has any residue activity against oats so be cautious of new germinations following application. FAR 11/01 was more effective when sequenced with other products. Firebird is not approved for use in oat crops.

It should be considered that the oats used in this trial all germinated at the same time and many of these products have limited or no residue activity, therefore follow up applications may be required.

Oilseed Rape

- Tolerant to: None of the treatments.
- Mostly tolerant to: None of the treatments.
- Mostly susceptible to: Teedal. FAR 11/01 incorporated, FAR 11/01 + Avadex Xtra 300,
- Fully susceptible to: Gardoprime + Glean, Firebird, Gardoprime + Firebird, FAR 11/01 + Quantum, FAR 11/01 + Firebird, Gardoprime f.b. Othello + Partner, Firebird f.b. Othello + Partner, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello + Partner, Othello + Partner, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity.

Oil seed rape was controlled by all the treatments, although Teedal and some FAR11/01 applications proved less effective.

Linseed

- Tolerant to: None of the treatments.
- Mostly tolerant to: None of the treatments.
- Mostly susceptible to: Teedal.
- Fully susceptible to: Gardoprime + Glean, Firebird. Gardoprime + Firebird, FAR 11/01 incorporated, FAR 11/01 + Quantum, FAR 11/01 + Firebird, FAR 11/01 + Avadex Xtra 300, Gardoprime f.b. Othello + Partner, Firebird f.b. Othello + Partner, Firebird f.b. Simplicity f.b. Simplicity, FAR 11/01 f.b. Othello + Partner, FAR 11/01 f.b. Cougar, Othello + Partner, Simplicity f.b. Simplicity, Simplicity + Stomp f.b. Simplicity.

Linseed mostly susceptible to Teedal otherwise excellent control was achieved by all other treatments.

Note. Many New Zealand Linseed cultivars are not winter hardy, and winter kill may have influenced these results. Consider alternative products if spring planting cereals where linseed escapes are possible.

Table 2. The effects of 16 herbicide treatments (various products and timings), each used at three different rates (1.0x = full rate, 0.5x = half rate, 0.25x = quarter rate), across 12 grassweed/crop species (0 = no kill, 10 = 100% kill). FAR Arable Site 2013.

Please refer to text when making herbicide decisions and always consult your agronomist when making herbicide decisions.

f.b. = followed by.

GRASSWEED SPECIES		Pre-emergence							Pre fb. Post					Post-em GS12			GS21
X RATE – treatments shown 1x rate Scoring Key: 10 = 100% kill 5 = 50% biomass control/kill 0 = no grass kill		Gardoprim + Glean 1.5 L/ha + 15 g/ha	Firebird 0.3 L/ha	Gardoprim + Firebird 0.75 L/ha + 0.3 L/ha	FAR 11/01 150 g/ha	FAR 11/01 150 g/ha + Quantum 0.12 L/ha	FAR 11/01 150 g/ha + Firebird 0.3 L/ha	FAR 11/01 150 g/ha + Avadex Xtra 2.8 L/ha	Gardoprim 1.5 L/ha (Pre-em) f.b. Othello 1.0 L/ha + Partner 1% (Post)	Firebird 0.3 L/ha (Pre-em) f.b. Othello 1.0 L/ha + Partner 1% (Post)		FAR 11/01 150 g/ha (Pre-am) f.b. Othello 1 L/ha + Partner 1% (Post)	FAR 11/01 150 g/ha (Pre-em) f.b. Cougar 0.6 L/ha (Post)	Othello 1.0 L/ha + Partner 1%	Simplicity 0.5 L/ha f.b. Simplicity 0.5 L/ha (Regrowth)	Simplicity + Stomp 0.5 L/ha + 3.0 L/ha f.b. Simplicity 0.5 L/ha (Regrowth)	
Linseed	Rate	1.0x	10	10	10	9	10	10	10	10	10	9	9	9	10	9	7
		0.5x	9	10	10	8	9	10	9	10	9	8	8	8	9	8	6
		0.25x	8	10	10	7	8	9	7	10	9	8	8	8	8	8	5
Oilseed Rape	Rate	1.0x	10	10	10	8	9	10	8	10	10	10	9	10	10	10	6
		0.5x	9	8	10	7	7	9	6	10	10	10	7	10	10	10	6
		0.25x	9	7	9	6	7	8	4	10	10	10	6	10	10	10	6
Annual ryegrass	Rate	1.0x	7	9	10	10	10	10	10	10	10	10	10	10	10	10	4
		0.5x	5	7	8	10	9	10	10	9	9	10	9	9	10	10	3
		0.25x	3	4	6	10	7	10	10	8	8	10	8	7	10	10	3
Perennial ryegrass	Rate	1.0x	9	8	10	10	10	10	10	10	10	10	10	10	10	10	4
		0.5x	7	7	9	10	9	10	10	9	9	10	10	9	9	10	4
		0.25x	4	6	7	10	9	10	10	8	8	10	9	8	8	10	3
Hairgrass	Rate	1.0x	2	10	10	10	10	10	10	8	10	10	10	9	2	10	5
		0.5x	1	9	10	10	10	10	10	7	10	10	9	8	1	10	4
		0.25x	0	8	9	10	10	10	10	7	9	9	10	6	0	10	3
Prairie grass	Rate	1.0x	7	6	7	9	9	9	9	7	6	10	9	9	6	10	5
		0.5x	6	5	6	8	8	9	8	6	5	10	9	8	5	9	5
		0.25x	4	4	5	7	7	8	8	5	4	9	8	8	4	9	4
Soft Brome	Rate	1.0x	4	7	7	9	8	9	10	8	6	10	10	9	7	10	5
		0.5x	3	6	6	8	8	9	9	7	5	10	10	9	7	9	5
		0.25x	2	5	4	7	7	9	9	6	4	9	10	8	6	9	4
Ripgut Brome	Rate	1.0x	5	7	9	8	8	9	9	7	8	10	10	9	7	10	5
		0.5x	4	6	7	7	7	8	8	6	6	9	9	8	6	9	4
		0.25x	3	5	6	6	6	8	7	6	5	8	9	7	5	8	3
Wheat-Oakley	Rate	1.0x	1	0	1	2	1	1	0	1	1	1	0	0	2	1	8
		0.5x	0	0	0	1	0	0	0	0	0	0	0	0	1	0	6
		0.25x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Wheat-Conquest	Rate	1.0x	0	0	0	1	0	0	0	0	0	0	0	0	0	0	9
		0.5x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		0.25x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Barley-Quench	Rate	1.0x	0	0	0	0	0	0	0	0	4	0	0	3	0*	0	4
		0.5x	0	0	0	0	0	0	0	0	2	0	0	1	0	0	3
		0.25x	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Oats	Rate	1.0x	0	0	0	8	8	10	9	9	10	10	10	7	9	10	4
		0.5x	0	0	0	6	6	8	7	8	9	9	9	5	8	8	3
		0.25x	0	0	0	4	4	6	6	7	8	8	8	3	7	7	1

* = Agrochemicals which should never be applied to cereal crops.