

Effects of Infinity FX and Infinity FX + MCPA Ester on Established Smooth Bromegrass Grown for Seed

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PRFSA Fact sheet 24

Please Note:

The URMULE indicates herbicide tolerance trials on a specific crop have been conducted and the crop has shown good tolerance to the herbicide in trials conducted to date. The company with the herbicide does not assume any responsibility if there is damage to the crop from using the herbicide. URMULE are useful to inform growers, seed companies and agronomists what herbicides are available for use on grass and legume seed crops.

Introduction

Controlling broadleaf weeds in established grasses grown for seed production is necessary to ensure a high-yielding and high-quality seed crop is produced. The Peace Region Forage Seed Association, AAFC Beaverlodge and SARDA Ag Research conduct herbicide tolerance trials on established grass seed crops each year. The information generated from the trials is used to inform growers, seed companies and crop input businesses as to what herbicides can safely be used on grass seed crops. If data collected from herbicide crop tolerance trials show good potential for use on a particular grass seed crop, the trials are summarized and used to prepare and submit a User Requested Minor Use Label Expansion (URMULE) as long as the herbicide company selling the product agrees to it.

Infinity (pyrasulfotole+bromoxynil) is a Bayer Crop Sciences herbicide for broadleaf weed control in cereal crops. There are several URMULE for the use of Infinity on both seedling and established grasses grown for seed including creeping red fescue, timothy, bromegrasses and perennial ryegrass. Bayer Crop Sciences added



Smooth bromegrass seed field

the active ingredient fluroxypyr to Infinity which is Infinity FX. Infinity FX provides a wider range of broadleaf weed control than Infinity, particularly on weeds such as cleavers, buckwheat and kochia. Infinity FX can also be tank-mixed with MCPA Ester for stronger and more consistent weed control. Trials were initiated in 2018 to evaluate the tolerance of established smooth bromegrass seed crops to Infinity FX and Infinity FX+MCPA Ester.

Methods

Trials were conducted on growers' fields with the exception of 2018 which was conducted at the AAFC Beaverlodge Research Farm. Uniform areas were selected to reduce variability in data collected from the trials. Experimental design for each location was a randomized complete block design with four replications. Plot size was 2 m x 10 m. Herbicide treatments were applied with a 2 m hand-held boom (4 TeeJet 80001 nozzles) pressurized by a propane sprayer. The sprayer and walking speed were

calibrated to provide 100 l/ha of water at a pressure of 270 kPa. Herbicide treatments were applied at 1x and 2x the recommended rates registered for use in cereal crops (Table 1). Site information and application dates are shown in Table 2. Visual crop tolerance ratings were conducted at three dates throughout the year but are generally 7 days after treatment (DAT), 28 DAT and prior to harvest. Visual crop tolerance ratings are done using the scale shown in Table 3.



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Methods (continued)

For 2018 trials conducted at the AAFC Beaverlodge Research Farm, harvesting was done by collecting samples from two rows by the length of the plot using a Japanese rice binder. The harvested area was 2.6 m². Samples were placed in cotton bags, dried and later thrashed with a stationary thrasher. For trials conducted on growers' fields, harvesting was done by

straight combining down the middle of each plot with a Wintersteiger plot combine. The harvested area was 15 m². Samples were dried, cleaned and weighed to determine seed yield. Germinations and 1000 SWT assessments were done on several of the trials. Data was statistically analyzed using ANOVA means separation (p=0.05, Student-Newman-Keuls).

Table 1. Treatments applied to established smooth bromegrass seed crops

Treatment	Active Ingredient (AI)	Concentration (g/l)	AI Rate (kg/ha)	Product Rate (l/ha)
Infinity FX 1x	pyrasulfotole	31.1	0.031	1.0
	bromoxynil	174.3	0.174	
	fluroxypyr	72	0.072	
Infinity FX 2x	pyrasulfotole	31.1	0.062	2.0
	bromoxynil	174.3	0.348	
	fluroxypyr	72	0.144	
Infinity FX 1x + MCPA Ester	pyrasulfotole	31.1	0.031	1.0
	bromoxynil	174.3	0.174	
	fluroxypyr	72	0.072	
	MCPA Ester	600	0.276	0.460

Table 2. Site and application information

Site	Age of Stand (years)	Application Date	Crop Stage	Harvest Date	Harvest Area (m ²)
2019 Valhalla	1	2019-05-21	Prior to stem elongation	2019-09-11	15
2019 Whitemud	1	2019-05-23	Prior to stem elongation	2019-08-29	15
2018 Beaverlodge	2	2018-05-23	Prior to stem elongation	2018-08-07	2.6

Table 3. Visual crop tolerance rating of phytotoxic effects

Phytotoxicity Range (percent rating)	Assessment of Injury
0-9	Very little injury
10-20*	Just acceptable; slight discoloration and/or stunting
>20-30	Not acceptable
>30	Severe

*20% or less is considered acceptable injury

Results and Discussion

Tables 4, 5 and 6 show results from three trials evaluating the effects of Infinity FX and Infinity FX+MCPA Ester on smooth bromegrass seed crops. Figure 1 summarizes yields from treatments as



Herbicide tolerance trial on established smooth bromegrass in Alberta (2019).

percent of check at all sites. No visual crop injury was observed during the trials. No significantly different seed yields, dockage, germination or 1000 SWTs were observed when compared to the check.

Table 4. Visual crop tolerance ratings, seed yield and dockage of smooth bromegrass following herbicide applications, 2019 Valhalla

Treatment	Visible Injury 7 DAT	Visible Injury 21 DAT	Visible Injury 69 DAT	Seed Yield (kg/ha)	Dockage (%)
Infinity FX 1x	0	0	0	497	17.7
Infinity FX 2x	0	0	0	527	16.0
Infinity FX 1x + MCPA Ester	0	0	0	464	17.8
Check	0	0	0	534	15.0
CV%	-	-	-	24.5	16.4
LSD (p=0.05)	-	-	-	NSD	NSD

CV - coefficient of variance; LSD - least significant difference; NSD - not significantly different

Table 5. Visual crop tolerance ratings, seed yield, dockage germination and 1000 SWT of smooth bromegrass following herbicide applications, 2019 Whitemud

Treatment	Visible Injury 7 DAT	Visible Injury 36 DAT	Visible Injury 84 DAT	Seed Yield (kg/ha)	Dockage (%)	Germination (%)	1000 SWT (g)
Infinity FX 1x	0	0	0	483	9.8	94.8	3.455
Infinity FX 2x	0	0	0	441	10.2	99.5	3.504
Infinity FX 1x + MCPA Ester	0	0	0	428	9.9	98.0	3.386
Check	0	0	0	480	10.0	97.0	3.667
CV%	-	-	-	9.1	7.5	3.6	5.1
LSD (p=0.05)	-	-	-	NSD	NSD	NSD	NSD

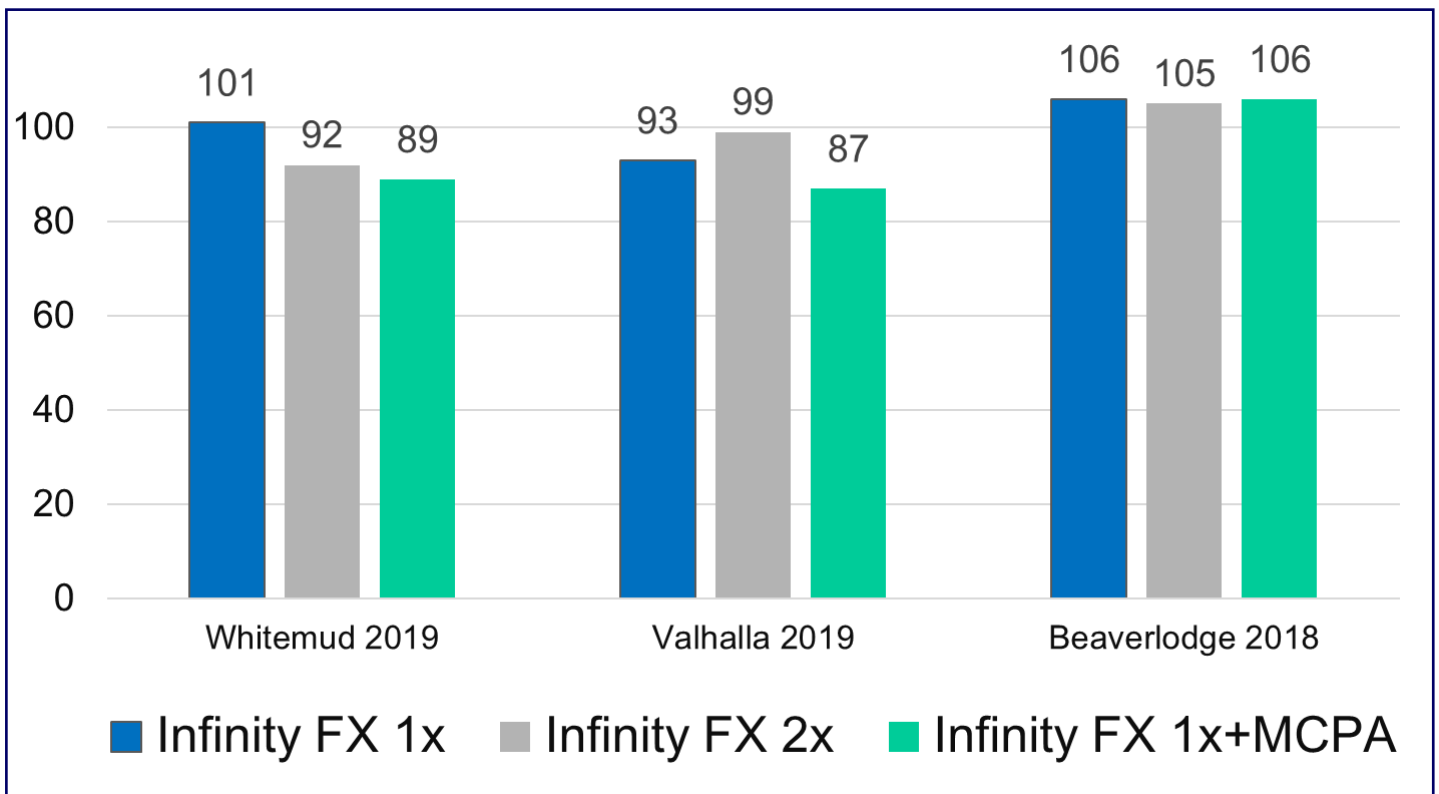
CV - coefficient of variance; LSD - least significant difference; NSD - not significantly different

Table 6. Visual crop tolerance ratings, seed yield, germination and 1000 SWT of smooth bromegrass following herbicide applications, 2018 Beaverlodge

Treatment	Visible Injury 8 DAT	Visible Injury 23 DAT	Visible Injury 62 DAT	Seed Yield (kg/ha)	Germination (%)	1000 SWT (g)
Infinity FX 1x	0	0	0	246	95.0	4.196
Infinity FX 2x	0	0	0	244	97.0	4.285
Infinity FX 1x + MCPA Ester	0	0	0	247	93.5	4.337
Check	0	0	0	232	95.0	4.127
CV%	-	-	-	16.8	3.6	3.7
LSD (p=0.05)	-	-	-	NSD	NSD	NSD

CV - coefficient of variance; LSD - least significant difference; NSD - not significantly different

Figure 1. Tolerance of established smooth bromegrass seed crops to Infinity FX and Infinity FX+MCPA Ester (% seed yield of check)



Summary

- Infinity FX at 1x, Infinity FX at 2x and Infinity FX+MCPA Ester at 1x the recommended rates used in cereal crops applied to established smooth bromegrass seed stands did not cause any visual injury, seed yield loss, reductions in germination or reductions in 1000 SWTs. Germination and 1000 SWT assessments were conducted on two of the three trials.
- Statistically significant differences in seed yields between the Infinity FX treatments and the check were not observed; however, the addition of MCPA Ester may have slightly reduced seed yield at two of the three sites compared to the check and Infinity FX alone.
- Infinity FX appears to be a safe herbicide for use on established smooth bromegrass grown for seed production in three trials.
- A URMULE is now in place for the use of Infinity FX on seedling and established smooth bromegrass grown for seed production.

References

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- Bayer Crops Sciences Canada. Infinity FX Label

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