The Seed Head
Fact sheet # 25

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

Trials conducted by:
Calvin Yoder, Forage Seed Specialist
AAFC Beaverlodge
SARDA Ag Research

For more information:
PRFSA 1-877-630-2198
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 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 timothy grass seed crops to Infinity FX and Infinity FX+MCPA Ester.

Combining herbicide tolerance trials on established timothy

Methods

Trials were conducted on growers' fields or at the AAFC Beaverlodge Research Farm. Uniform areas were selected to reduce variability in data collected. 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. Harvested areas ranged from 2.6 to 4.8 m^2. Samples were placed in cotton bags, dried and later thrashed with a stationary thrasher. For trials conducted in growers' fields, harvesting was done by swathing down the middle of each plot with a Zurn 540 High Clearance Tool Carrier and then combining with a Wintersteiger plot combine with a pickup header, generally a week after swathing. The harvested area was 15 m^2. Samples were dried, cleaned and weighed to determine seed yield. Germinations and 1000 SWT assessments were done on three of the four trials. Data was statistically analyzed using ANOVA means separation (p=0.05, Student-Newman-Keuls).

Table 1. Treatments applied to established timothy seed crops

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

Table 2. Site and application information

Site	Age of Stand (years)	Application Date	Crop Stage	Harvest Date	Harvest Area (m^2)
2020 Sunset House	2	2020-05-28	Early stem elongation	2020-08-18	15
2019 Sunset House	3	2019-05-23	Prior to stem elongation	2019-08-30	15
2018 2YR Beaverlodge	2	2018-05-23	Prior to stem elongation	2018-08-08	2.6
2018 1YR Beaverlodge	1	2018-05-23	Early stem elongation	2018-08-08	4.8

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 through 7 show results from four trials evaluating the effects of Infinity FX and Infinity FX+MCPA Ester on timothy seed crops. Figure 1 summarizes yields from treatments as 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 timothy following herbicide applications, 2020 Sunset House

Treatment	Visible Injury 15 DAT	Visible Injury 35 DAT	Visible Injury 62 DAT	Seed Yield (kg/ha)	Dockage (%)
Infinity FX 1x	0	0	0	608	7.5
Infinity FX 2x	0	0	0	595	7.6
Infinity FX 1x + MCPA Ester	0	0	0	589	6.9
Check	0	0	0	564	8.3
CV%	-	-	-	5.1	9.4
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 timothy following herbicide applications, 2019 Sunset House

Treatment	Visible Injury 7 DAT	Visible Injury 36 DAT	Visible Injury 91 DAT	Seed Yield (kg/ha)	Dockage (%)	Germination (%)	1000 SWT (g)
Infinity FX 1x	0	0	0	620	11.3	94.3	0.451
Infinity FX 2x	0	0	0	548	12.6	95.5	0.445
Infinity FX 1x + MCPA Ester	0	0	0	508	11.5	94.3	0.463
Check	0	0	0	573	10.5	94.5	0.453
CV%	-	-	-	13.4	11.4	2.2	3.9
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 timothy following herbicide applications, 2018 2YR 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	368	94.3	0.476
Infinity FX 2x	0	0	0	377	96.3	0.457
Infinity FX 1x + MCPA Ester	0	0	0	380	95.8	0.475
Check	0	0	0	384	90.8	0.476
CV%	-	-	-	20.1	7.5	4.6
LSD (p=0.05)	-	-	-	NSD	NSD	NSD

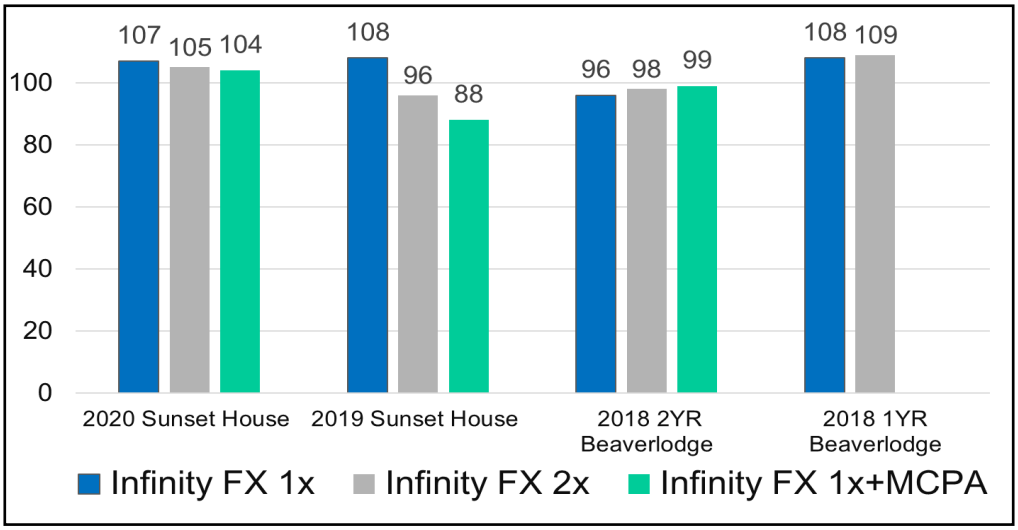
CV - coefficient of variance; LSD - least significant difference; NSD - not significantly different

Table 7. Visual crop tolerance ratings, seed yield, germination and 1000 SWT of timothy following herbicide applications, 2018 1YR Beaverlodge

Treatment	Visible Injury 8 DAT	Visible Injury 14 DAT	Visible Injury 37 DAT	Seed Yield (kg/ha)	Germination (%)	1000 SWT (g)
Infinity FX 1x	0	0	0	613	98.5	0.450
Infinity FX 2x	0	0	0	619	98.8	0.434
Check	0	0	0	566	98.3	0.469
CV%	-	-	-	13.4	0.1	3.2
LSD (p=0.05)	-	-	-	NSD	NSD	NSD

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

Figure 1. Tolerance of established timothy 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 timothy seed stands did not cause any visual injury, seed yield loss, reductions in germination or reductions in 1000 SWTs.
- Infinity FX with or without MCPA Ester appears to be a safe herbicide for use on established timothy grown for seed production.
- A URMULE is now in place for the use of Infinity FX on seedling and established timothy grown for seed production.

References

Yoder, C., and AAFC Beaverlodge. 2018. *Tolerance of Seven Established Grasses Grown For Seed to Infinity FX, Beaverlodge. ARM DAT File.*
Yoder, C., and AAFC Beaverlodge. 2018. *Tolerance of Seven Established Grasses Grown For Seed to Infinity FX, Beaverlodge. ARM DAT File.*
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Yoder, C. and SARDA Ag Research. 2020. *Tolerance of Established Timothy Seed Crop to Infinity FX and Cirpreme, Sunset House. ARM DAT File.*
Bayer Crops Sciences Canada. Infinity FX Label

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